Identifying leaders among IPO firms:

a content analysis of analyst coverage reports

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Abstract:

We examine the ability of analysts to identify firms with superior future performance, based on their identification of leadership positions of newly public firms in initial coverage reports. Leadership identification can be expected to reflect analysts' specialized industrial knowledge and interpretation of the competitive advantages of a firm, and leadership sentences to identify discussion by analysts of firms' leadership positions from initial coverage reports for U.S. IPOs issued during 1999-2012. We find that firms identified by analysts as leaders generally do not provide superior peer-adjusted profit margins or net sales to non-leader firms. We find no difference in the ability of lead-underwriter affiliated analysts (LUWs) and non-LUWs in identifying leaders, suggesting the analyst affiliation tends not to bias the leadership identification. The non-informative leadership identification is not attributable to the conflict of interests in lead-underwriter affiliated analysts. We also find that both LUW and non-LUW analysts tend to be more conservative about firms' leadership position after the Global Settlement implemented in 2003.

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1 Introduction

In a coverage report, financial analysts provide quantitative outputs, such as stock recommendations, earnings forecasts and target prices, as well as text content. Francis and Soffer (1997) and Tsao (2002) argue that text content merely provides justifications for quantitative outputs issued contemporaneously. In contrast, Twedt and Rees (2012) classify report sentences into those with positive and negative tone and find that after controlling for earnings forecasts and stock recommendations, the tone of analyst reports has a significant positive impact on price reactions. Huang et al. (2014) also find that the positive or negative tone of text provides greater predictive power economically on earnings growth in the subsequent five years than do quantitative summary measures. These results suggest that text content may reflect predictive information of firm future performance.

In this paper, we investigate the informativeness of textual information in analyst reports. The main aims of this study are to examine whether analysts, at the time of initial coverage release, can accurately identify leader IPO firms with superior post-IPO operating performance and whether the Global Settlement (GS) and underwriter affiliation of analysts affect the accuracy of their leadership identification.

While the prior literature generally examines the informativeness of analysts' quantitative outputs and the sentiment of text, we extend the literature by focusing on firms' leadership position identified by analysts. Using a content analysis approach, we extract sentences including the keyword "lead" from initial coverage reports (ICRs) and pick out sentences where the IPO firm is identified as either an "industry leader" or "partial leader". Our study empirically examines the post-IPO performance of firms identified as "leaders". If financial analysts have superior information about the industry or accurately interpret a firm's competitive position, we would expect to observe that leader firms provide superior performance to non-leaders in the same industry.

Prior empirical studies generally suggest that the conflicts of interest arising from a lead-underwriter (LUW) affiliation of analysts affect the informativeness of analysts' research outputs. LUW analysts have been found to be more optimistic in their recommendations than non-LUW analysts (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber

et al., 2007). Furthermore, Michaely and Womack (1999) find that firms recommended by LUWs generate lower long-run stock returns than those recommended by non-LUWs. James and Karceski (2006) also find that LUWs tend to provide "booster shots" (stronger coverage) for underwriting firms that perform poorly after the IPOs. Therefore, we expect that a lead-underwriter affiliation could drive analysts to issue more optimistic leadership identification, and that LUW analysts provide less accurate leadership identification than non-LUWs.

On the other hand, some studies find that LUWs are not necessarily more optimistic or less accurate in their forecasts than non-LUWs, Jacob et al. (2008) suggest that LUWs can provide more accurate earnings forecasts than non-LUWs, as LUWs may get inside information from the due-diligence process. When providing recommendations and earnings forecasts, LUWs need to consider the trade-off between investment and underwriting business. James and Karceski (2006) suggests that LUWs are likely to provide an honest stock valuation to maintain long-term relations with their investing clients, especially large institutional clients. Furthermore, both LUWs and non-LUWs have economic incentives to issue favourable recommendations in an attempt to attract future investment banking revenues (Bradley et al., 2008).

Furthermore, the conflicts of interest arising from a lead-underwriter (LUW) affiliation of analysts are affected by regulation reforms, such as the Global Analyst Research Settlement (GS) in 2003. The GS regulates the quantitative outputs of analysts. For example, analysts are required to disclose the proportion of favourable recommendations to the public (Kadan et al., 2009). While the GS require financial analysts (especially affiliated analysts) to disclose conflicts of interest and limit relations between research and investment banking departments, these regulations do not regulate the text of analyst reports (Kadan et al., 2009; Corwin et al., 2017). It is not clear that the GS should have had an impact on the text in analyst reports and this is an open empirical question. We therefore hypothesize that the GS does not affect the leadership identification in analysts' report text.

We examine the impact of analyst affiliation on the optimism and accuracy of leadership identification sentences of IPO firms in ICRs. Irvine (2003) suggests that ICRs reflect valuable information, as they represent the commitment of resources by financial analysts. Early studies also show that significant positive abnormal stock returns are associated with the initiation of coverage (Peterson, 1987; Kim et al., 1997). An ICR may contain more information than subsequent coverage reports. McNichols and O'Brien (1997) indicate that ICRs are more

accurate than subsequent coverage in terms of the absolute value of the price-deflated forecast error. Similarly, Irvine (2003) finds that ICR recommendations on average generate 0.98% higher abnormal price returns than subsequent recommendations. Using a content analysis approach, we explore ICRs to test with three leadership identification measurements, whether a firm is identified as a leader (existence), the number of leadership sentences per report (frequency) and the number of leadership sentences per page of report (intensity).

If the text content in ICRs have valuable information of firms' competitive position, leadership identification sentences should be associated with leader firms' future superior performance. However, although some regression coefficients of the industry or partial leader identifications are significant, we find that there is no consistent pattern in the impact of leadership identification on peer-adjusted firm performance within three years post-IPO. The leadership identification may not capture superior peer-adjusted performance but rather reflect the financial characteristics of the firms. Un-tabulated regression results suggest that leader firms generate significantly higher un-adjusted profit margin and net sales than non-leader firms and that leadership identifications significantly affect the post-IPO un-adjusted performance. However, matching the firms with peer firms, there is no consistent evidence of leader firms outperform non-leader firms. How analysts identify leader firms are black boxes. If analysts' leadership identification captures the size effect, after controlling for the performance of peer firms with similar size and performance, the peer-adjusted operating performance of leaders may not necessary outperform that of non-leaders.

Contrary to the expectation that LUWs are optimistic and biased, we find that LUWs are not more like to identify their IPO clients as leaders than non-LUWs. Although LUWs appear to state more leadership sentences than non-LUWs, LUWs issue longer report. Analyst affiliation does not affect the number of leadership sentences per page of ICR. Furthermore, neither leader firms identified by LUWs or non-LUWs generate superior peer-adjusted operating performance to non-leader firms. Therefore, it is not clear whether LUWs or non-LUWs are more accurate.

Our results suggest that the GS reduced the optimism of leadership identification by financial analysts, especially in partial leader firms. After the GS, analysts tend to be less likely to identify a firm as a partial leader, and reduce the number of partial leadership sentences per report and per page. The GS appears to affect analysts' optimism in their leadership identifications, as well as in quantitative outputs. Kadan et al. (2009) observe that analysts are

less likely to provide positive recommendations after the GS. Corwin et al. (2017) find that the GS led to a substantial reduction in analyst affiliation bias[2] for sanctioned banks. Although the text content in analyst reports is not subject to regulatory requirements, we find that analysts tend to be more conservative in the leadership identification of IPO firms after the GS.

Our study extends the prior literature in three ways. First, we investigate the informativeness of analysts' text. According to *Institutional Investor* magazine's annual survey of nearly 3,500 institutional investors since 1998, analysts' report content is consistently ranked as far more important than stock recommendations and earnings forecasts (Huang et al., 2014). However, much less attention has been paid to the information released in analysts' text content (Ramnath et al., 2008; Bradshaw, 2011; Huang et al., 2014).

Prior studies on the role of analysts' information generally focus on the informativeness of analysts' quantitative outputs such as recommendations, target prices and earnings forecasts. Evidence on analysts' research generally shows that quantitative outputs are informative. For example, Michaely and Womack (1999) show that investors on average react positively to a "buy" recommendation and negatively to a "sell" recommendation. Brav and Lehavy (2003) find that investors also show large and significant stock price reactions to target prices and earning forecast announcements. However, these prior studies fail to consider the informativeness of analyst report text, which may help develop a more comprehensive understanding of the role of analysts' information (Bradshaw 2011; Huang et al., 2014).

Text content could include non-financial information which is not yet recognised by the financial reporting system (Stocken and Verrecchia, 2004; Huang et al., 2014). Some sentiment studies suggest that the positive or negative tone of analysts' report text could provide incremental information beyond quantitative outputs (Hirst et al., 1995; Asquith et al., 2005; Twedt and Rees, 2012; Huang et al., 2014). Prior literature suggests that non-financial measures, such as customer satisfaction, brand recognition and corporate social responsibility, determine firm value (Barth et al., 1998; Ittner and Larcker, 1998; Dhaliwal et al., 2011; Huang et al., 2014). Analyst report text may reflect non-financial information undisclosed by managers due to proprietary cost (Verrecchia, 1983). These value determinants can be discussed in the text content of analyst reports.

[2] Affiliation bias is measured as the relative forecast accuracy of the analyst which is the absolute value of the difference between the analyst's most recent forecast of fiscal-year earnings and actual earnings, scaled by stock price the year before (Corwin et al., 2017).

Second, text content in an ICR could reflect analysts' understanding of IPO firms and industries. Huang et al. (2014) argue that non-financial information on topics such as an industry's competitive landscape is challenging for investors to process. In this case, this text, which is a product of analysts' superior industry knowledge and analytical skills, offers valuable information to investors. Michaely and Womack (1999) discuss that most analysts specialise in an industry. These analysts interpret information and value a firm's position relative to its competitors (Michaely and Womack, 1999). Industry-specific analysts interpret financial performance and deliver their understanding and private information on firms to their customers. Furthermore, an investor could use analysts' research ideas expressed in text content to form his or her own investment decision, instead of simply following a stock recommendation (Huang et al., 2014).

Third, our study extends the research on qualitative analyst outputs with a focus on firms' leadership positions, a "tone" representing analysts' view of the competitive advantages in a firm. A leadership position in an industry gives a firm the competitive advantage of scanning opportunities, building on strengths, and committing resources to serve consumers effectively (Golder and Tellis, 1993). Stock recommendations are generally short-lived, but the leadership identification may provide an idea of the firms' long-term competitive advantage and can be expected to help predict long-run operating performance.

Our leadership identification is different from the "first-mover" identification in prior literature. Previous studies generally identify leaders as the "first or early mover in the market" based on the order of market entry (Tufano, 1989; Kalyanaram and Wittink, 1994; Szymanski et al., 1995; Murthi et al., 1996), the proportion of market share (Tufano, 1989; Kalyanaram and Wittink, 1994; Szymanski et al., 1995; Murthi et al., 1996), and self-reported pioneers in the PIMS and ASSESSOR databases (Robinson, 1988; Lambkin, 1988; Miller et al., 1989).

Eisenmann (2006) suggests that these previous studies of first-movers typically focus on the impact of entry order on market share, rather than underlying determinants of firms' competitive advantages. First-mover positions can only provide a firm with opportunities to gain positional advantages (Kerin et al., 1992). The actual competitive advantages of a firm, as argued by Kerin et al. (1992), depend more on product-market contingencies and the actions of all entrants rather than market entry order. In addition, Kerin et al. (1992) and Lieberman and Montgomery (1988) argue that a later entrant may benefit from lower imitation costs, free-rider effects, scope economies, and learning from the pioneer's mistakes. Similarly, firms

enjoying "leadership advantage" are not necessarily the "first-mover" but may have resources and capabilities to generate competitive advantages. If financial analysts accurately interpret the competitive advantages, the leadership position identified in the coverage reports could provide valuable information to investors.

This paper is organized as follows. Section 2 describes the research framework and develops hypotheses. Section 3 discusses the sample selection and data collection process and presents the models of leadership identification and firm performance. Section 4 examines the accuracy of leadership identification by investigating operating performance of leader and non-leader firms identified by analysts, and examines factors affect the leadership identification. Section 5 concludes the paper.

2 Research Framework and Hypothesis Development

2.1 Leadership position and firm performance

Unlike prior literature on the quantitative outputs in analyst reports, the text content in coverage reports is unstructured data, which varies from report to report. The factors discussed around "leadership position" sentences can be anything from general economic conditions, such as industry prospects, to firm-specific competitive advantages and risks, such as market share, technology, and bargaining power with consumers and suppliers. The content analysis approach transfers these unstructured data into numerical data.

To investigate analysts' view of the leadership position in IPO firms, we extract all sentences mentioning the keyword "lead" from initial coverage reports. The cognate words including "lead", "leads", "leader", "leaders", "leading" and "leadership", are identified with the "lead" keyword. To investigate the tone of analysts' leadership identification, we quantify each leadership position with leader sentences mentioned by analysts in ICRs. We measure the existence, frequency and intensity of four types of leaders. The existence of leadership position is presented as a dummy variable, which equals one if the IPO firm is identified as a leader at least once in an ICR, and zero otherwise. The frequency of leadership position refers to the number of leadership sentences per ICR. The intensity of leadership position refers to the number of leadership sentences scaled by the number of pages in an ICR.

Following "first-mover" and "pioneer" studies, we classify analysts' leadership identification into two types.

> *Type 1 leader describes IPO firms that are explicitly identified as "a market leader" or "an industry leader", and*

Type 2 leader describes IPO firms that hold a "partial leading position" in a particular product or asset.

Type 1 and Type 2 leaders are firms which are perceived to hold a competitive advantage at the time of the IPOs by analysts. Previous studies generally compare first-movers or pioneers to followers in the same product category (Buzzell and Gale 1987; Lieberman and Montgomery, 1988). Similarly, Type 1 leaders are expected to hold competitive advantages over other firms in the same industry or market, while Type 2 leaders capture some competitive advantages, because they do one specific thing really well or in an innovative way. For example, Type 2 leader are identified by analysts to have cost-efficiency, leading technology, or a leading product. Although there is no prior study examining the difference between market leaders and "partial leaders", we expect market leaders to have stronger competitive advantages and influences in a market than partial leaders.

Our leadership position is different from the first-mover or pioneer position discussed in prior literature. Prior studies generally suggest that innovative pioneers, S&P 500 ranking firms and self-reported first-movers capture some kind of benefits arising from the competitive position of firms (Urban et al., 1986; Lieberman and Montgomery, 1988; Tufano, 1989; Colak and Gunay, 2011). Tufano (1989) investigates the compensation of 58 financial innovators during 1974-1986 and finds that that these innovative investment banks capture a larger share of underwritings business compared to followers with imitative products. These innovative pioneers do not charge higher "monopoly" prices before imitative products appear, and even charge lower price than imitative rivals. Tufano (1989) conjectures that innovators enjoy lower costs of trading, underwriting, and marketing, although there is no direct examination of cost data. The innovative pioneer appears to capture market share, but it is not clear whether the pioneer can generate superior performance to followers.

Early studies investigating the self-reported pioneers in PIMS (Profit Impact of Market Strategy) and Assessor databases generally suggest that pioneering manufacturing firms enjoy first-mover advantages, such as long survival time and large market share (Robinson and Fornell, 1985; Urban et al., 1986; Lambkin, 1988; Robinson, 1988; Miller et al., 1989; Robinson et al., 1992). However, Golder and Tellis (1993) state that the self-reported pioneer positions could be exaggerated due to respondents' self-perception bias, as 52% of firms in the PIMS database classify themselves as pioneers, including multiple competitors in the same product category (Buzzell and Gale 1987; Lieberman and Montgomery, 1988). Golder and

Tellis (1993) suggest that these databases identify not competitive leaders but early movers, as the pioneers are classified based on the year a firm entered the market.

First-movers may not hold a competitive position. Colak and Gunay (2011) find that IPOs firms that are later included in the S&P 500 index are not first to issue in their own industry. IPOs of future S&P 500 firms tend to strategically delay their IPO processes and issue in the mid-stages of an expanding IPO cycle, which suggests that "first movers" may not necessarily be the best performance firms and first movers and leaders are not necessary the same thing (Colak and Cunay, 2011). Furthermore, it is hard for investors to predict future S&P 500 IPOs. Thus, the leadership identification in Colak and Gunay (2011) does not help investors to make any profit-making strategy before firms get into the S&P 500 index.

Evidence from earlier studies suggests that first movers and pioneers are not necessarily the ones to capture the competitive advantages of a leader. If an early follower learns from the mistakes of the first-mover and dominates the market, it would be inappropriate to classify the first-mover as "an industry leader" (Golder and Tellis, 1993). Our leadership identification reflects the analysts' view of competitive advantages in the IPO firm, which is arguably more likely to capture leadership advantages than would a first-mover identification.

If financial analysts accurately interpret competitive advantages and correctly identify the leadership position of an IPO firm, these "leader" firms should experience superior operating performance in our event window of three years. This leads to the first two hypotheses:

> ***Hypothesis 1a: IPO firms identified as Type 1 leaders generate better operating performance post-listing than non-leader firms.***
>
> ***Hypothesis 1b: IPO firms identified as Type 2 leaders generate better operating performance post-listing than non-leader firms.***

2.2 Conflicts of interest and regulatory reforms

The Dotcom crash in 2000 raised the concern that analysts' biased research outputs could mislead investors (Gao et al., 2013). Changes in regulatory environment such as the Global Analyst Research Settlement (GS) aimed to address analysts conflicts of interest (Kadan et al., 2009). The purpose of GS was to require strict disclosure of knowable conflicts of interest by securities analysts, to substantially limit relations between research and investment banking departments, and to regulate analysts to provide more meaningful research (Kadan et al., 2009). However, the regulations may have started to have an impact earlier than the GS in 2003. For

example, Barber et al. (2007) find that after the May 2002 implementation of NASD Rule 2711, which requires the disclosure by rating agencies the distributions of their ratings to the public, the proportion of buy recommendations started to decline.

Before regulation reforms, prior empirical studies generally suggested that due to conflicts of interest, LUWs appear to provide more optimistic and less accurate forecasts than non-LUWs (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber et al., 2007). Dechow et al. (2000) find that underwriting fees are positively correlated to the level of earnings growth forecasts of LUWs. Lin et al. (2005) and Barber et al. (2007) observe that LUWs are more reluctant to downgrade but more willing to upgrade than non-LUWs. James and Karceski (2006) also find that IPO firms with a strong coverage from LUWs perform poorly post-IPO. This evidence suggests that before the GS, LUWs perhaps suffered conflicts of interest between their fiduciary responsibility to investing clients and their sales incentive to underwriting clients.

Studies of regulation reforms suggest that the implications of regulations tend to affect the optimism/pessimism tone of analysts and improve the accuracy of analysts' forecasts (Barniv et al., 2009; Kadan et al., 2009; Corwin et al., 2017). Barniv et al. (2009) find that after the regulation reforms, analysts' earnings forecasts are more positively correlated to firms' future stock returns. The correlations between analysts' stock recommendations and analysts' earnings-based valuation change from negative in the pre-regulation period to zero or even positive after the regulation reforms (Barniv et al., 2009).

Kadan et al. (2009) find that both LUWs and non-LUW analysts are less likely to issue favourable recommendations in the post-GS period than pre-GS. Kadan et al. (2009) find that LUWs were 22% more likely to issue favourable recommendations compared to non-LUWs before the GS, but as likely to provide favourable recommendations as non-LUWs after the GS.

On the other hand, regardless of the impact of regulation reforms, some studies suggest both LUWs and non-LUWs need to weigh the trade-off between underwriting business and relation with investment clients (James and Karceski, 2006; Jacob et al., 2008; Bradley et al., 2008). Jacob et al. (2008) suggest that LUWs provide more accurate earnings forecasts compared to non-LUWs, as LUWs may get inside information from the due-diligence process. James and Karceski (2006) suggest that, to maintain long-term relations with their investing clients, especially large institutional clients, LUWs are likely to provide an honest appraisal of the stock's value.

Groysberg et al. (2011) find that analysts are not compensated for the accuracy of forecasts but are compensated for actions that increase brokerage and investment-banking revenues. Both LUWs and non-LUWs have economic incentives to issue favourable recommendations in an attempt to attract future investment banking revenues (Das et al., 1998; Lim, 2001; Libby et al., 2008; Mayew, 2008; Bradley et al., 2008). Therefore, LUWs are not necessarily more optimistic or less accurate in their forecasts than non-LUWs, regardless of the impact of regulation reforms (Aggarwal et al., 2002; Bradley et al., 2004; Reuter, 2006; James and Karceski, 2006; Jacob et al., 2008; Bradley et al., 2008).

These discussions above suggest that the impact of investment banking affiliation on the tone and accuracy of analysts' research outputs is inconclusive. We investigate whether the affiliation position affect the accuracy of leadership identification and analysts' optimism in leadership identification with the following hypotheses:

> ***Hypothesis 2a: Firms identified as leaders are less likely to outperform if the leadership advantage is identified by LUWs.***
>
> ***Hypothesis 2b: Firms identified as leaders are more likely to outperform if the leadership advantage is identified by non-LUWs.***
>
> ***Hypothesis 3a: LUWs are more likely to identify an IPO firm as a leader than non-LUWs are.***
>
> ***Hypothesis 3b: LUWs mention leadership advantages more frequently than non-LUWs do.***
>
> ***Hypothesis 3c: LUWs mention leadership advantages more intensely than non-LUWs do.***

As discussed in Section 1, although prior studies of the regulatory changes generally suggest that the GS reduced optimistic recommendations and forecasts in analyst reports, whether the GS affected the qualitative text content has not, to the best of our awareness, been investigated in prior studies. Bradley et al. (2008) conjecture that analysts' text content is not subject to the same regulation restrictions that limit the information content of earnings forecasts and stock recommendations. Alternatively, financial analysts may still be cautious in their tone after the GS, and less optimistic in the leadership identification. We extend the literature by controlling for the impact of the GS on the affiliation position of analysts.

Hypothesis 4a: The Global Settlement does not affect analysts' likelihood of identifying a firm as a leader.

Hypothesis 4b: The Global Settlement does not affect analysts' frequency of leadership identification.

Hypothesis 4c: The Global Settlement does not affect analysts' intensity of leadership identification.

3 Data and Methodology

3.1 Data

We obtain our IPO sample from the Thomson SDC New Issue database. Following Banerjee et al. (2016), we exclude closed-end funds, REITs, acquisition companies, depository institutions (banks, savings and loans), limited partnerships, American depositary receipts (ADR), unit offers (packages of shares and warrants), best effort issues and auctions. Furthermore, we require that IPO firm operating performance data is available from the Center for Research in Securities Prices (CRSP) and that trading starts no later than ten days after the IPO date (Banerjee et al., 2016). These exclusions result in an initial sample of 1,850 completed IPOs issued between 1 January 1999 and 31 December 2012. The sample period covers both economic boom and bust periods.

We eliminate IPOs without ICRs within six-months after the IPOs, following Breton and Taffler (2001) and Das et al. (2006). The six-months cutoff period is chosen for two reasons. First, six-months is longer than the quiet period and thus covers ICRs issued by LUWs after the quiet period.[3] Second, Barber et al. (2001) show that the average time between sequential recommendations for a firm is around 200 days. Therefore, a cutoff period of six-months is likely to capture most ICRs. We manually search for "initiating coverage" reports from Investext (via Thomson One). We exclude 299 IPO firms that have no initial coverage reports (ICRs) in Investext and 37 IPO firms that do not have ICRs within six months of the IPO.[4] The remaining 1,514 IPOs have 4,068 ICRs in Investext. Furthermore, as ICRs are analysed by

[3] The SEC requires a quiet period in which insiders and affiliated underwriters are restricted from issuing reports on newly issued firms.

[4] As stated in Asquith et al. (2006), some LUWs could not be included in our study because their analyst reports are not provided to Investext (e.g., Goldman Sachs). In our initial sample of 1850 IPOs, there are 299 IPOs where no analyst reports are provided to Investext. We realise the potential bias arising from the uncovered investment banks, and discuss this further in Section 4.1.
In the remaining 1,551 IPOs having initial coverage reports in Investext, initial coverage reports of 37 IPOs were issued more than six months after the IPO and are excluded from the analysis.

statistical software R, we exclude 47 ICRs that cannot be read by R.[5] Our final sample of IPOs consists of 1,501 IPOs going-public during 1999-2012 that have 4,021 ICRs issued by 180 analysts within six months of IPOs.

As stated in Section 2.1, we extract all sentences including the keyword "lead" from initial coverage reports. The cognate words, including "lead", "leads", "leader", "leaders", "leading" and "leadership" are identified with the "lead" keyword. We manually check 33,384 sentences with the keyword "lead" in the final sample of 4,021 ICRs and exclude 23,558 sentences mentioning the phrases "lead to" (6,740), leading person (2,946), lead/main products or assets or departments in the IPO firm (626), "lead" metal (703), "leads/referral" (205), "lead times" (479), IPO firms used to be a leader (25), un-lead (51), "misleading" (512), leadership advantage in the IPO competitors (11,271), "leader to be" (638) and "leader aim to be (628)". The remaining 8,560 sentences mention the IPO firm's "leadership advantage" and the sentences are classified into two types of "leader" IPOs.[6] There are 859 sentences mentioning Type 1 leaders and 7,701 mentioning Type 2 leaders.

We use the software R to generate information from the ICRs, which includes IPO firm names, financial analyst firm names, dates of ICR release, the number of pages in an ICR, the number of sentences in an ICR and stock recommendations.

Following Banerjee et al. (2016), we collect IPO data from Thomson SDC, firms' financial data from Compustat (in millions of U.S. dollars), price data from the CRSP, data on firm foundation years from the Field-Ritter dataset, and underwriter reputation rankings from Jay Ritter's webpage. The variable measurements and motivations for these variables are discussed further in Section 3.2 below.

3.2 Methodology

We use an OLS regression model to test whether firms identified as Type 1 or Type 2 leaders generate superior on-going operating performance post-IPO and whether LUWs or non-LUWs provide more accurate leadership identification. Model 1 use the firm-level data of leadership identification, which means that each IPO firm is observed once in our sample. The un-tabulated robustness test uses the report-level data of leadership identification and controls for

[5] For example, the report is in a picture format instead of text format. Or, the text in an ICR is encrypted and cannot be copied and pasted.

[6] We manually check the renamed IPO firms and make sure both the previous name and the current name are recognised as the same IPO firm across different databases (SDC and Investext).

the clustering of IPO firms, and regression results hold. The following regression Model 1 examines the accuracy of analysts' leadership identification:

$$Model\ 1:\ Firm\ Performance_{(t+p)} = \beta_0 + \beta_1 * Leadership\ Identification\ + \beta_2 * Recommendation + \beta_3 * Firm\ Financial\ Characteristics_{t-1} + \beta_4 * Firm\ nonfinancial\ Charactristics + \beta_5 * Market\ Condition_t + \beta_6 * ICR\ Charactristics + \varepsilon$$

Model 1 investigates hypotheses 1 and 2. We control for IPO firm characteristics, market conditions, industry effects and investment bank effects on the peer-unadjusted and peer-adjusted performance of IPO firms following previous literature.

Model 2 examines whether the affiliation position and the GS affect analysts' leadership identification, which tests hypotheses 3 and 4. When the leadership identification is the existence (a 0-1 dummy variable), frequency (a count variable) and intensity of leadership position (a continuous and non-negative variable), Model 2 uses logit regression, Poisson regression and Tobit regression, respectively. In our sample, the frequency and intensity of leadership position are often not observed. To model the non-negative dependent variables with clumping at zero, we also provide models with Zero-inflated Poisson regressions and Cragg's Tobit regressions and these un-tabulated regression results are consistent with the findings which uses Poisson and Tobit regression models. As an IPO firm can be observed several times in the report-level leadership identification, the robustness regressions control for the clustering of IPO firms.

$$Model\ 2:\ Leadership\ Identification = \beta_0 + \beta_1 * GS\ dummy + \beta_2 * Affiliation + \beta_3 * Affiliation * GS\ dummy + \beta_4 * Firm\ Financial\ Characteristics_{t-1} + \beta_5 * Firm\ nonfinancial\ Charactristics\ + \beta_6 * Market\ Condition_t + \beta_7 * ICR\ Charactristics\ + \varepsilon$$

Following Jain and Kini (1994) and Banerjee et al. (2016), we focus on peer-adjusted profit margin (EBITDA/total assets) of IPO firms, as a leader firm should take advantage of its leadership position to earn positive profits (Lieberman et al., 1988; Barber et al., 2001).[7] Peer firms are listed for more than three years matched in the same industry (3-digit SIC code), similar firm size (sales revenue at t-1 between 50% and 200% of IPO firm size), and the closest performance (EBITDA at t-1), and the peer firm must have a stock price of at least $5 during

[7] We have the peer-adjusted growth of profit margin and net sales as alternative measures of firm performance.

the fiscal year that precedes the IPO.[8] For the full sample of 1,501 IPOs, we find peer firms for 1,010 IPOs. IPO firms without a peer are generally small firms.

For firms with negative earnings the year prior to going public, an alternative performance measure is the peer-adjusted net sales. Jain and Kini (1994) observe that IPO firms with declining operating profits (compared to their pre-listing profits) experience high growth in sales and capital expenditures post-listing. Therefore, for example, a technology leader firm may not be expected to earn positive earnings for years after going public, but could raise money from NASDAQ and use the capital to expand operations and product market share.

We control for the impact of ICR characteristics, the firm's pre-IPO financial and non-financial characteristics, and economic conditions on analysts' tone of leadership identification and IPO firms' performance. The expected impact of each factor on the leadership identification and operating performance is discussed below:

Recommendation has three ratings in our sample of ICRs: +1 stands for a "buy" recommendation, 0 stands for a "hold" recommendation and -1 stands for a "sell" recommendation.[9] We expect that financial analysts are more likely to identify leaders in a "buy" firm than in a "sell" firm and a positive correlation between stock recommendation and IPO firms' operating performance.

Affiliation captures the lead-underwriting relation between analysts and IPO firms. We classify an ICR as LUW affiliated if it is issued by an investment bank involved as one of the top four leading underwriters in an IPO; otherwise, an ICR is classified as a non-LUW ICR. As discussed in Section 2.2, analyst affiliation could have a positive or negative impact on the likelihood and accuracy of leadership identification.

The ***GS*** dummy equals one if an ICR was issued after the Global Settlement in 2003, and zero otherwise. Hypothesis 4 expects no impact of the GS on analysts' leadership identification. The GS only directly regulated the quantitative information of ICRs. Therefore, it is not clear whether GS should have had an impact on the leadership identification. The GS should not affect firm performance but could affect analysts' valuation of firm performance via leadership identification. For example, if the GS regulates analysts to provide more accurate leadership

[8] The peer firm of a profitable IPO firm must be positive. We relax the restriction of positive EBITDA for unprofitable IPO firms.

[9] Kadan et al. (2009) find that following the GS, most leading investment banks moved from the traditional five-tier rating system to a three-tier rating system. We use a three-tier rating system as our sample covers initial coverage reports issued before and after the GS.

identification, we would observe that leader identification has a larger impact on firm performance in the post-GS than pre-GS period.

Ln(firm age) and ***ln(TA)*** are the natural log of the number of years between when the firm was founded and the IPO issue date and the natural log of the value of total assets of the IPO firm in the financial reports before the IPO issue, respectively. Banerjee et al. (2016) suggest that smaller/younger IPOs are more likely to have valuable growth opportunities than larger/older IPO firms, as smaller/younger IPOs are more likely to be early-stage firms. Therefore, we expect a negative relationship between operating performance changes and size/age.

Leverage is defined as long-term debts divided by total assets. The leverage ratio of a firm could affect its corporate governance and indirectly affect its operating performance post-IPO. Renneboog (2000) suggests that high leverage is likely to be associated with a higher level of monitoring and more frequent interventions by creditors as the risk of financial distress increases.

These pre-IPO financial characteristics such as firm age, firm size (total assets) and leverage could also affect the leadership identification as firms with a solid financial position are expected to perform well in the future and these firms are more likely to be identified as leaders.

VC and ***PE*** are dummy variables which equals 1 if an IPO firm has a venture capital or private equity backing, respectively. Prior literature suggests a positive correlation between sponsorship and stock returns (Banerjee et al., 2016). Similarly, we expect a positive correlation between VCs and PEs' sponsorship and operating performance. The intuition is that screening activities of reputable sponsors are more likely to lead to improved operating performance as a prestigious sponsor may protect their reputation by sponsorship IPOs that have relatively better long-run stock performance (Chemmanur and Fulghieri, 1994; Jain and Kini, 1995; Banerjee et al., 2016).

Underwriters' reputations (UW reputation) is a nine-point scale ranking following Loughran and Ritter (2004). UWs with a high ranking of reputation are high-prestige UWs. When there is more than one lead underwriter involved in an IPO, following Banerjee et al. (2016), we use the highest-ranking of the underwriters. UW reputation are expected to be positively correlated to IPO firms' stock and operating performance (Michaely and Shaw, 1994; Carter et al., 1998; Banerjee et al, 2016).

Hot market is a dummy variable which equals 1 if the IPO was issued in rising IPO cycles (Banerjee et al., 2016).[10] Banerjee et al. (2016) suggest that IPO firms issued in a hot or cold market have different qualities, as high-growth firms tend to lead the IPO cycle and low-growth firms tend to wait for the certainty over economic conditions. In contrast, Helwege and Liang (2004) observe that IPOs issued in hot and cold markets have similar post-IPO operating performance.

4 Results

4.1 Descriptive statistics: characteristics of ICRs and IPO firms

Table 1 provides the annual frequency of ICRs written by LUW and non-LUW analysts. Both IPOs' and ICRs' frequencies show a cyclical nature. On average, 14% of LUW ICRs identify the industry leadership position in an IPO firm, while non-LUW ICRs show a proportion of 13% Type 1 leaders. Type 2 leadership is characterised by a looser definition of competitive advantage than Type 1. Our proportion of Type 2 leaders (57% in LUW reports and 60% in non-LUW reports) is similar to the proportion of self-reported pioneers in the PIMS database (52%) (Buzzell and Gale, 1987; Lieberman and Montgomery, 1988).

There is a sharp drop in Type 1 and Type 2 leader identifications after the GS introduced in 2003. Unlike the conjecture in Stocken and Verrecchia (2004) and Bradley et al. (2008), although there are no explicit rules on the text content of analysts' reports, analysts appear to identify firms' leadership position less often after the GS.

[Insert Table 1 here]

Table 2 Panel A describes the leadership identification by analysts in ICRs. LUWs appear not to be more likely to identify a firm as a Type 1 or 2 leaders than non-LUWs. Although LUWs on average use 0.05 more Type 1 leader sentences per ICR than non-LUWs, the result is driven by the report length. LUWs appear to have the same number of Type 1 leadership sentences per page of ICR (intensity) as non-LUWs. Table 2 Panel A shows that ICRs by LUWs are on average 6.5 pages longer than those by non-LUWs. The longer reports either reflect a significant amount of firm-specific and industry knowledge obtained by LUW analysts from the due-diligence and book building processes (Michaely and Womack, 1999), or reflect LUW's effort to reduce conflicts of interest with more text to support or justify recommendations (Huang et al., 2014). In our sample, LUWs are slightly more likely to make

[10] Rising IPO cycles are identified as periods during which the 4-quarter moving average of IPO volume has risen for at least three quarters in a row (Banerjee et al., 2016).

a favourable recommendation than non-LUWs. Overall, the descriptive statistics indicates that LUWs are not more optimistic than non-LUWs in leadership identification.

[Insert Table 2 here]

Table 2 Panel B shows the existence and frequency of Type 1 leadership identification before the GS are not significantly different between those after the GS. On the other hand, the existence, frequency and intensity of Type 2 leadership identification are significantly reduced after the GS. The GS subgroup results indicate that Type 1 "industry or market leader" is used more rigidly by financial analysts than Type 2 leader identification, as a stricter regulation environment after the GS does not reduce the proportion and frequency of Type 1 leadership identification. Table 2 Panel B also shows that the proportion of favourable recommendation reduced significantly after the GS, in ICRs by both LUWs and non-LUWs. Type 1 leader identification could provide incremental value beyond recommendations, especially in the post-GS period when analysts significantly reduced their favourable recommendations.

Table 2 Panel C shows that the differences of firm-level leadership identification between profitable and unprofitable IPOs are generally consistent with those differences of report-level leadership identification. In Section 4.2, we further use the report-level leadership identification in Model 1, to examine the accuracy of leadership identification in profitable and unprofitable IPO firms separately.

As discussed at the end of Section 3.1, investment banks not-found in Investext could bias our classification of IPO firms not covered by LUWs. For example, Goldman Sachs was highly active in the LUW role, and as a LUW would be more likely to identify leadership position among its clients. Therefore, the existence of leadership position in Table 2 Panel A are likely to be downward biased. For other two measurements, however, the impacts, if any, of some investment banks been missing from Investext, on the other variables, including the average frequency of leadership sentences, the proportion of investment banks identifying leadership position and the leadership intensity, are unclear.

Table 3 presents the post-listing performance and pre-listing firm characteristics of IPO firms. Table 3 shows that both profitable and unprofitable IPO firms tend to generate significantly positive peer-adjusted profit margin and net sales, which suggests that IPO firms experience higher growth in profit and net sales compared to peer firms that are listed for more than three years. As discussed in Section 3.2, profitable firms and unprofitable firms appear to have different short- to- medium-term performance aims. Unprofitable IPO firms, such as

technology leaders, may raise money from the stock market and use the capital to expand their product market share. Therefore, in the following discussions, we focus on profit-related performance measurements in profitable IPOs and sales-related performance measurements in unprofitable IPOs.

Table 3 also shows that the firm characteristics are different between profitable and unprofitable IPO firms. Unprofitable IPO firms are generally younger and smaller than profitable IPOs. On average, unprofitable IPO firms are 16.5 years younger and total assets are $863 million less than profitable IPO firms.

These results are consistent with the evidence in Loughran and Ritter (2004) that an increasing number of young and unprofitable companies went public during the internet bubble period. The median differences provide consistent results to the mean difference.

Table 4 presents the correlations between each variable. Table 4 shows that the leadership identifications appear to not be significantly correlated to the peer-adjusted performance. Table 4 shows that LUW coverage is positively correlated to Type 1 leadership existence and frequency, which indicates that LUWs are more optimistic to identify IPO firms as Type 1 leaders than non-LUWs. Table 4 also shows that the GS is negatively correlated to Type 2 leadership identification, which is consistent with the result in Table 1 that analysts are less optimistic to identify Type 2 leader after the GS. Table 4 shows that underwriter's ranking and the sponsorship of venture capital (VC) are positively correlated with the peer-adjusted net sales of IPOs (significant at the 1% level), with is consistent with the findings in Carter et al. (1998) and Jain and Kini (1995) that sponsorship positively affect firms' stock returns. IPO firms with VC sponsorship or a high LUW ranking are more likely to be identified as leaders.

4.2 The accuracy of analysts' leadership identification

This section provides the regression results of factors driving post-IPO peer-adjusted performance and investigates whether leader firms identified by analysts outperform non-leaders. Section 4.2.1 discusses the analyses related to Hypotheses 1a and 1b. Section 4.2.2 discusses the analyses related to Hypotheses 2a and 2b.

4.2.1 Leadership positions and post-listing performance

Table 5 investigates whether leadership identification by analysts accurately predicts IPO firms' peer-adjusted performance post-listing. Table 5 provides the regression results with the firm-level leadership identification, which means that each IPO firm is observed once in our regression sample. If Type 1 and 2 leaders are likely to hold competitive positions at the time

initial coverage reports are issued, the identified competitive advantages could help to predict future superior operating performance. As the correlation coefficients of control variables are generally consistent with the finding in Table 5 Panel A, we simply show the correlation coefficients of Type 1 and 2 leadership identification in the following panels and the full tables can be send if requested.

Table 5 provides the regression results of peer-adjusted profit margin and net sales. Table 5 Panel A shows that in profitable IPOs, Type 1 leaders do not generate superior peer-adjusted profits compared to non-Type 1 leaders. Table 5 Panel B shows that in profitable IPOs, Type 2 leadership position has a significant positive impact on post-listing peer-adjusted profits in year +2 (significant at the 5% level). However, there is no consistent pattern of the impact of leadership identification on profit margins within three years post-IPO. Similarly, Table 5 Panel C shows that although Type 1 and Type 2 leadership position have some positive impact on the peer-adjusted net sales of unprofitable IPO firms, there is no evidence that firms with Type 1 or Type 2 leadership position consistently generate superior post-IPO performance to firms without leadership identification. These results are consistent with previous studies that market leaders which are identified as firms with large market shares are not necessary to generate superior profitability (e.g., Tufano, 1989; Kalyanaram and Wittink, 1994; Szymanski et al., 1995; Murthi et al., 1996). Therefore, evidence from Type 1 and Type 2 leadership position fails to support Hypotheses 1a and 1b in profitable IPOs.[11]

[Insert Table 5 here]

Tables 5 also examines other factors that affect the post-listing peer-adjusted performance of IPO firms. Table 5 suggests that leadership identification by analysts provides information beyond stock recommendations, as leader firms sometimes generate higher peer-adjusted profit margins or net sales post-listing than non-leaders, while recommendation appears to have no impact on the post-listing performance in neither profitable nor unprofitable firms. Irvine (2003) suggests that, although stock recommendations can predict stock returns, this is generally short-lived and appears not to affect post-listing operating performance.

[11]As a robustness check of analysis of firm-level leadership identification in Table 5, we examine the accuracy of leadership identification with the report-level leadership identification and controll for the clustering by IPO firms. In the report-level data, each IPO firm could be observed several times in our regression sample, as there could be more than one analyst issuing ICRs for each IPO firm. With the report-level data of leadership identification, the un-tabulated regressions generally provide results consistent with Table 5 (firm-level leadership identification) on the impact of leadership identification on firms' peer-adjusted performance post-listing.

Table 5 Panel A suggests that VC sponsorship have a significant positive impact on profitable firms' profit margin in year +1 (significant at the 1% level) and that LUW sponsorship have a significant positive impact on peer-adjusted net sales in unprofitable firms within three years post-IPO. These results are consistent with the findings in previous studies that having a prestigious sponsorship appears to have a significant positive impact on stock returns (Chemmanur and Fulghieri, 1994; Jain and Kini, 1995; Carter et al., 1998; Coakley et al., 2007).

4.2.2 Lead underwriter affiliation and post-listing performance

We find that analysts' leadership identification tends not to accurately predict leader firms with superior on-going performance post-IPO. A possible explanation is that analyst affiliation affects the accuracy of leadership identification. Prior literature generally suggests that LUWs appear to provide more optimistic and less accurate forecasts than non-LUWs (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber et al., 2007). We investigate whether IPO firms identified as leaders are more likely to outperform non-leaders if the leadership advantage is identified by LUWs or non-LUWs. We use aggregated leadership identification by LUWs (non-LUWs) to examine the accuracy of LUWs' (non-LUWs') leadership prediction. Analyses in Tables 6 and 7 do not compare the accuracy of leadership identification by LUWs and non-LUWs, but test them separately in Hypotheses 2a and 2b.[12]

[Insert Table 6 here]

Table 6 shows that in profitable IPO firms, Type 1 and 2 leaders identified by LUWs generally do not enjoy significantly higher peer-adjusted profit margins than firms not identified as leaders by LUWs (Table 6 Panels A and B). These results support Hypothesis 2a that firms identified as leaders are less likely to outperform if the leadership advantage is identified by LUWs. Table 7 also shows that Type 1 leadership identification by non-LUWs appears not to affect peer-adjusted profits post-listing (Table 7 Panel A). Type 2 leadership identification by

[12] We also investigate the accuracy of LUWs versus non-LUWs when they have contradictory opinions of leadership positions of an IPO firm. We use the report-level leadership identification to test whether IPO firms identified as leaders by LUWs but not by non-LUWs are likely to perform worse than IPO firms identified as leaders by non-LUWs but not by LUWs analysts. As discussed in Section 2.2, if LUWs are more likely to suffer conflicts of interest between their fiduciary responsibility to investing clients and their sales incentive to underwriting clients, LUWs may provide less accurate leadership identification than non-LUWs. Un-tabulated regression results suggest that either LUWs or non-LUWs sometimes tend to provide a leadership identification which positively affects the post-listing performance. Therefore, it is not clear whether LUWs or non-LUWs provide more accurate leadership identification when they have contradictory opinions. These results suggest that the affiliation position of financial analysts is not likely to affect the accuracy of their leadership identification.

non-LUWs generally do not have a significant positive impact on post-listing peer-adjusted profits in profitable firms (Table 7 Panel A), which fails to support Hypothesis 2b.

[Insert Table 7 here]

Similarly, Table 6 Panel C shows that in unprofitable firms, Type 1 and 2 leadership identification by LUWs do not consistently affect the peer-adjusted net sales post-listing. These results support Hypothesis 2a. Furthermore, leader firms identified by non-LUWs do not tend to consistently generate higher peer-adjusted net sales than firms not identified as leaders by non-LUWs (Table 7 Panel B), which fails to support Hypothesis 2b.

Overall, results in Tables 6 and 7 suggests that neither LUWs nor non-LUWs provide leadership identifications which accurately predict firms with constantly superior on-going performance within three years post-listing, which is consistent with the findings in Table 5 that analysts generally fail to provide informative leadership identification to pick out IPO firms with superior post-listing operating performance. These results are consistent with the finding in prior studies that LUWs are not necessarily less accurate in their forecasts than non-LUWs (Aggarwal et al., 2002; Bradley et al., 2004; Reuter, 2006; James and Karceski, 2006; Jacob et al., 2008; Bradley et al., 2008).

Analyst affiliation could have a positive or negative impact on the accuracy of leadership identification. On one hand, LUWs could have information advantages over non-LUWs, with a significant amount of firm-specific information obtained from the due-diligence and book building processes (Michaely and Womack, 1999; Jacob et al., 2008). On the other hand, the conflicts of interest theory suggests that the analyst affiliation could lead LUWs to provide more favourable opinions and reduce the quality of LUWs' research outputs (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber et al., 2007).

Moreover, analyst affiliation may affect LUWs as well as non-LUWs. As discussed in Section 2.2, the compensation structure of analysts and the relation between investment banks and investing clients, could affect the accuracy of leadership identification by LUWs and non-LUWs. For example, if analysts are not compensated for the accuracy of forecast but are compensated for actions that increase brokerage and investment-banking revenues, LUWs may not have the incentive to take advantage of their insider information, if any, to enhance the accuracy of their leadership identification (Groysberg et al., 2011). Furthermore, both LUWs and non-LUWs may need to weigh the cost of issuing honest leadership identification to maintain long-term relations with their investing clients, and the benefit of issuing more

optimistic and less accurate leadership identification to attract future underwriting business (Das et al., 1998; Lim, 2001; James and Karceski, 2006; Libby et al., 2008; Mayew, 2008). Non-LUWs may be as likely as LUWs to align their forecasts to those of management and issue favourable forecasts to attract potential future underwriting business (Das et al., 1998; Lim, 2001; Libby et al., 2008; Mayew, 2008; Groysberg et al., 2011).

In our study, neither LUWs or non-LUWs tend to provide informative leadership identification. LUWs appear to not have, or unable to use the private information of their clients to issue more accurate leadership identification than non-LUWs. Both LUWs and non-LUWs may need to consider the trade-off between providing more optimistic and less accurate coverages to attract future underwriting business and more accurate forecasts to maintain investing business.

If the uninformative leadership identification in LUWs are driven by optimistic forecasts, we would be more likely to observe that LUWs are more likely to provide leadership identifications than non-LUWs, or identify a firm as a leader more often and more intensity in ICRs. On the other hand, if both LUWs and non-LUWs tend to issue optimistic forecasts to attract future underwriting business, we would be more likely to observe that LUWs tend to have the same tone of leadership identification as non-LUWs. In Section 4.3, we investigate whether analyst affiliation tend to affect the optimistic of leadership identification.

As discussed in Section 2.2, the GS aims to address analysts' conflicts of interest and regulate analysts to provide more meaningful research (Kadan et al., 2009). If the GS are implemented effectively after 2003, we would be more likely to observe that LUWs are more optimistic before the GS than non-LUWs and that LUWs and non-LUWs tend to have the same tone of firm leadership after the GS.

Our study does not rule out other possible explanations of uninformative leadership identification by analysts, in terms of identify leader firms with superior operating performance. For example, the leadership identification in ICRs may capture the size effect of IPO firms and therefore, leader firms identified by financial analysts are not necessary to provide superior performance to non-leader firms after controlling for firm size.

4.3 Factors affecting analysts' leadership identification

Table 8 investigates whether analyst affiliation and the GS affect the tone of analysts' leadership identification in the report-level.[13] Table 8 Panel A also presents the conditions

[13] Table 8 investigates the analysts' tone of leadership identification at the initial coverage report level. Thus, one IPO firm may have multiple observations of leadership identification by several financial analysts. To control the

under which an IPO firm is more likely to be identified as a leader by financial analysts and discusses factors that affect the frequency and the intensity of leadership position.

[Insert Table 8 here]

Table 8 Panel A shows that LUW analysts do not tend to be more likely to identify an IPO firm as a leader than non-LUW analysts. Although LUWs tend to mention Type 1 and Type 2 leadership sentences more often than non-LUW analysts (Table 8 Panel A Columns 3 and 4), as discussed in Section 4.1, these results are driven by the longer reports used by LUWs. However, after controlling for the impact of report length, LUWs do not mention leadership advantage more intensely than non-LUWs. Our results do not support Hypotheses 3a to 3c that LUWs are more optimistic than non-LUWs in the leadership position of IPO firms.

Table 8 Panel A also shows that generally, the GS had a significantly negative impact on analysts' tone of Type 2 leadership identification, which fails to support Hypotheses 4a to 4c that the GS does not affect leadership identification. After the GS, financial analysts tend to reduce the probability, frequency and intensity of Type 2 leadership identification in ICRs. For example, after the GS, financial analysts tend to reduce Type 2 leadership frequency by 0.215 sentences per ICR (Table 8 Panel A). Analysts also reduce the intensity of Type 1 and 2 leadership identification in ICRs after the GS. Our results go against the conjecture in Stocken and Verrecchia (2004) and Bradley et al. (2008), that regulatory changes do not affect the text content of coverage report as there are no explicit rules on the text content of analyst reports. The GS, although not directly regulating analysts' text outputs, appears to have affected financial analysts, making them tend to be more conservative in their tone of leadership identification.

On the other hand, Table 8 Panel A shows that the existence and frequency of Type 1 leadership identification is not affected by the GS, which supports Hypotheses 4a and 4b. If investors try to make investment decisions based on the analysts' tone of leadership identification, an industry leader or market leader (Type 1 leader) tends to be less affected by regulatory changes than other types of leader. One possible explanation is that the phrase Type 1 "industry or market leader" is used more rigidly by financial analysts than Type 2 leader identification. Therefore, a stricter regulation environment after the GS does not reduce the existence and

multiple observations effect, we examine Hypotheses 3 and 4 with the firm level data of leadership identification. In the firm level data, each IPO firm is observed once. The LUW dummy equals one if the IPO firm got initial coverage reports from at least one LUW. These results are consistent with those in Table 8.

frequency of Type 1 leadership identification, which supports Hypotheses 4a and 4b (Table 8 Panel A).

The Type 2 leadership identification, contains contingent advantages that may or may not hold after IPOs. Analysts reduce the existence and frequency of Type 2 leaders after the GS, which fails to support Hypotheses 4a to 4c. The regulatory changes require analysts to provide more meaningful outputs; therefore, the contingent advantages are less likely to be mentioned in ICRs.

To examine whether our LUW coverage coefficients are driven by our sample, which is dominated by post-GS ICRs, we investigate analysts' leadership identification before and after the GS. Table 8 Panel B reveals no evidence of LUWs suffering from the affiliation optimism bias, either before or after the GS, in respective of whether we focus on the leadership existence or leadership intensity.

Table 8 Panel B shows that LUW coverage is positively correlated to Type 1 and Type 2 leadership frequencies in both pre-GS and post-GS periods. Table 8 Panel B shows that before the GS, LUWs' ICRs include significantly more Type 1 sentences than non-LUWs', with the coefficient of 0.4, significant at the 1% level. However, after the GS, LUWs are likely to mention 0.2 more Type 1 sentences per ICR than non-LUWs, which is significant at the 5% level. Thus, both the coefficient and the significance of the LUW coverage are reduced after the GS. After controlling for report length, Table 8 Panel B shows that LUWs are not more likely to mention leaders more intensely in the pre-GS period compared to in the post-GS period. In both pre- and post-GS period, LUWs tend not to be more optimistic than non-LUWs.

Results in Table 8 Panel B suggest that before and after the GS, LUWs do not tend to be more optimistic than non-LUWs in identifying a firm as either a Type 1 or 2 leader. These results are consistent with the findings in Table 8 Panel A that LUWs and non-LUWs tend to have the same tone of leadership identification. Therefore, the overall results suggest that analyst affiliation tend to not affect the optimistic of leadership identification.

Table 8 Panels A and B suggests that LUWs and non-LUWs tend to have the same existence and intensity of firm leadership before and after the GS, which indicates that even before the GS implementation, LUWs and non-LUWs appear to have the same level of conflicts of interest. These results suggest that, before the GS are implemented effectively to limit the conflicts of interest in financial analysts, both LUWs and non-LUWs may consider the trade-

off between providing more optimistic and less accurate coverages to attract future underwriting business and more accurate forecasts to maintain investing business.

Overall, we find that leadership identification tends not to pick out leader firms with superior on-going performance post-listing and that the uninformativeness of leadership identification is not attribute to optimistic affiliation in LUWs. As how analysts identify a firm as an industry or partial leader are black boxes, the leadership identification may capture some firm characteristics other than the potential to generate superior performance. Table 8 Panel A suggests that large firms are more likely to be identified as Type 1 and 2 leaders than smaller firms, and that large firms are mentioned as a leader more frequently in the report with greater intensity. These results are consistent with our discussion in Section 3.2 that firm size proxies for firm quality, and a large firm is more likely to hold a leadership position (Type 1 and Type 2 leaders) than small firms.

Furthermore, the leadership identification may reflect firm characteristics drawing attention from prestigious sponsorship. Our results show that VC sponsorship and the ranking of LUWs, positively affects Type 2 leader identification (Table 8 Panels A and B). There are at least two possible explanations for these results. First, financial analysts value the sponsorship and market conditions when analysing non-contingent leadership positions. For Type 1 leaders, the industry or market leading position is more obvious for Type 2 leaders, and VC or LUW sponsorship does not provide additional competitive advantage information to financial analysts. For Type 2 leaders, sponsorship provides an additional signal, alongside the Type 2 leadership position, of the competitive position of IPO firms to financial analysts. Second, VCs and analysts are likely to make their own analyses of the IPO firms' competitive advantage, and VCs may find firms with Type 2 leadership characteristics attractive investment targets. However, it is not clear whether VCs rely on analysts' classifications or whether they reach their own independent conclusions attractiveness of the firms for investments. As the sponsoring, underwriting and analysing decision processes are largely black boxes, our study cannot identify whether the first or second explanation leads to the positive correlations between sponsorship and Type 2 leadership.

5 Conclusions

This paper examines how financial analysts identify IPO firms' competitive position in initial coverage reports, and to what extent leadership identification by financial analysts accurately predicts post-listing performance. Our results show that neither Type 1 industry leaders nor

Type 2 firms with partial leadership advantages tend to generate superior performance compared to non-leaders. Furthermore, the inaccurate forecast of leaders' superior performance is not due to the conflicts of interest in lead-underwriters (LUWs). We find that LUWs do not tend to provide more optimistic leadership identification than non-LUWs. Both LUWs and non-LUWs appear to not provide a leadership identification which consistently identify firms generating superior on-going performance.

One possible explanation is that financial analysts, both LUWs and non-LUWs, need to weigh the costs of providing honest leadership identification to maintain long-term relations with their investing clients and the benefits of providing more optimistic leadership identification to attract potential underwriting business. Furthermore, the leadership identification tends to pick out firms with large size or venture capital (VC) and LUW sponsoring.

Analysts' leadership identification, excepting industry or market leader identification, is affected by the regulatory changes such as the Global Settlement (GS) in 2003. Our results show that the GS significantly reduced the existence, frequency and intensity of Type 2 leadership identification. These results are consistent with findings in Kadan et al. (2009) that the GS reduced the proportion of positive recommendations. Type 1 leadership identification tends to be less affected by the GS than other types of leaders, as financial analysts appear to use the Type 1 "industry leader" identification more rigidly than the Type 2 "partial leader" identification.

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Table 1
Breakdown of initial coverage reports by year and affiliation of analyst firms

Type 1 to Type 4 stands for the proportion of initial coverage reports (ICRs) mentioning different types of leadership advantage by analyst firms. Type 1 stands for industry leaders and market leaders; Type 2 stands for a leadership position in specific area, such as technology leaders, cost leaders, and having a market-leading product. We split the ICRs based on the analyst affiliation. Within six-months after IPOs, leading underwriter (LUW) affiliated-analysts issued 1,169 ICRs while non-LUW analysts issued 2,852 ICRs. The ICRs are split into before and after the Global Settlement (GS) based on the ICR release year.

	All ICR reports			Reports written by LUW analysts				Reports written by non-LUW analysts			
Year	NO of IPOs	NO of ICRs	page	NO of ICRs	Type 1	Type 2	page	NO of ICRs	Type 1	Type 2	Page
1999	319	707	17	154	14%	71%	18	553	12%	69%	17
2000	298	689	18	154	15%	67%	21	535	16%	61%	17
2001	54	130	19	26	27%	58%	23	104	14%	66%	18
2002	48	116	22	24	21%	58%	25	92	14%	63%	22
2003	41	98	22	32	6%	38%	22	66	8%	58%	21
2004	113	301	21	86	10%	49%	25	215	11%	49%	20
2005	111	304	25	107	10%	47%	29	197	8%	46%	23
2006	122	331	27	106	8%	52%	32	225	11%	48%	25
2007	118	356	27	107	14%	50%	31	249	18%	62%	25
2008	11	51	26	10	10%	80%	29	41	22%	63%	25
2009	37	124	28	44	23%	64%	31	80	16%	60%	27
2010	74	203	28	94	14%	44%	32	109	10%	59%	25
2011	72	286	30	95	20%	63%	35	191	12%	63%	28
2012	83	325	30	130	16%	62%	35	195	11%	59%	27
Before GS	719	1,639	18	356	16%	67%	20	1,283	14%	65%	17
After GS	2,283	2,382	27	813	14%	53%	31	1,569	12%	56%	24
All	1,501	4,021	23	1,169	14%	57%	28	2,852	13%	60%	21

Table 2

Panel A. Descriptive Statistics of leadership identification in initial coverage reports

This panel provides the leadership identification by LUW and non-LUW analysts in initial coverage reports. Existence1 is a dummy variable equals one if the IPO firm is identified as a Type 1 leader at least once in an ICR, and zero otherwise. Frequency1 is the number of Type 1 leadership sentences per ICR. Intensity1 is the number of Type 1 leadership sentences per ICR page. Daylag is the number of days between the IPO issue date and the ICR release date. Recommendation equals 1 for "buy", 0 for "hold" and -1 for "sell" stock recommendation. Page is the number of pages per ICR. Sents is the number of sentences per ICR. Difference is the difference of variables between ICR by LUW analysts and ICR by non-LUW analysts. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	Full Sample		ICR by LUW analysts		ICR by non-LUW analysts		Difference
VARIABLES	N	mean	N	mean	N	mean	t-test
Existence1	4021	0.134	1169	0.143	2852	0.130	0.013
Existence2	4021	0.591	1169	0.574	2852	0.598	-0.024
Frequency1	4021	0.214	1169	0.248	2852	0.200	0.049**
Frequency2	4021	1.915	1169	1.998	2852	1.881	0.117
Intensity1	4021	0.011	1169	0.010	2852	0.011	-0.002
Intensity2	4021	0.108	1169	0.086	2852	0.117	-0.031***
Daylag	4021	56.028	1169	41.533	2852	61.970	-20.437***
Recommendation	3988	0.799	1159	0.819	2829	0.791	0.027*
Page	4021	23.116	1169	27.666	2852	21.251	6.416***
Sents	4021	1729.198	1169	2122.935	2852	1567.811	-555.124***

Panel B. Descriptive Statistics of leadership identification breakdown by the GS

	Full Sample			ICR by LUW analysts			ICR by non-LUW analysts		
VARIABLES	before GS	after GS	Difference	before GS	after GS	Difference	before GS	after GS	Difference
Existence1	0.142	0.128	0.015	0.160	0.135	0.025	0.137	0.124	0.014
Existence2	0.655	0.547	0.107***	0.671	0.531	0.140***	0.650	0.556	0.094***
Frequency1	0.210	0.216	-0.005	0.278	0.235	0.043	0.192	0.206	-0.014
Frequency2	2.182	1.731	0.451***	2.537	1.763	0.774***	2.084	1.715	0.369***
Intensity1	0.014	0.009	0.006***	0.015	0.007	0.008***	0.014	0.009	0.005***
Intensity2	0.162	0.070	0.092***	0.152	0.057	0.096***	0.165	0.077	0.087***
Daylag	55	56	-1	36	44	-8***	61	63	-2
Recommendation	0.949	0.696	0.253***	0.986	0.745	0.241***	0.938	0.670	0.268***
Page	18	27	-9***	20	31	-11***	17	24	-7***
Sents	1318	2012	-694***	1465	2411	-946***	1277	1805	-528***

Table 2 Panel C

Descriptive Statistics of leadership identification breakdown by pre-listing profitability

This panel provides the descriptive statistics of leadership identification on ICR characteristics in the firm-level and report-level data. Existence1 is a dummy variable equals one if the IPO firm is identified as a Type 1 leader at least once in an ICR, and zero otherwise. Likelihood1 is the proportion of analysts who identify the IPO firm as a Type 1 leader. Frequency1 is the number of Type 1 leadership sentences per ICR. Intensity1 is the number of Type 1 leadership sentences per ICR page. Daylag is the number of days between the IPO issue date and the ICR release date. Recommendation equals 1 for "buy", 0 for "hold" and -1 for "sell" stock recommendation. Page is the number of pages per ICR. Sents is the number of sentences per ICR. Difference is the difference of variables between unprofitable IPOs and profitable IPOs. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	Firm-level				Report-Level				Firm-level	Report-Level
	Unprofitable IPOs		Profitable IPOs		Unprofitable IPOs		Profitable IPOs		Difference	Difference
VARIABLES	N	mean	N	mean	N	mean	N	mean	t-test	t-test
Existence1	696	0.244	805	0.263	1698	0.131	2323	0.136	-0.019	-0.005
Existence2	696	0.718	805	0.774	1698	0.601	2323	0.584	-0.056**	0.018
Frequency1	696	0.168	805	0.206	1698	0.189	2323	0.232	-0.038*	-0.043**
Frequency2	696	1.812	805	1.823	1698	1.935	2323	1.901	-0.010	0.034
Intensity1	696	0.011	805	0.009	1698	0.012	2323	0.010	0.002	0.002*
Intensity2	696	0.126	805	0.095	1698	0.129	2323	0.092	0.031***	0.036***
Daylag	696	52.320	805	54.174	1698	56.651	2323	55.712	-1.854	0.939
Recomm	696	0.862	805	0.786	1698	0.837	2323	0.747	0.076***	0.090***
Page	696	20.547	805	24.227	1698	21.176	2323	25.548	-3.680***	-4.372***
Sents	696	1376.520	805	1999.545	1698	1407.137	2323	2159.154	-623.025***	-752.017***

Table 3
Descriptive Statistics of leadership identification breakdown by pre-listing profitability

This panel provides the descriptive statistics of firm characteristics and peer-adjusted performances. Pages (Sents) stands for the average number of pages (sentences) in an initial coverage report (ICR). Coverage is the total number of analysts issued initial coverage reports within six-months after IPOs. NO. of UWs is the total number of leading underwriters involved in the IPO issues. Leverage (debt/TA) stands for the pre-IPO year long-term debt (debt) divided by total assets. Adj_Profit+1 (Adj_Sale+1) is the peer-adjusted EBITDA/TA (net sales) at year +1. Adj_Pg1 (Adj_Sg1) is the peer-adjusted profit (net sales) growth between year -1, +1. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	Unprofitable IPOs			Profitable IPOs			Difference	Difference
VARIABLES	N	mean	median	N	mean	median	mean	median
Firm age	696	7.099***	5	801	23.635***	13	-16.536***	-8***
Total Assets	696	295.219	30.692	801	1158.532***	224.330	-863.313***	-193.638***
Leverage	695	0.134***	0.244	796	0.274***	0.195	-0.140***	0.049***
EBITDA/TA	696	-0.544***	-0.356	779	0.150***	0.115	-0.693***	-0.471***
Pages	696	20.547***	19	805	24.227***	23	-3.680	-4***
Sents	696	1376.520***	893.5	805	1999.545***	1517	-623.025	-623.5***
Coverage	696	2.504***	2	805	3.071***	3	-0.566***	-1***
NO. of UWs	681	1.314***	1	786	1.852***	2	-0.538***	-1***
Adj_Profit-1	422	0.042***	0.040	577	0.001	0.001	0.041***	0.039***
Adj_Profit+1	371	-0.313	0.082	530	0.211***	0.051	-0.523**	0.031
Adj_Profit+2	315	1.144***	0.387	474	0.436***	0.086	0.707***	0.301**
Adj_Profit+3	259	1.349***	0.184	428	0.797***	0.122	0.552*	0.062
Adj_Sale-1	430	-6.162***	-2.151	587	-26.548	-11.480	20.386**	9.329**
Adj_Sale+1	374	59.378***	23.661	535	91.070***	46.548	-31.693**	-22.887**
Adj_Sale+2	318	58.698***	13.506	476	110.856***	49.397	-52.158	-35.891***
Adj_Sale+3	263	73.015***	18.8568***	431	155.334***	62.507	-82.320***	-43.651***

Table 4 Correlation Matrix

This table provides the pairwise correlation coefficients of leadership identifications, IPO firm characteristics, timing characteristics and post-listing firm performance. All variables are the firm-level data. Existence1, likelihood1, frequency1 and intensity1 are the overall existence, likelihood, average frequency and average intensity of Type 1 leadership positions. GS is the dummy of the Global Settlement. LUW is the dummy which equals one if the ICR was issued by LUW. lnage and lnTA is the natural log of the value of firm age and total assets pre-IPO. Leverage (EBITDA/TA) stands for the pre-IPO year long-term debt (EBITDA) divided by total assets. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriter(s). Adj_Profit+1 (Adj_Sale+1) is the peer-adjusted EBITDA/TA (net sales) at year+1. Adj_Pg1 (Adj_Sg1) is the peer-adjusted profit (net sales) growth between year -1, +1. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	Adj_Profit+1	Adj_Profit+2	Adj_Profit+3	Adj_Profit-1	Adj_Sale+1	Adj_Sale+2	Adj_Sale+3	Adj_Sale-1
Existence1	0.04	-0.01	0.01	0.03	0.09**	0.08**	0.06	0.01
Existence2	0.01	-0.02	-0.05	0.09***	0.05	0.01	0.05	0.03
Frequency1	0.01	0.03	0.03	0.04	0.04	0.03	0.04	0.03
Frequency2	-0.01	0	0.03	0.05	0	-0.01	0.03	-0.01
Intensity1	0	0.07	0.06	0.08	-0.01	0	-0.01	0.02
Intensity2	-0.05	0.02	0.05	0.03	-0.01	-0.02	0.01	0.04
GS	0.02	-0.12***	-0.07	-0.04	0.05	0.04	0.01	-0.05
LUW	0	-0.04	0	-0.01	0.03	0.01	0	-0.02
lnage	0.04**	-0.07	-0.06	-0.03	0.1***	0.14***	0.15***	-0.02
lnTA	-0.01	-0.11***	-0.1**	-0.14***	0.25***	0.29***	0.33***	-0.1***
Leverage	0.03	-0.14***	-0.09**	-0.04	0.09**	0.05	0.04	0.03
VC	-0.05	0.07	0.03	0.01	-0.14***	-0.13***	-0.12***	0.02
Hot Market	-0.05	-0.05	0	0	-0.06*	-0.07*	-0.02	-0.01
LUW rank	-0.04	-0.07*	-0.07*	0.04	0.14***	0.13***	0.13***	-0.02

	Existence1	Existence2	Frequency1	Frequency2	Intensity1	Intensity2
GS	0.01	-0.11***	0	-0.13***	-0.1***	-0.32***
LUW	0.15***	0.04	0.08***	0.02	0.04	-0.09***
lnage	0.09***	0.09***	0.07	0.08	0	-0.04*
lnTA	0.12***	0.07***	0.07**	0.03	-0.01	-0.12***
Leverage	-0.01	-0.07*	0.01	-0.07**	-0.03	-0.12***
VC	-0.02	0.02	-0.04	0.07	0	0.11***
Hot Market	-0.05*	0.01	-0.02	0.03	-0.04	0.04
LUW rank	0.13***	0.18***	0.08***	0.11***	0.04	0.06

Table 5 Panel A Factors driven financial performance post-IPO
Firm level, subsample of profitable IPOs, Type 1 leadership identification, Y=peer-adjusted profit margin

Output of Model 2 OLS regression is reported for profitable IPOs. Dependent variables are the peer-adjusted profit (profit) at year +1, +2 and +3. For Columns 1-3, Type 1 is the dummy of overall existence of Type 1 leadership. For Columns 7-9, Type 1 is the average frequency of Type 1 leader. For Columns 10-12, Type 1 is the average intensity of Type 1 leader. The pre-IPO financial characteristics include firm age, total assets, and leverage. Recommendation is a dummy equal 1 for "buys", 0 for "hold" and -1 for "sell". VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	profit1	profit2	profit3	profit1	profit2	profit3	profit1	profit2	profit3
Type 1	0.057	0.022	0.048	0.030	0.056	0.055	0.628	2.154	2.710
	(0.049)	(0.092)	(0.116)	(0.044)	(0.081)	(0.101)	(0.795)	(1.484)	(1.839)
Recommendation	-0.042	-0.064	0.005	-0.043	-0.060	0.002	-0.043	-0.056	0.014
	(0.048)	(0.090)	(0.117)	(0.048)	(0.089)	(0.116)	(0.048)	(0.089)	(0.116)
lnAge	-0.011	-0.029	-0.034	-0.011	-0.026	-0.030	-0.010	-0.026	-0.030
	(0.027)	(0.053)	(0.066)	(0.027)	(0.052)	(0.065)	(0.027)	(0.052)	(0.065)
LnTA	0.019	0.014	-0.003	0.020	0.012	-0.005	0.021	0.014	-0.000
	(0.017)	(0.031)	(0.039)	(0.017)	(0.031)	(0.039)	(0.017)	(0.031)	(0.039)
Leverage	-0.123	-0.224	-0.131	-0.128*	-0.220	-0.121	-0.130*	-0.219	-0.116
	(0.077)	(0.145)	(0.183)	(0.077)	(0.143)	(0.181)	(0.077)	(0.143)	(0.181)
VC	0.145***	0.049	0.021	0.140***	0.045	0.019	0.143***	0.053	0.036
	(0.049)	(0.093)	(0.119)	(0.049)	(0.092)	(0.118)	(0.049)	(0.092)	(0.118)
Hot Market	0.003	-0.110	0.006	0.001	-0.108	0.007	0.005	-0.105	0.016
	(0.043)	(0.080)	(0.102)	(0.043)	(0.079)	(0.100)	(0.043)	(0.079)	(0.101)
LUW rank	-0.021	-0.061	-0.013	-0.018	-0.059	-0.013	-0.019	-0.061	-0.020
	(0.022)	(0.042)	(0.054)	(0.022)	(0.042)	(0.054)	(0.022)	(0.041)	(0.054)
Profit_pre	0.776***	-0.399	-0.001	0.763***	-0.357	-0.027	0.776***	-0.331	0.050
	(0.209)	(0.387)	(0.503)	(0.209)	(0.383)	(0.498)	(0.209)	(0.382)	(0.498)
Constant	0.091	0.757**	0.338	0.082	0.732**	0.336	0.075	0.720**	0.324
	(0.190)	(0.366)	(0.476)	(0.190)	(0.359)	(0.469)	(0.189)	(0.358)	(0.469)
N	504	448	407	504	448	407	504	448	407
r2_a	0.0326	0.00235	-0.0180	0.0300	0.00228	-0.0177	0.0312	0.00593	-0.0130
F	2.885	1.117	0.205	2.731	1.113	0.214	2.800	1.296	0.420
p	0.00248	0.349	0.994	0.00406	0.352	0.992	0.00326	0.237	0.924

Table 5 Panel B Factors driven financial performance post-IPO
Firm level, subsample of profitable IPOs, 2 leadership identification, Y=peer-adjusted profit margin

Output of Model 2 OLS regression is reported for profitable or unprofitable IPOs. Dependent variables are the peer-adjusted profit (profit) or peer-adjusted net sales (sale) at year +1, +2 and +3. For Columns 1-3, Type 1 is the dummy of overall existence of Type 1 leadership. For Columns 7-9, Type 1 is the average frequency of Type 1 leader. For Columns 10-12, Type 1 is the average intensity of Type 1 leader. The pre-IPO financial characteristics include firm age, total assets, and leverage. Recommendation is a dummy equal 1 for "buys", 0 for "hold" and -1 for "sell". VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	profit1	profit2	profit3	profit1	profit2	profit3	profit1	profit2	profit3
Type 2	0.054	0.206**	0.083	0.014	0.045**	0.047*	0.029	0.555**	0.627*
	(0.052)	(0.097)	(0.122)	(0.010)	(0.019)	(0.024)	(0.148)	(0.263)	(0.321)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	504	448	407	504	448	407	504	448	407
r2_a	0.0311	0.0137	-0.0173	504	448	407	0.0289	0.0127	-0.00846
F	2.797	1.692	0.234	0.0325	0.0163	-0.00894	2.666	1.639	0.622
p	0.00329	0.0885	0.989	2.875	1.821	0.600	0.00499	0.102	0.779

Panel C Factors driven financial performance post-IPO
Firm level, subsample of unprofitable IPOs, Type 1 or 2 leadership identification, Y=peer-adjusted net sales

Output of Model 2 OLS regression is reported for unprofitable IPOs. Dependent variables are the peer-adjusted net sales (sale) at year +1, +2 and +3.

VARIABLES	sale1	sale2	sale3	sale1	sale2	sale3	sale1	sale2	sale3
Type 1	13.056***	7.158	24.894***	7.900*	3.949	10.621	81.222*	57.361	142.458
	(4.197)	(5.926)	(8.232)	(4.120)	(5.633)	(7.240)	(48.702)	(67.274)	(92.181)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	357	303	250	357	303	250	357	303	250
r2_a	0.113	0.0721	0.145	0.0957	0.0660	0.0846	0.0928	0.0656	0.102
F	6.045	3.608	5.685	5.187	3.373	3.557	5.047	3.356	4.149
p	6.85e-08	0.000278	3.86e-07	1.28e-06	0.000594	0.000364	2.06e-06	0.000627	5.48e-05
Type 2	15.152***	8.116	17.139*	1.887**	-0.199	0.150	16.673	-19.018	1.082
	(4.576)	(6.558)	(8.891)	(0.922)	(1.357)	(1.797)	(11.883)	(17.404)	(22.976)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	357	303	250	357	303	250	357	303	250
r2_a	0.110	0.0706	0.105	0.0912	0.0640	0.0684	0.0855	0.0656	0.0677
F	5.873	3.551	4.231	4.969	3.296	3.033	4.699	3.354	3.009
p	1.23e-07	0.000335	4.22e-05	2.68e-06	0.000760	0.00188	6.69e-06	0.000630	0.00202

Table 6 Panel A Factors driven financial performance post-IPO (leadership identification by LUWs)
Firm level, subsample of profitable IPOs, Type 1 leadership identification, Y=peer-adjusted profit margin

Output of Model 2 OLS regression is reported for profitable IPOs. Dependent variables are the peer-adjusted profits (profit) between (-1, +1), (-1, +2), (-1, +3). All leadership identifications are provided by LUWs. For Columns 1-3, Type 1 is the dummy of overall existence of Type 1 leadership. For Columns 7-9, Type 1 is the average frequency of Type 1 leader. For Columns 10-12, Type 1 is the average intensity of Type 1 leader. The pre-IPO financial characteristics include firm age, total assets, and leverage. Recommendation is a dummy equal 1 for "buys", 0 for "hold" and -1 for "sell". VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. ***, **, *

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	profit1	profit2	profit3	profit1	profit2	profit3	profit1	profit2	profit3
Type 1	0.028	0.093	0.134	0.013	0.094	0.283**	-0.566	2.453*	2.985
	(0.079)	(0.140)	(0.197)	(0.047)	(0.085)	(0.119)	(0.788)	(1.437)	(1.986)
Recommendation	-0.064	-0.088	0.034	-0.065	-0.092	0.050	-0.066	-0.093	0.023
	(0.068)	(0.118)	(0.168)	(0.068)	(0.119)	(0.171)	(0.067)	(0.118)	(0.165)
lnAge	-0.019	0.022	0.020	-0.019	0.019	0.012	-0.020	0.021	0.022
	(0.038)	(0.068)	(0.095)	(0.038)	(0.068)	(0.097)	(0.038)	(0.068)	(0.093)
LnTA	0.013	-0.014	-0.010	0.012	-0.016	-0.006	0.015	-0.012	-0.004
	(0.024)	(0.040)	(0.056)	(0.024)	(0.041)	(0.058)	(0.023)	(0.040)	(0.055)
Leverage	-0.146	-0.129	-0.090	-0.147	-0.129	-0.083	-0.162	-0.131	-0.094
	(0.103)	(0.176)	(0.248)	(0.104)	(0.179)	(0.253)	(0.102)	(0.176)	(0.243)
VC	0.149**	0.029	-0.076	0.147**	0.014	-0.085	0.145**	0.029	-0.054
	(0.067)	(0.115)	(0.166)	(0.067)	(0.116)	(0.169)	(0.067)	(0.115)	(0.163)
Hot Market	-0.029	-0.051	0.093	-0.030	-0.064	0.094	-0.026	-0.049	0.118
	(0.059)	(0.100)	(0.141)	(0.059)	(0.101)	(0.144)	(0.058)	(0.100)	(0.139)
LUW rank	-0.028	-0.036	-0.022	-0.027	-0.044	-0.032	-0.027	-0.036	-0.025
	(0.029)	(0.051)	(0.072)	(0.029)	(0.051)	(0.074)	(0.029)	(0.051)	(0.071)
Sale_pre	1.012***	0.344	-0.132	1.001***	0.297	0.019	0.965***	0.407	0.053
	(0.317)	(0.532)	(0.741)	(0.318)	(0.538)	(0.754)	(0.315)	(0.537)	(0.732)
Constant	0.267	0.446	0.180	0.271	0.544	0.221	0.263	0.433	0.149
	(0.260)	(0.454)	(0.641)	(0.261)	(0.460)	(0.653)	(0.256)	(0.453)	(0.626)
N	306	272	248	306	272	248	306	272	248
r2_a	0.0295	-0.0233	-0.0315	0.0283	-0.0191	-0.00849	0.0338	-0.0134	-0.0233
F	2.031	0.315	0.163	1.989	0.436	0.769	2.184	0.601	0.374
p	0.0358	0.970	0.997	0.0404	0.915	0.645	0.0231	0.795	0.947

Table 6 Panel B Factors driven financial performance post-IPO (leadership identification by LUWs)
Firm level, subsample of profitable IPOs, Type 1 or 2 leadership identification, Y=peer-adjusted profit margin

Output of Model 2 OLS regression is reported for profitable IPOs. Dependent variables are the peer-adjusted profits (profit) between (-1, +1), (-1, +2), (-1, +3). All leadership identifications are provided by LUWs. For Columns 1-3, Type 1 or 2 is the dummy of overall existence of Type 1 or 2 leadership. For Columns 7-9, Type 1 or 2 is the average frequency of Type 1 or 2 leader. For Columns 10-12, Type 1 or 2 is the average intensity of Type 1 or 2 leader. The pre-IPO financial characteristics include firm age, total assets, and leverage. Recommendation is a dummy equal 1 for "buys", 0 for "hold" and -1 for "sell". VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	profit1	profit2	profit3	profit1	profit2	profit3	profit1	profit2	profit3
Type 2	-0.021	0.187*	-0.015	-0.001	0.059***	0.056***	-0.117	1.119***	0.636
	(0.061)	(0.108)	(0.147)	(0.009)	(0.015)	(0.020)	(0.184)	(0.312)	(0.421)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	306	272	248	306	272	248	306	272	248
r2_a	0.0318	-0.0113	-0.0333	0.0309	0.0370	0.000527	0.0355	0.0282	-0.0234
F	2.113	0.664	0.115	2.081	2.156	1.014	2.247	1.873	0.373
p	0.0284	0.741	0.999	0.0311	0.0255	0.429	0.0192	0.0562	0.947

Panel C Factors driven financial performance post-IPO (leadership identification by LUWs)
Firm level, subsample of unprofitable IPOs, Type 1 or 2 leadership identification, Y=peer-adjusted net sales

Output of Model 2 OLS regression is reported for unprofitable IPOs. Dependent variables are the peer-adjusted net sales (sale) at year +1, +2 and +3.

VARIABLES	sale1	sale2	sale3	sale1	sale2	sale3	sale1	sale2	sale3
Type 1	17.422***	13.612	17.446	4.869*	11.744***	4.096	57.313	87.269	96.924
	(6.316)	(10.496)	(16.345)	(2.797)	(4.370)	(6.010)	(53.905)	(80.664)	(153.306)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	206	170	133	206	170	133	206	170	133
r2_a	0.283	0.132	0.453	0.267	0.164	0.451	0.250	0.117	0.452
F	9.987	3.865	13.13	9.281	4.690	13.04	8.609	3.479	13.08
p	0	0.000187	0	0	1.57e-05	0	7.63e-11	0.000597	0
Type 2	7.532	8.187	29.027**	1.351	1.954	7.389***	22.664	19.880	51.117
	(5.391)	(8.503)	(12.002)	(0.894)	(1.484)	(1.992)	(16.187)	(26.000)	(38.486)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	206	170	133	206	170	133	206	170	133
r2_a	0.258	0.122	0.530	0.250	0.133	0.569	0.244	0.116	0.485
F	8.900	3.619	17.52	8.608	3.881	20.33	8.363	3.472	14.79
p	0	0.000393	0	7.65e-11	0.000179	0	1.58e-10	0.000610	0

Table 7 Panel A Factors driven financial performance post-IPO (leadership identification by non-LUWs)
Firm level, subsample of profitable IPOs, Type 1 and 2 leadership identification, Y=peer-adjusted profit margin

Output of Model 2 OLS regression is reported for profitable IPOs. Dependent variables are the peer-adjusted profits (profit) between (-1, +1), (-1, +2), (-1, +3). All leadership identifications are provided by LUWs. For Columns 1-3, Type 1 or 2 is the dummy of overall existence of Type 1 or 2 leadership. For Columns 7-9, Type 1 or 2 is the average frequency of Type 1 or 2 leader. For Columns 10-12, Type 1 or 2 is the average intensity of Type 1 or 2 leader. The pre-IPO financial characteristics include firm age, total assets, and leverage. Recommendation is a dummy equal 1 for "buys", 0 for "hold" and -1 for "sell". VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	profit1	profit2	profit3	profit1	profit2	profit3	profit1	profit2	profit3
Type 1	0.049	-0.004	0.097	0.042	0.043	0.068	1.108	1.156	2.239
	(0.053)	(0.102)	(0.129)	(0.041)	(0.076)	(0.095)	(0.682)	(1.255)	(1.517)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	452	400	363	452	400	363	452	400	363
r2_a	0.0315	0.0101	-0.0129	0.0301	0.00975	-0.0133	0.0336	0.0105	-0.00901
F	2.630	1.454	0.489	2.557	1.437	0.473	2.743	1.472	0.641
p	0.00569	0.163	0.882	0.00714	0.170	0.892	0.00397	0.156	0.762
Type 2	0.045	0.129	0.057	0.012	0.019	0.028	0.033	0.192	0.638*
	(0.051)	(0.098)	(0.122)	(0.010)	(0.020)	(0.025)	(0.157)	(0.293)	(0.365)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	452	400	363	452	400	363	452	400	363
r2_a	0.0309	0.0147	-0.0139	0.0316	0.0128	-0.0106	0.0297	0.0109	-0.00601
F	2.596	1.663	0.448	2.638	1.574	0.579	2.531	1.489	0.760
p	0.00632	0.0961	0.908	0.00554	0.121	0.815	0.00772	0.150	0.654

Table 7 Panel B Factors driven financial performance post-IPO (leadership identification by non-LUWs)
Firm level, subsample of unprofitable IPOs, Type 1 and 2 leadership identification, Y=peer-adjusted net sales

Output of Model 2 OLS regression is reported for unprofitable IPOs. Dependent variables are the peer-adjusted net sales (Sale) between (-1, +1), (-1, +2), (-1, +3). All leadership identifications are provided by LUWs. For Columns 1-3, Type 1 or 2 is the dummy of overall existence of Type 1 or 2 leadership. For Columns 7-9, Type 1 or 2 is the average frequency of Type 1 leader. For Columns 10-12, Type 1 or 2 is the average intensity of Type 1 or 2 leader. The pre-IPO financial characteristics include firm age, total assets, and leverage. Recommendation is a dummy equal 1 for "buys", 0 for "hold" and -1 for "sell". VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

VARIABLES	sale1	sale2	sale3	sale1	sale2	sale3	sale1	sale2	sale3
Type 1	10.278**	6.925	26.163***	5.724	2.035	9.117	49.101	49.859	139.767
	(4.937)	(6.938)	(9.704)	(4.869)	(6.779)	(9.058)	(45.550)	(67.741)	(86.272)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	312	268	219	312	268	219	312	268	219
r2_a	0.101	0.0643	0.148	0.0887	0.0556	0.109	0.0888	0.0592	0.120
F	4.884	3.040	5.217	4.362	2.747	3.953	4.368	2.866	4.302
p	4.05e-06	0.00179	2.11e-06	2.30e-05	0.00442	0.000114	2.26e-05	0.00306	3.79e-05
Type 2	11.552**	-2.864	4.157	1.221	-1.400	-2.315	3.603	-32.761**	-16.178
	(5.039)	(7.213)	(9.663)	(1.011)	(1.477)	(1.987)	(10.950)	(16.220)	(21.337)
Control variables	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	312	268	219	312	268	219	312	268	219
r2_a	0.0989	0.0537	0.0768	0.0873	0.0535	0.104	0.0839	0.0651	0.103
F	4.793	2.683	3.015	4.304	2.676	3.818	4.166	3.067	3.773
p	5.47e-06	0.00537	0.00210	2.79e-05	0.00548	0.000174	4.39e-05	0.00164	0.000200

Table 8 Panel A
Determinants of IPO leadership identification by financial analysts

Output of Model 1 logit regression is reported in Columns1-4 and the dependent variable is the dummy of leadership existence. Output of Model 1 Poisson regression is reported in Columns 5-8 and the dependent variable is the frequency of leadership sentences. Output of Model 1 Tobit regression is reported in Columns 9-12 and the dependent variable is the leadership intensity. We control for industry effects with the 2-digit SIC. The pre-IPO financial characteristics include firm age, total assets, and leverage. GS, LUW and GS*LUW stand for the dummy of Global Settlement effect, dummy of lead-underwriter as the report issuer, and the interaction term respectively. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriter(s). ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(5)	(6)	(9)	(10)
VARIABLE	Type 1	Type 2	Type 1	Type 2	Type 1	Type 2
LUW	0.216	0.121	0.415***	0.216***	0.014	-0.012
	(0.172)	(0.138)	(0.121)	(0.039)	(0.014)	(0.015)
GS	-0.105	-0.404***	0.070	-0.215***	-0.017*	-0.113***
	(0.128)	(0.096)	(0.094)	(0.031)	(0.011)	(0.011)
GS*LUW	-0.028	-0.063	-0.223	-0.117**	-0.008	-0.006
	(0.222)	(0.171)	(0.154)	(0.052)	(0.018)	(0.019)
lnAge	0.118	0.269***	0.065	0.150***	0.010	0.031***
	(0.073)	(0.053)	(0.051)	(0.018)	(0.006)	(0.006)
LnTA	0.129***	0.103***	0.142***	0.088***	0.009***	0.004
	(0.038)	(0.028)	(0.026)	(0.009)	(0.003)	(0.003)
Leverage	-0.096	0.013	-0.018	-0.181***	-0.008	-0.018
	(0.209)	(0.139)	(0.144)	(0.052)	(0.017)	(0.016)
VC	0.031	0.389***	0.029	0.217***	-0.002	0.029***
	(0.128)	(0.094)	(0.092)	(0.031)	(0.011)	(0.011)
Hot Market	-0.006	0.215***	0.092	0.120***	-0.004	0.032***
	(0.105)	(0.078)	(0.076)	(0.025)	(0.009)	(0.009)
LUW rank	0.048	0.131***	0.065	0.080***	0.004	0.012**
	(0.071)	(0.047)	(0.054)	(0.018)	(0.006)	(0.005)
Constant	-2.208**	-1.293	-2.893***	-0.419**	-0.205***	-0.071
	(0.885)	(0.896)	(0.644)	(0.212)	(0.076)	(0.085)
Industry	Y	Y	Y	Y	Y	Y
N	3570	3792	3804	3804	3804	3804
r2_p	0.0697	0.129	0.100	0.114	0.180	0.306
chi2	203.2	660.4	471.7	2098	264.8	770.2
p	0	0	0	0	0	0

Table 8 Panel B
Determinants of IPO leadership identification by financial analysts before and after the GS

Output of Model 1 logit regression is reported. Dependent variable is the dummy of leadership existence. Columns 1 to 4 investigate ICRs issued before the GS 2003 and columns 5-8 investigate ICRs issued after the GS. All regressions control the industry effects with the 2-digit SIC. The pre-IPO financial characteristics include firm age, total assets, and leverage. LUW is dummy of lead-underwriter as the report issuer. VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(5)	(6)	(1)	(2)	(5)	(6)	(1)	(2)	(5)	(6)
	logit regression (Y=existence of leadership)				Poisson regression (Y=frequency of leadership)				Tobit regression (Y=intensity of leadership)			
	Before GS		After GS		Before GS		After GS		Before GS		After GS	
	Type 1	Type 2	Type 1	Type 2	Type 1	Type 2	Type 1	Type 2	Type 1	Type 2	Type 1	Type 2
LUW	0.202	0.105	0.203	0.061	0.399***	0.220***	0.202**	0.106***	0.018	-0.014	0.006	-0.019**
	(0.175)	(0.140)	(0.142)	(0.102)	(0.122)	(0.040)	(0.096)	(0.034)	(0.018)	(0.020)	(0.010)	(0.008)
lnAge	0.174	0.292***	0.035	0.231***	0.205**	0.178***	-0.094	0.103***	0.017*	0.043***	0.010	0.030***
	(0.111)	(0.089)	(0.104)	(0.071)	(0.081)	(0.026)	(0.069)	(0.025)	(0.010)	(0.011)	(0.006)	(0.005)
LnTA	0.149***	0.074*	0.072	0.135***	0.129***	0.065***	0.097***	0.091***	0.006	-0.014**	0.004	0.007**
	(0.058)	(0.043)	(0.053)	(0.041)	(0.042)	(0.013)	(0.036)	(0.013)	(0.005)	(0.006)	(0.003)	(0.003)
Leverage	-1.391***	-0.565**	0.448**	0.197	-1.106***	-0.465***	0.427***	-0.020	-0.117***	-0.151***	0.000	-0.027**
	(0.463)	(0.268)	(0.227)	(0.162)	(0.340)	(0.096)	(0.158)	(0.064)	(0.041)	(0.039)	(0.016)	(0.014)
VC	0.135	0.486***	-0.057	0.284**	0.086	0.142***	-0.050	0.232***	0.016	0.052***	0.017	0.046***
	(0.184)	(0.137)	(0.183)	(0.137)	(0.139)	(0.043)	(0.123)	(0.046)	(0.018)	(0.019)	(0.012)	(0.010)
Hot Market	-0.184	0.216*	0.187	0.178*	-0.010	0.132***	0.183*	0.113***	-0.023	0.043**	0.015	0.017**
	(0.163)	(0.130)	(0.149)	(0.105)	(0.121)	(0.038)	(0.103)	(0.035)	(0.016)	(0.017)	(0.010)	(0.008)
LUW rank	-0.119	0.067	0.264**	0.178***	-0.024	0.051**	0.187**	0.118***	-0.002	0.021**	0.021***	0.014***
	(0.096)	(0.074)	(0.117)	(0.066)	(0.075)	(0.024)	(0.081)	(0.027)	(0.009)	(0.010)	(0.008)	(0.005)
Constant	-2.161**	-1.248*	-3.511***	-2.420**	-4.985	0.282	-3.019***	-0.941***	-0.238**	-0.151*	-0.404***	-0.246***
	(0.978)	(0.721)	(1.233)	(0.998)	(0.733)	(0.363)	(0.836)	(0.293)	(0.084)	(0.091)	(0.067)	(0.045)
Industry	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	1512	1554	1916	2214	1576	1576	2228	2228	1576	1576	2228	2228
r2_p	0.0537	0.0967	0.0946	0.153	0.0792	0.0816	0.145	0.151	0.0255	0.0401	0.0312	0.162
chi2	68.55	193.4	150.8	467.3	151.1	644.6	405.3	1564	17.96	55.48	22.99	93.14
p	7.58e-05	0	0	0	0	0	0	0	0.0122	1.20e-09	0.00171	0