Identifying leaders among IPO firms:
A content analysis of analyst coverage reports

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Abstract

We examine whether firms identified as having a first- or early-mover advantage ("FMA" hereinafter) at the time of their Initial Public Offering (IPO) perform better after going public than do other IPO firms. We find firms identified by financial analysts in initial coverage reports as having FMA generate to have larger improvements in operating performance post IPO than industry peers and other IPO firms. The positive association between FMA and post-IPO firm operating performance is stronger where a firm's FMA is identified by an unaffiliated analysts, suggesting lead underwriters and co-managers may be less discerning in identifying first- or early-movers advantages of their IPO clients. The Global Analyst Research Settlement (GARS) in 2002 had little impact on the likelihood of IPO firms being identified as having FMA, but the association between FMA identification and operating performance changes became weaker after the regulatory change.

JEL Classification: G30, G32

Keywords: IPO performance, market position, investment bank affiliation, first-mover advantage, Global Analyst Research Settlement

1. Introduction

There is extensive literature discussing the relation of firm quality with IPO firms' operational and stock performance (e.g., Jain and Kini, 1994, and Zheng and Stangeland, 2007), with prior studies exploring issues such as the link between long-run performance and size (Brav et al., 2000), book-to-market ratio (Brav et al., 2000), leverage (Barry and Mihov, 2015), venture capital backing (Krishnan et al., 2011), private equity backing (Levis, 2011), underwriter reputation (Dong et al, 2011), management ownership (Mikkelson et al., 1997), discretionary accruals (Teoh et al., 1998), innovation (Cao et al., 2015), and investor attention (Da et al., 2011). These financial and non-financial characteristics are expected to represent the firm quality of an IPO firm and to be determinants of the post-listing performance.

In this paper, we focus on a factor that has not received much attention in the literature despite being a potentially important determinant of the cross-section of post-IPO operating performance: the issuer's first- or early-mover market position in its product market. For example, in a coverage report by Gurley for Deutsche Bank (1997, p. 1), Amazon was referred to as having a first mover position:

> *"Although competition in the on-line book retail market is increasing, Amazon.com's operational flexibility and first-mover advantages should ensure long-term success."*

We are interested in whether firms going public that are perceived as having a first- or early-mover advantage ("FMA" hereinafter) display stronger operating performance ex post than other IPO firms. There are many reasons to expect this might be the case. Lieberman and Montgomery (1998) suggest that early entry into an emerging market may facilitate the accumulation of superior resources and capabilities. Schultz and Zaman (2001) argue that a wave of IPOs within an industry may be a sign of competitive pressure to gain an early-mover advantage. Indeed, a number of studies find empirical evidence that firms rush to go public to grab market shares (Lieberman and Montgomergy, 1998; Schultz and Zaman, 2001; Eisenmann, 2006; Ang and Zhang, 2006; Chemmanur and He, 2011). Chemmanur and He (2011) find that the firms that go public earlier in an IPO wave have better total factor productivity pre-listing and that these higher-productivity firms also have higher post-IPO ROA than those that go public later in the wave. Banerjee et al. (2016) model the

dynamics of early movers' going-public decision in an IPO wave and find that early movers accept underpricing to signal quality. These highly underpriced early movers generate stronger change in operating ROA post-IPO and enjoy faster sales growth than other IPO firms (Banerjee et al., 2016).

We start our analysis by identifying FMA in IPO firms. Potential sources of data for an IPO issuer's FMAs include the IPO prospectus published by the issuer and initiating coverage reports produced by analysts from investment banks. We use the latter as our main source for the following reasons. First, the IPO prospectus reflects the issuer's own assessment of its FMA, while initial coverage reports ("ICRs" hereinafter), especially those published by analysts who are unaffiliated with underwriters of the IPO ("unaffiliated analysts" hereinafter) can be expected to provide a more independent assessment. Second, our sample includes ICRs prepared by analysts affiliated with lead underwriters and co-managers ("affiliated analysts" hereinafter) as well. The views regarding the issuer's FMA in these reports are likely to coincide with those presented in IPO prospectuses, since there is substantial evidence that (favorable) investment bank coverage is a key factor when issuers select their lead underwriters (e.g., Lin and McNichols, 1997; Krigman et al, 2001; Cliff and Denis, 2005). This gives us an opportunity to test for any systematic difference between affiliated analysts and unaffiliated analysts in terms of their assessment of the issuer's market position. Third, having multiple ICRs for most IPOs allow us to determine the analysts' consensus on the issuer's market position. Clearly, an IPO firm is more likely to truly have a FMA when a majority of ICRs agree on that rather than when only a minority of ICRs mentions such an advantage.

Using a sample of 10,223 ICRs for 2,887 firms going public in an IPO during 1997-2017, we find a positive relation between the presence of FMA sentences in ICRs and the IPO firms' operating performance ex post. The industry-adjusted improvement in ROA from the year prior to the IPO to three years after, is on average a highly significant 5.8% to 6.7% higher (depending on model specification) for FMA than for other IPO firms. The relation between FMA identification and post-IPO operating performance is particularly strong where the firm is identified as having FMA by an unaffiliated analyst. The results are consistent with our conjecture that FMAs, especially those identified by unaffiliated analysts, represent the firm quality of an IPO issuer to generate strong operating performance ex post.

Next, we conjecture that analysts are more willing to point out an IPO firm's FMA if they are confident about the firm's competitive position. In this case, an IPO firm with more FMA sentences in analyst reports is more likely to display stronger operating performance ex post than other IPO firms with less or no FMA sentences. After controlling for the report length and number of coverage report, we find that the number of FMA sentences are significantly positively correlated to the IPO performance over the first three years post-listing.

We find that affiliated analysts identify a similar proportion of IPOs to have FMA to unaffiliated analysts, at around 10% of covered firms. However, we further show that the FMA effect is more pronounced when the FMA of an IPO issuer is stated by the unaffiliated analysts. FMA firms identified by unaffiliated analysts generate significantly higher ROA changes than firms without unaffiliated FMA identifications, which is 10%, 11% and 10% higher ROAs within three years post-listing respectively. While FMA identifications by either lead underwriter or co-mangers generate around 6% higher ROAs than firms without affiliated FMA identifications. Our findings of analyst affiliation are generally consistent with Michaely and Womack (1999) and Barber et al. (2007) who find affiliation bias in affiliated analysts, we find that affiliated analysts appear to provide less accurate FMA than unaffiliated analysts.

We revisit the role of the Global Analyst Research Settlement (GARS) on analyst reports. The purpose of the GARS in 2002 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; Corwin et al., 2017). Kadan et al. (2009) find that both affiliated and unaffiliated investment banks are less likely to issue favorable recommendations in the post-GARS period than pre-GARS. We explore whether the GARS also had an impact on the textual content of analyst reports. Although the text content in analyst reports is not subject to regulation requirements, we find that analysts tend to be more conservative in the FMA identification of IPO firms after the GARS. The proportion of FMA ICRs decrease from 11% before the GARS to 7% after. However, after controlling for analyst affiliation and the number of coverage reports, the GARS did not appear to reduce the probability of FMA identification. Rather, our findings suggest that the decreases of the proportion of IPO firms

identified in ICRs as having FMA is more likely associated with changes over time in IPO firms' characteristics. We observe that firms going public after the GARS tend to be older, larger, and more profitable than firms going public before the GARS, which the change significant at the 1% level.

However, we also find that the link between ex-post operating performance and the analysts' consensus view as to whether a firm has a FMA become weaker after the GARS. The performance of sub-groups of IPO firms listed before and after the GARS show that, before the GARS, first movers identified by analysts enjoyed 16.6% higher improvement in operating performance ROA(-1, +1), controlling for industry and time effets) 15.7% higher ROA(-1, +2), and 18.8% higher ROA(-1, +3) than non-FMA firms. Both affiliated FMAs and unaffiliated FMAs generate significantly higher performance changes (controlling for industry and time effects) than other IPO firms. However, after the implementation of the GARS, neither affiliated FMAs nor unaffiliated FMAs tend to generate higher ROA changes than non-FMA firms. We find that the interaction term between FMA and the GARS range from -0.04 to -0.18, confirming again that FMA identifications are likely to be less informative after the GARS. The positive impact of the FMA identification on the post-listing performance is eliminated by the negative impact of the GARS.

This study contributes to the literature in several ways. We first contribute to the literature of IPO operating performance ex post. While prior studies (e.g. Jain and Kini, 1994) tend to show that firm-specific financial variables and ownership structure affect the operating performance ex post, we study the relation between analysts' FMA identification and IPO firms' return on assets. Our results highlight a significant positive relation between the FMA and IPO firms' operating performance ex post, indicating the incremental information of firm quality from the textual content in analyst reports. We contribute to the analyst report literature by empirically validating the value of textual information in analyst reports. We also contribute to the literature on first-movers, which typically focus on the impact of entry order and market shares, rather than underlying determinants of firm quality (Eisenmann, 2006). To the best of our knowledge, our study is the first in the literature to connect the separate strands of literature on post-IPO operating performance, product market competition, and content analysis of analysis reports.

We also contribute to the literature of regulatory impact on financial analysts. We find that after controlling for analyst coverage, the GARS does not appear to affect affiliated and unaffiliated analysts' likelihood to identify FMA firms and decreases the frequency of FMA reports issued by co-managers and unaffiliated analysts. Consistent with Kadan et al. (2009) and Corwin et al. (2017) who find that the GARS significantly reduce the optimistic stock recommendation and earnings forecast, we predict that the GARS could affect analysts' conservativeness of text content, even though the text content is less subject to regulatory changes. We find that analysts' FMA information provides valuable information before the GARS but are becoming less informative after the GARS.

Our study is most closely related with Banerjee et al. (2016), who model and find that firms with better growth opportunities find it optimal to go public early even though there is still uncertainty about the future state of the economy. Banerjee et al. (2016) find that leaders, defined as firms with high under-pricing that list early in an IPO wave, experience faster sales growth and higher growth in EBITDA/total assets ratio compared to other IPO firms ex post. In an additional test, Banerjee et al. (2016) randomly select 50 model-predicted early movers and 50 model-predicted late movers whose IPOs are managed by a single book runner between 1999 and 2012. Consistent with their model prediction, they find that 32% of model predicted early movers are identified as early movers/leaders by the book runner, while 80% of model predicted late movers are not identified as early movers/leaders. Our study instead uses analyst coverage reports issued within six months as a proxy of firm quality. With the content analysis approach, we are able to investigate both affiliated and unaffiliated analysts opinion of an issuer's first- or early- mover advantage. We highlight the information value of text content in analyst coverage reports, as an extension of the literature on analysts' quantitative outputs such as recommendations (Michaely and Womack, 1999; Irvine 2003; James and Karceski, 2006), target prices (Brav and Lehavy, 2003) and earnings forecasts (Francis and Soffer, 1997; Brav and Lehavy, 2003; Asquith et al., 2005; Huang et al., 2014)

The rest of the paper is structured as follows. Section 2 develops hypotheses. Section 3 describes our data and descriptive statistics. Section 4 discusses the empirical test results of the hypotheses. Section 5 concludes.

2. Hypotheses development

Our hypotheses focus on analysts' research output in ICRs. ICRs could reflect the commitment of resources allocated by investment banks (Irvine, 2003). Early studies argue that the positive abnormal stock returns at the initiation of recommendation are triggered by the disclosure of private information (Irvine, 2003). Francis and Soffer (1997) argue that text content merely provides justifications for quantitative outputs issued contemporaneously. However, later on studies suggest that the text content provide incremental information by reflecting analysts' positive or negative sentiment (Asquith et al., 2005; Loughran and McDonald, 2011; Huang et al., 2014). 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.

Although the text content of analyst reports provide many other pieces of information to represent firm quality (for example, forecasts of sales and growth, etc), we focus on the relation between analysts' FMA identification with firms' operating performances. We would expect that FMA firms have superior quality and are positively correlated to an issuer' operating performance post-IPO. Our first hypothesis is:

Hypothesis 1. *FMA firms generate higher operating performance ex post than IPO firms without FMA identifications.*

We argue that analyst affiliation is expected to affect their FMA identification. Analysts are not compensated for the accuracy of forecasts but are compensated for actions that increase brokerage and investment-banking revenues (Groysberg et al., 2011). Dechow et al. (2000) find that underwriting fees are positively correlated with the level of earnings growth forecasts of lead underwriters. Empirical evidence suggests that lead underwriters and co-managers appear to provide more optimistic and less accurate forecasts than unaffiliated analysts (Michaely and Womack, 1999; Barber et al., 2007). Michaely and Womack (1999) find that stocks recommended by affiliated investment banks perform worse than stocks recommended by unaffiliated investment banks prior to, at the time of, and subsequent to the recommendation date. Barber et al. (2007) observe that lead underwriters are more reluctant to downgrade but more willing to upgrade than non-lead underwriters. Thus, we would expect affiliated analysts suffer more conflicts of interests at the FMA identification than unaffiliated

analysts. To capture the influence of the affiliation on FMA identification, we test the following hypothesis:

Hypothesis 2. *Affiliated analysts are more likely to identify FMA firms than unaffiliated analysts.*

Regarding the accuracy of affiliated or unaffiliated analysts' FMA identifications predicting future performance, we test the following hypothesis:

Hypothesis 3. *FMA firms identified by unaffiliated analysts are more likely to generate higher operating performance ex post than FMA firms identified by affiliated analysts.*

The conflicts of interest arising from analyst affiliation appear to be affected by regulatory changes. The GARS requires analysts to disclose the proportion of favorable recommendations to the public. Kadan et al. (2009) find that affiliated analysts became more conservative after the GARS. The affiliated analysts were 22% more likely to issue favorable recommendations compared to unaffiliated analysts before the GARS, but as likely to provide favorable recommendations as unaffiliated analysts after the GARS (Kadan et al., 2009). Kadan et al. (2009) also find that the price response to "buy" recommendations in the post-GARS period is 80% stronger than the price response in the pre-GARS period, which suggests that "buy" recommendations convey more useful information after the GARS. Similarly, Corwin et al. (2017) investigate the difference between analyst earning forecast and actual earnings, and find that the GARS led to a substantial reduction in forecast error for sanctioned banks. However, these regulations do not regulate the text of analyst reports. We investigate the GARS' impact on the conservativeness and accuracy of analysts' FMA identifications, with the following two hypotheses:

Hypothesis 4. *When comparing the pre-GARS and post-GARS periods, there will be a decrease in the FMA identification in both affiliated and unaffiliated analysts.*

Hypothesis 5. *The operating performance of FMA firms in the post-GARS period will be higher than the performance in the pre-GARS period.*

3. Data description

3.1. Sample, sources and variables

Our sample of IPO transactions is from the Thomson SDC New Issue Database. For all US IPOs issued between January 1st 1997 and December 31st 2017, we follow Banerjee et al. (2016) and exclude close-end funds, REITs, acquisition companies, depository institutions (banks, savings and loads), limited partnerships, American depositary receipts (ADR), unit offers (packages of shares and warrants), best effort issues, and auctions. To focus on firms with price data, we also require that trading of these IPO firms starts no later than 10 days after the IPO date, following Helwege and Liang (2004). This leaves us with a sample of 3,128 IPO transactions. We further apply filters as follows[2]:

1. We require that IPO firms have at least one initial coverage report (ICR) available from the Thomason One Banker (TOB) Investext database, and that ICRs were issued by investment banks within six months after the IPO;

2. We require that the underwriters and co-managers of an IPO transaction are disclosed in TOB and SEC Edgar;

3. We require that IPO firms' financial performance data (e.g., EBITDA, sales revenue, total assets) are available from COMPUSTAT (in millions of U.S. dollar) for years -1 and +1, and years +2 and +3 are collected if any, where year 0 is the IPO year;

4. We require that IPO firms' inflation adjusted values of total assets and sales revenue at year -1 are disclosed in SDC and exceed $1 million.

After these exclusions, the final sample consists of 2,289 IPO transactions over the period 1997-2017.

The 6-month cutoff period follows Das et al. (2006) and is chosen for three reasons. First, 6-month is longer than the quiet period and covers initial coverage reports (ICRs) issued by LUWs after the quiet period[3]. Second, Barber et al. (1999) show that the average time between sequential

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[2]Appendix Table A summarizes our criteria.
[3] The SEC requires a quiet period which restrict insiders and affiliated underwriters from issuing reports to a

recommendations for a firm is around 200 days. Therefore, a cutoff period of 6-month are likely to capture most ICRs. Third, Das et al. (2006) find that in a sample period of 5 years, the percent of IPO firms received research coverage from at least one investment bank in the first 180 days was 30% in 1986, and that the corresponding ratio increases to about 80% in the early 1990s, and to 90% in the years of 1999 and 2000. If that trend holds, considering our sample period of 1999-2017, a 6-month cutoff period should be long enough to cover the majority of ICRs issued within 5 years after an IPO. The ICRs are manually collected from Investext (via Thomson One). When an IPO firm has duplicate ICRs issued by the same analyst on the same date, we keep the ICR with the most pages[4].

Accurately identifying first-mover advantage is crucial to our empirical analysis. We rely on investment banks' statements of first-movers to construct the key variable "first-mover advantage" (FMA). To quantify the FMA in initial coverage reports, we perform the following scrutiny: first, we extract all sentences mentioning the keyword "move" and cognate words such as "moved", "moves", "moving", and "mover(s)". Second, we manually check these more than twenty thousand keyword sentences and exclude sentences without explicit statement of first or second or early mover advantages of the IPO firm.[5] In our sample, 516 out of 2,289 firms are identified as first-movers. Investment banks identify the FMA of an IPO firm in 844 reports, which represents approximately 11% of the 8,420 initial coverage reports.

We use two measures of FMA: FMA is a dummy variable to represent whether an IPO firm was stated as a first-mover by investment banks in ICRs; FMS is the number of first-mover sentences of an IPO stated in ICRs.

We gather the data of underwriter reputation rankings from Jay Ritter's web-page and IPO firms' price data from Center for Research in Securities Prices (CRSP). Other information is manually collected from ICRs, including IPO firm names, investment bank names, dates of ICR release, the number of pages in an ICR, the number of sentences in an ICR and stock recommendations.

newly listed firm.

[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 3128 IPOs, 241 IPOs do not have analyst reports provided to Investext. The potential bias raising from restricted investment bank coverage is discussed in Section 4.

[5]We exclude sentences mentioning the phrases "remove/ remover" or "movement", used the keyword as a verb or a noun but not mentioning mover advantages or mover position, mentioning the phrase "fast mover", "late mover", and "last mover", and mentioning the phrase "first mover"to firms other than the IPO issuer.

Following prior studies, we classify investment banks into three types of affiliation, including lead-underwriter affiliated[6], co-manager affiliated and un-affiliated (Dechow et al., 2000; Lin et al, 2005; Bradley et al., 2004; Barber et al., 2007; Bradley et al., 2008; Kadan et al., 2009; Corwin et al., 2017).[7] Appendix B lists and defines the variables used in the empirical investigation, categorized into dependent variables of operating performance, initial coverage report related variables, and deal level variables.

3.2. Affiliation of investment banks and first-mover advantage

The breakdown of our sample by year is provided in Table 1. During our sample period, 23% of IPO firms are identified as first movers and 10% of ICRs state the FMA of an IPO firm. Lead underwriters, co-managers and unaffiliated analysts show a similar trend in their FMA identification: around 1/5 of ICRs reported IPO firms' FMA in 1999 and 2000, while only 1% of them reported FMAs in 2003, the year of the GARS implementation.

[Insert Table 1]

Table 2 presents the pre-listing financial characteristics between the group of IPOs identified as FMAs by analysts (FMA group) and the group of IPOs not identified as FMAs (non-FMA group). Table 2 shows that FMA firms tend to be less profitable, younger and less-leveraged than non-FMA firms. FMAs firms on average earn 20% less ROA than non-FMAs (Table 2). FMA firms and non-FMA firms have similar levels of firms size and sales revenue before the IPO announcement.

[Insert Table 2]

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[6]Lead underwriters are also called book managers or book runners. We also classify joint book managers as lead underwriters.

[7]Prior papers generally suggest that results of the lead-underwriter and co-managers group are consistent to the results of the pure lead-underwriter subgroup (Dechow et al., 2000). We conduct robustness test with a two-type affiliation, that investment banks are either affiliated or unaffiliated, and the results are consistent.

4. Empirical test

4.1 Do FMA firms earn higher operating performance than other IPO firms?

The results of Table 3 support our hypothesis 1 that firms identified as FMAs by affiliated or unaffiliated analysts appear to generate 0.05 to 0.12 higher ROA changes than firms not identifed as FMAs within three years post-listing. Furthermore, the superior performances of FMA firms over non-FMA firms are higher if the FMA is identified by unaffiliated analysts (Table 3 Panels B and C), which indicate that unaffiliated analysts may suffer less conflicts of interests and offer more accurate FMAs to identify firms with superior performance than affiliated analysts.

[Insert Table 3]

Table 4 investigates factors affect the post-listing operating performance changes in IPO firms. Our preliminary analysis suggests that FMA firms generate higher operating performance ex post than IPO firms without FMA identifications.   Regression results in Table 4 Panel A shows that firms with an affiliated FMA identification appear to generate 0.06 higher industry-adjusted ROA changes within three years post-listing, and the regression coefficients are significant at the 1% level. This result is driven by the FMAs identified by co-managers and unaffiliated analysts, which has a significantly positive impact on the operating performance changes within three years post listing (Table 4 Panels A and B). On the contrary, FMA coverage provided by lead-underwriters only has a significantly positive impact on the operating performance changes at the first year post-listing. This findings remain robust if we investigate the impact of number of FMA reports on ROA changes. Table 4 Panel C shows that firms with one more first-mover coverage from co-managers and unaffiliated analysts earn around 0.05 higher ROA changes within three years post listing, and the coefficients of number of FMA reports are statistically significant at the 1% level.

[Insert Table 4]

These findings in Tables 3 and 4 collectively support our hypothesis 1 that FMA firms generate higher operating performance ex post than IPO firms without FMA identifications. Our findings are consistent to prior literature that early movers appear to grab market shares and enjoy stronger changes in operating performance (Lieberman and Montgomergy, 1998; Schultz and Zaman, 2001;

Eisenmann, 2006; Ang and Zhang, 2006; Chemmanur and He, 2011; Banerjee et al., 2016).

Table 4 also investigates other factors affect firms' performance post listing. We find that the ln value of firm age and total assets have negative impact up to three years post-listing, and the coefficients of age and total assets are significantly negative at the 1% level. Firms with a longer history and larger assets appear to enjoy less operating performance changes, which is consistent to Banerjee et al. (2016) 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.

4.2 Do analysts' affiliation position affect their FMA identifications to IPO firms?

According to Michaely and Womack (1999) and Barber et al. (2007), lead underwriters and co-managers appear to provide more optimistic and less accurate forecasts than unaffiliated analysts. Our hypothesis 2 investigates whether lead underwriters and co-managers are more likely to provide FMA identifications to their clients. To further understand the relationship between analyst affiliation and FMA identification, we construct a regression model with the data of FMA identifications in 8,246 initial coverage reports (ICRs). Results of Table 5 shows that after controlling for analyst coverage (the number of coverage reports), analysts affiliation has a significant positive impact on the FMA identifications, which suggests that affiliated analysts are more likely to identify FMA firms than unaffiliated analysts. These results support our hypothesis 2 that affiliation position may have a positive impact on the FMA identification, suggesting that lead underwriters and co-managers may not be more optimistic than unaffiliated analysts to their IPO clients.

[Insert Table 5]

The coefficients of analyst coverage and unaffiliated coverage are significantly positive, which suggests that firms with more coverage reports, especially independent coverage reports from unaffiliated analysts, are more likely to be identified as FMAs. We find that firms with a private equity backing up pre-listing are not more likely to be identified as FMAs. We also find that younger firms and smaller firms are more likely to be identified as FMAs.

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Furthermore, we investigate whether analyst affiliation affect the accuracy of FMA identifications to predict firms with superior operating performance. To address this concern, we repeat our tests of hypothesis 1 but this time focus on the FMA ranking instead of the dummy variable of FMA. FMA ranking is a ordinal variable. FMA ranking measures the FMA perception bias between affiliated and unaffiliated analysts. An IPO firm has an FMA ranking of 1 if neither affiliated nor unaffiliated analysts perceive the IPO firm as a first mover. An IPO firm has a FMA ranking of 2 if affiliated investment banks perceive the IPO firm as a first mover while unaffiliated investment banks fail to state that the firm has a competitive advantage in the ICRs. An IPO firm has a FMA ranking of 3 if an IPO firm has unaffiliated FMAs but not affiliated FMAs. An IPO firm has the highest FMA ranking of 4 if an IPO firm is not perceived as a FMA firm by both affiliated and unaffiliated analysts. The FMA ranking represents the consistency of affiliate and unaffiliated analysts' perception of an IPO firm's first-mover position.

[Insert Table 6]

Table 6 presents that the FMA ranking is positively correlated to the post-listing ROA changes. On average, firms with only unaffiliated FMAs earn 0.03 to 0.04 higher ROA changes than firms that not perceived as FMAs by neither affiliated nor unaffiliated analysts. These results, together with the performance difference between FMAs and non-FMAs identified by affiliated or unaffiliated analysts (Table 4 Panels A and B), support hypothesis 3 that FMA firms identified by unaffiliated analysts are more likely to generate higher operating performance ex post than FMA firms identified by affiliated analysts.

4.3 GARS impact on FMA perception

Kadan et al. (2009) and Corwin et al. (2017) find that affiliated analysts became more conservative after the GARS, which indicating that the conflicts of interest arising from analyst affiliation appear to be affected by regulatory changes. Although the GARS does not directly regulate analysts' text content in a coverage report, we conjecture the GARS could affect analyst FMA perception and the accuracy of FMA perception to identify firms with superior operating performance.

If the GARS reduce the level of conflicts of interest in affiliated and unaffiliated analysts, we may observe that the FMA perception is stronger correlated to ROA changes in the post-GARS period than in the pre-GARS period.

Table 7 addresses the concern of how the GARS and analyst affiliation collectively affect the FMA perception. Table 7 shows that after the GARS, the likelihood of FMA identification reduced significantly. After the GARS, the likelihood of a firm to be identified as a FMA reduced by around 0.5 in lead underwriters' coverage reports. However, after controlling for the number of coverage reports, we find that the GARS appears to have no impact on the likelihood of FMA identification. These results are against our hypothesis 4 that FMA identifications in both affiliated and unaffiliated analysis would show a decrease after the GARS implementation.

[Insert Table 7]

Consistent to the results in Table 5, Table 7 results show that affiliated analysts appear to be more optimistic to identify their clients as FMAs than unaffiliated analysts. The coefficients of the interaction term between the GARS and analyst affiliation are not significantly different from zero.

Table 8 provides the performance difference between FMA firms and non-FMA firms in the pre- and post-GARS periods. On average, firms that are perceived as FMAs generate 0.09-0.20 higher ROA changes than firms not perceived as FMAs in the pre-GARS period, while FMA firms and non-FMA firms appear to have similar performance changes in the post-GARS period. These results provide little support to our hypothesis 5.

[Insert Table 8]

Multivariate analysis in Table 9 show that the GARS is negatively correlated to the post-listing performance changes. Generally, FMA firms identified by co-managers or unaffiliated analysts generate 0.12-0.16 higher ROA changes, and the regression coefficients are significantly positive at the 5% level. On the contrary, FMA firms identified by lead-underwriters have similar performance to non-FMA firms. These results suggest that lead-underwriters appear to be more biased compared to co-managers. Lead underwriters suffer conflicts of interests and are more likely to provide more

optimistic FMA identifications and be less accurate to predict firms with superior performance post-listing.

The interaction term between the FMA and the GARS is negatively correlated to the performance changes. Table 9 shows that if a firm is identified as FMAs by co-managers or unaffilaited analysts after the GARS, it generate 0.15-0.21 lower ROA changes than FMA firms identified by analysts in the pre-GARS period. This evidence fail to support our hypothesis 5 that the operating performance of FMA firms in the post-GARS period will be higher than the performance in the pre-GARS period. Although analysts' FMA perception helps investors to pick up first mover firms with superior performance, it only works in the pre-GARS period. The FMA identification tends to becoming less informative after the GARS. One possible explanation is that during the 2000 internet bubble period, there are more technology firms going public and these high-tech firms are more likely to be perceived as FMAs by affiliated and unaffiliated analysts. After the GARS, less high-tech firms go public and therefore less firms are perceived as FMAs.

[Insert Table 9]

5. Conclusion

This paper examines how financial analysts identify IPO firms' competitive position in initial coverage reports, and to what extent FMA identification by financial analysts accurately predicts post-listing performance. Our results show that firms with FMAs generate higher operating performance ex post than IPO firms without FMAs, and this result is driven by firms going public before the GARS. Furthermore, firms identified as FMAs by unaffiliated analysts are more likely to generate higher operating performance than firms as FMAs identified by affiliated analysts. We find that lead underwriters appear to be more optimistic than unaffiliated analysts to identify their IPO clients as first- or early-movers and that the Global Analyst Research Settlement significantly reduces the FMA identifications in lead underwriters. Although analysts' FMA perception helps investors to pick up first mover firms with superior performance, it only works in the pre-GARS period. The FMA identification tends to becoming less informative after the GARS. One possible explanation is that

during the 2000 internet bubble period, there are more technology firms going public and these high-tech firms are more likely to be perceived as FMAs by affiliated and unaffiliated analysts. After the GARS, less high-tech firms go public and therefore less firms are perceived as FMAs.

Table 1. Sample distributions of IPOs, initial coverage reports, and first-movers

This table presents the frequency distribution of IPOs and ICRs breakdown by the listing year and report-issuing investment banks' affiliation.

IPO year	Number of IPOs	Number of ICRs	% of FMA firms	*LUW FMA firms*	*CO FMA firms*	*Unaff. FMA firms*	*% of FMA ICR*
1997	286	565	6%	8	10	3	4%
1998	171	447	12%	11	13	6	8%
1999	297	952	39%	52	81	38	23%
2000	265	820	35%	47	57	24	18%
2001	57	207	21%	6	6	3	8%
2002	46	174	20%	0	6	4	6%
2003	39	121	3%	0	0	1	1%
2004	113	370	10%	1	6	6	4%
2005	106	337	8%	2	4	3	3%
2006	111	389	16%	6	12	3	6%
2007	114	448	22%	13	14	5	9%
2008	16	78	19%	1	3	1	6%
2009	37	200	22%	6	2	1	5%
2010	69	288	26%	11	7	4	9%
2011	63	373	32%	14	9	5	14%
2012	75	399	28%	14	8	7	10%
2013	108	583	26%	17	12	8	8%
2014	131	649	24%	21	11	7	6%
2015	71	415	32%	11	14	6	9%
2016	54	256	20%	6	5	2	7%
2017	60	349	32%	13	7	3	9%
Total	2,289	8,420	23%	260	287	140	10%

Table 2. Financial characteristics of IPO firms before the IPO announcement

The sample includes financial characteristics of 2,286 IPO firms before and after going-public. Mean and median values of financial variables are reported for the full sample. N stands for the number of observations available. The financial variables includes firm's age, total assets adjusted for inflation, sales revenue adjusted for inflation, long-term debt in the proportion of total assets (Debt),   EBITDA in the proportion of total assets (ROA), EBIT in the proportion of sales revenue (Prof). The dummy variables VC (or PE) equal to one if the IPO firm has a VC (or PE) background. Difference (Diff.) presents the difference in mean between FMA and non-FMA IPO groups.

Variable	N (full sample)	mean	median	N (FMA)	mean	median	N (non-FMA)	mean	median	Diff.
Age	2,286	18.74	10.00	515	11.50	7.00	1,771	20.84	11.00	-9.34***
Total Assets	2,289	830.40	86.60	516	939.58	71.83	1,773	703.50	91.34	140.95
Sales Revenue	2,289	678.37	82.26	516	592.05	57.65	1,773	703.50	91.96	-111.45
Debt	2,282	27.65%	11.68%	515	18.86%	4.85%	1,767	30.21%	15.44%	-11.35%***
ROA	2,289	-8.89%	7.63%	516	-24.50%	-10.59%	1,773	-4.34%	9.18%	-20.16%***
Prof	2,289	-87.91%	2.88%	516	-157.95%	-18.36%	1,773	-67.53%	4.29%	-90.42%***
VC	2,261	0.48	0	506	0.67	1	1,755	0.43	0	0.24***
PE	2,261	0.23	0	506	0.16	0	1,755	0.16	0	0.08***

Table 3. Industry adjusted financial performance of IPO firms

The ROA is adjusted for industry median performance and winsorized at the 5% level, if unspecified. Mean and median value of industry adjusted ROA changes, and the difference between the ROA changes of the FMA firm group and non-FMA firm group are presented.

Variable	N	mean	median	N	mean	median	
Panel A. FMA identified by affiliated and unaffiliated analysts							
	N (FMA)	mean	median	N (non-FMA)	mean	median	Diff.
ROA(-1,+1)	516	13.66%***	4.25%	1,773	4.93%***	1.21%	6.90%***
ROA(-1,+2)	444	11.54%***	3.72%	1,563	3.30%***	0.55%	5.12%***
ROA(-1,+3)	369	12.40%***	4.64%	1,367	2.71%***	0.07%	9.68%***
Panel B. FMA identified by affiliated analysts							
ROA(-1,+1)	461	13.64%***	4.53%	1,828	5.20%***	1.23%	8.44%***
ROA(-1,+2)	397	11.74%***	4.40%	1,610	3.49%***	0.55%	8.25%***
ROA(-1,+3)	327	12.69%***	5.03%	1,025	2.92%***	0.07%	9.76%***
Panel C. FMA identified by unaffiliated analysts							
ROA(-1,+1)	140	17.87%***	5.35%	2,149	6.19%***	1.46%	11.69%***
ROA(-1,+2)	126	16.46%***	4.75%	1,881	4.36%***	0.91%	12.10%***
ROA(-1,+3)	105	15.50%***	3.84%	1,630	4.08%***	0.41%	11.42%***

Table 4 Panel A. Do first movers generate higher operating performance than non-first movers post-listing?

The table reports OLS regression output, with the dependent variable the industry adjusted ROA changes within three years post-listing. ROA is winsorized at the top and bottom 5%. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Variables	First movers identified by affiliated and unaffiliated analysts			First movers identified by affiliated analysts			First movers identified by unaffiliated analysts		
	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)
Dummy_FMA	0.0720***	0.0621***	0.0732***	0.0641***	0.0580***	0.0677***	0.105***	0.109***	0.0967***
	(0.0152)	(0.0174)	(0.0193)	(0.0160)	(0.0183)	(0.0203)	(0.0304)	(0.0329)	(0.0362)
Age	-0.0309***	-0.0457***	-0.0504***	-0.0320***	-0.0463***	-0.0512***	-0.0342***	-0.0480***	-0.0542***
	(0.00590)	(0.00668)	(0.00769)	(0.00592)	(0.00670)	(0.00772)	(0.00586)	(0.00660)	(0.00759)
lnAT	-0.0340***	-0.0203***	-0.0192***	-0.0335***	-0.0200***	-0.0187***	-0.0340***	-0.0204***	-0.0189***
	(0.00416)	(0.00458)	(0.00529)	(0.00416)	(0.00458)	(0.00529)	(0.00417)	(0.00458)	(0.00531)
Debt	0.0648***	0.0472**	0.0516**	0.0637***	0.0465**	0.0505**	0.0633***	0.0467**	0.0503**
	(0.0149)	(0.0195)	(0.0215)	(0.0150)	(0.0196)	(0.0218)	(0.0149)	(0.0194)	(0.0216)
PE	0.0190*	0.0162	0.00170	0.0182*	0.0158	0.00156	0.0208*	0.0178	0.00284
	(0.0110)	(0.0124)	(0.0142)	(0.0109)	(0.0123)	(0.0141)	(0.0108)	(0.0122)	(0.0141)
Constant	0.266***	0.229***	0.233***	0.270***	0.232***	0.236***	0.284***	0.242***	0.251***
	(0.0235)	(0.0263)	(0.0296)	(0.0239)	(0.0266)	(0.0300)	(0.0233)	(0.0258)	(0.0289)
Observations	2,240	1,959	1,697	2,240	1,959	1,697	2,240	1,959	1,697
R-squared	0.095	0.068	0.072	0.092	0.066	0.070	0.092	0.068	0.069

Table 4 Panel B. Do first movers generate higher operating performance than non-first movers post-listing?

The table reports OLS regression output, with the dependent variable the industry adjusted ROA changes within three years post-listing. ROA is winsorized at the top and bottom 5%. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Variables	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)
	First movers identified by lead-underwriters			First movers identified by co-managers		
Dummy_FMA	0.0487**	0.0318	0.0431*	0.0781***	0.0691***	0.0953***
	(0.0198)	(0.0226)	(0.0257)	(0.0203)	(0.0235)	(0.0252)
Age	-0.0349***	-0.0498***	-0.0549***	-0.0332***	-0.0475***	-0.0515***
	(0.00593)	(0.00674)	(0.00776)	(0.00593)	(0.00670)	(0.00769)
lnAT	-0.0331***	-0.0195***	-0.0181***	-0.0334***	-0.0199***	-0.0187***
	(0.00417)	(0.00460)	(0.00531)	(0.00414)	(0.00457)	(0.00528)
Debt	0.0617***	0.0445**	0.0481**	0.0627***	0.0455**	0.0504**
	(0.0152)	(0.0199)	(0.0222)	(0.0150)	(0.0197)	(0.0217)
PE	0.0170	0.0147	0.000400	0.0193*	0.0169	0.00257
	(0.0108)	(0.0122)	(0.0141)	(0.0109)	(0.0123)	(0.0141)
Constant	0.283***	0.247***	0.251***	0.276***	0.237***	0.237***
	(0.0236)	(0.0263)	(0.0295)	(0.0238)	(0.0263)	(0.0295)
Observations	2,240	1,959	1,697	2,240	1,959	1,697
R-squared	0.087	0.061	0.065	0.092	0.066	0.073

Table 4 Panel C. Do firms with more first mover sentences (FMS) generate higher operating performance than other firms post-listing?

The table reports OLS regression output, with the dependent variable the industry adjusted ROA changes within three years post-listing. ROA is winsorized at the top and bottom 5%. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Variables	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)
	First movers identified by lead underwriters			First movers identified by co-managers			First movers identified by unaffiliated analysts		
Number of FMA reports	0.0381**	0.0252	0.0295	0.0571***	0.0510***	0.0740***	0.0432**	0.0513***	0.0442**
	(0.0151)	(0.0177)	(0.0200)	(0.0165)	(0.0187)	(0.0193)	(0.0174)	(0.0179)	(0.0186)
Constant	0.285***	0.248***	0.254***	0.277***	0.238***	0.236***	0.289***	0.246***	0.254***
	(0.0236)	(0.0262)	(0.0293)	(0.0239)	(0.0264)	(0.0296)	(0.0234)	(0.0259)	(0.0290)
Control	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,240	1,959	1,697	2,240	1,959	1,697	2,240	1,959	1,697
R-squared	0.087	0.061	0.065	0.091	0.066	0.074	0.088	0.066	0.067

Table 5. Are affiliated analysts more likely to identify their clients as FMA firms in initial coverage reports than unaffiliated analysts?

Logistic regression results. Dependent variable is a dummy variable, which equals to one if a coverage report mentioning first-mover advantage of IPO firms. In columns 1 to 3, Affiliation equals to 1 for unaffiliated analysts, 2 for co-managers and 3 for lead underwriters. In columns 4 to 6, affiliation equals to 1 for lead underwriters and co-managers, and 0 for unaffiliated analysts.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	FMA	FMA	FMA	FMA	FMA	FMA
Affiliation	0.0621	0.119**	0.158***	0.117	0.246***	0.348***
	(0.0499)	(0.0509)	(0.0524)	(0.0907)	(0.0944)	(0.0997)
Total coverage		0.0598***			0.0620***	
		(0.0110)			(0.0111)	
unaffiliated coverage			0.0887***			0.0961***
			(0.0152)			(0.0156)
Age	-0.538***	-0.517***	-0.509***	-0.539***	-0.518***	-0.509***
	(0.0497)	(0.0510)	(0.0510)	(0.0497)	(0.0511)	(0.0511)
lnAT	-0.0498*	-0.140***	-0.116***	-0.0482*	-0.140***	-0.116***
	(0.0274)	(0.0325)	(0.0299)	(0.0275)	(0.0325)	(0.0298)
Debt	-0.748***	-0.594***	-0.584***	-0.752***	-0.600***	-0.586***
	(0.163)	(0.159)	(0.159)	(0.163)	(0.159)	(0.159)
PE	-0.234*	-0.193	-0.152	-0.234*	-0.193	-0.147
	(0.122)	(0.123)	(0.123)	(0.122)	(0.123)	(0.123)
ROA-1	-0.387***	-0.347***	-0.359***	-0.388***	-0.348***	-0.360***
	(0.0763)	(0.0760)	(0.0762)	(0.0763)	(0.0760)	(0.0761)
Constant	-0.738***	-0.822***	-0.893***	-0.701***	-0.768***	-0.836***
	(0.177)	(0.178)	(0.179)	(0.161)	(0.161)	(0.163)
Observations	8,246	8,246	8,246	8,246	8,246	8,246
LR Chi2	442.34	470.07	443.90	442.47	471.61	477.46
Prob	0	0	0	0	0	0
Pseudo R2	0.0830	0.0882	0.0889	0.0830	0.0884	0.0895

Table 6. Are FMA firms identified by unaffiliated analysts are more likely to generate higher operating performance ex post than FMA firms identified by affiliated analysts?

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)
FMA ranking	0.0351***	0.0349***	0.0339**	0.0375***	0.0387***	0.0387***
	(0.0108)	(0.0118)	(0.0133)	(0.0108)	(0.0118)	(0.0132)
coverage	0.0111***	0.00966***	0.0102***			
	(0.00255)	(0.00262)	(0.00299)			
Unaffiliated coverage				0.0125***	0.00820**	0.00796*
				(0.00411)	(0.00412)	(0.00440)
Age	-0.0281***	-0.0424***	-0.0480***	-0.0290***	-0.0435***	-0.0494***
	(0.00587)	(0.00665)	(0.00767)	(0.00585)	(0.00663)	(0.00764)
lnAT	-0.0427***	-0.0278***	-0.0271***	-0.0375***	-0.0228***	-0.0216***
	(0.00486)	(0.00530)	(0.00616)	(0.00438)	(0.00479)	(0.00551)
Debt	0.0673***	0.0496***	0.0532**	0.0676***	0.0497***	0.0533**
	(0.0142)	(0.0187)	(0.0207)	(0.0144)	(0.0190)	(0.0211)
PE	0.0178	0.0156	0.00213	0.0231**	0.0194	0.00505
	(0.0108)	(0.0122)	(0.0141)	(0.0109)	(0.0123)	(0.0141)
Constant	0.229***	0.189***	0.199***	0.233***	0.190***	0.199***
	(0.0273)	(0.0305)	(0.0346)	(0.0275)	(0.0308)	(0.0347)
N	2,240	1,959	1,697	2,240	1,959	1,697
Pseudo R2	0.103	0.076	0.078	0.100	0.073	0.074

Table 7. Has GARS affected the FMA identification?

Columns 1 to 3 shows logistic regression results. Dependent variable is a dummy variable equals to 1 if a coverage report mentioning first mover advantage of the IPO firm.

Columns 4 to 6 shows Tobit regression results. Dependent variable is the number of coverage reports mentioning first-mover advantage of IPO firms.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	FMA	FMA	FMA	FMA	FMA	FMA
Affiliation	0.222*	0.307**	0.395***	0.445	0.627**	0.813***
	(0.129)	(0.130)	(0.132)	(0.287)	(0.288)	(0.292)
GS	-0.0360	-0.257	-0.229	-0.0563	-0.502	-0.448
	(0.162)	(0.168)	(0.167)	(0.348)	(0.358)	(0.355)
Affiliation *GS	-0.204	-0.0796	-0.0565	-0.359	-0.127	-0.0676
	(0.180)	(0.182)	(0.183)	(0.387)	(0.390)	(0.391)
coverage		0.0713***			0.152***	
		(0.0115)			(0.0262)	
Unaff. coverage			0.104***			0.224***
			(0.0161)			(0.0367)
Age	-0.520***	-0.482***	-0.480***	-1.138***	0.152***	-1.027***
	(0.0500)	(0.0516)	(0.0514)	(0.111)	(0.0262)	(0.112)
lnAT	-0.0339	-0.129***	-0.0991***	-0.0771	-1.035***	-0.204***
	(0.0280)	(0.0322)	(0.0300)	(0.0586)	(0.112)	(0.0622)
Debt	-0.790***	-0.636***	-0.626***	-1.435***	-0.264***	-1.170***
	(0.166)	(0.162)	(0.162)	(0.319)	(0.0673)	(0.313)
PE	-0.195	-0.135	-0.0976	-0.339	-1.198***	-0.134
	(0.123)	(0.124)	(0.124)	(0.247)	(0.314)	(0.248)
ROA-1	-0.381***	-0.329***	-0.347***	-0.866***	-0.229	-0.809***
	(0.0764)	(0.0760)	(0.0762)	(0.172)	(0.248)	(0.171)
Constant	-0.782***	-0.818***	-0.876***	-2.307***	-0.772***	-2.571***
	(0.174)	(0.173)	(0.175)	(0.386)	(0.171)	(0.389)
				4.234***	4.213***	4.208***
Obs.	8,246	8,246	8,246	(0.128)	(0.127)	(0.127)
LR Chi2	449.02	484.98	487.62			
Prob	0	0	0	8,246	8,246	8,246
Pseudo R2	0.0842	0.0910	0.0914	453.07	486.22	489.95

Table 8. The performance difference between FMA firms and non-FMA firms in the pre- and post-GARS periods

Descriptive statistics. This table provides the difference of ROA changes between FMA firm group and non-FMA firm group, breakdown by the GARS. FMA : non-FMA shows the number of firms with FMA identification (FMA) compared to the number of firms without FMA identification (non-FMA). In our sample, 1997-2002 are recognized as the pre-GARS period, and 2003-2017 are recognized as the post-GARS period.

	Before the GARS		After the GARS	
	Number of FMA firms: Number of non-FMA firms	Difference in mean	Number of FMA firms: Number of non-FMA firms	Difference in mean
Panel A. FMA identified by affiliated and unaffiliated analysts				
ROA(-1,+1)	270:852	16.57%***	246:921	0.20%
ROA(-1,+2)	234:751	15.66%***	210:812	0.19%
ROA(-1,+3)	190:666	18.79%***	178:710	0.23%
Panel B. FMA identified by lead underwriters				
ROA(-1,+1)	124:998	14.54%***	136:1031	-0.25%
ROA(-1,+2)	108:877	9.44%***	112:910	2.11%
ROA(-1,+3)	84:772	14.36%***	93:786	0.92%
Panel C. FMA identified by co-managers				
ROA(-1,+1)	173:949	15.29%***	114:1053	0.61%
ROA(-1,+2)	150:835	15.58%***	98:924	-0.97%
ROA(-1,+3)	126:730	19.73%***	87:792	1.07%
Panel D. FMA identified by unaffiliated analysts				
ROA(-1,+1)	78:1044	19.24%***	62:1105	1.16%
ROA(-1,+2)	70:915	20.01%***	56:966	1.48%
ROA(-1,+3)	56:880	21.39%***	49:830	0.54%

Table 9 Does the GARS affect the accuracy of analysts' identification of FMA firms with superior operating performance post-listing?

The table reports OLS regression output. ROA is winsorized at the top and bottom 5%. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	First movers identified by lead underwriters			First movers identified by co-managers			First movers identified by unaffiliated analysts		
Variables	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)	ROA(-1,+1)	ROA(-1,+2)	ROA(-1,+3)
FMA	0.0958***	0.0395	0.0832*	0.122***	0.124***	0.152***	0.142***	0.160***	0.157**
	(0.0360)	(0.0411)	(0.0454)	(0.0296)	(0.0346)	(0.0360)	(0.0503)	(0.0554)	(0.0616)
GARS	-0.0359***	-0.0287**	-0.0432***	-0.0267**	-0.00972	-0.0271*	-0.0366***	-0.0201	-0.0400**
	(0.0124)	(0.0143)	(0.0163)	(0.0125)	(0.0144)	(0.0165)	(0.0121)	(0.0140)	(0.0160)
FMA*GARS	-0.119***	-0.0448	-0.108**	-0.151***	-0.173***	-0.183***	-0.173***	-0.186***	-0.214***
	(0.0396)	(0.0453)	(0.0515)	(0.0371)	(0.0430)	(0.0467)	(0.0567)	(0.0609)	(0.0682)
Nicr_t	0.0165***	0.0147***	0.0160***	0.0156***	0.0138***	0.0144***	0.0156***	0.0130***	0.0152***
	(0.00266)	(0.00267)	(0.00295)	(0.00262)	(0.00267)	(0.00290)	(0.00262)	(0.00267)	(0.00302)
Age	-0.0273***	-0.0438***	-0.0472***	-0.0259***	-0.0412***	-0.0444***	-0.0270***	-0.0424***	-0.0470***
	(0.00586)	(0.00669)	(0.00773)	(0.00586)	(0.00666)	(0.00767)	(0.00582)	(0.00658)	(0.00757)
lnAT	-0.0420***	-0.0285***	-0.0269***	-0.0432***	-0.0290***	-0.0275***	-0.0427***	-0.0277***	-0.0272***
	(0.00481)	(0.00526)	(0.00610)	(0.00481)	(0.00525)	(0.00608)	(0.00482)	(0.00526)	(0.00613)
Debt	0.0642***	0.0467**	0.0493**	0.0661***	0.0486***	0.0515**	0.0644***	0.0475**	0.0501**
	(0.0148)	(0.0194)	(0.0221)	(0.0144)	(0.0188)	(0.0214)	(0.0147)	(0.0192)	(0.0218)
PE	0.0221**	0.0194	0.0105	0.0243**	0.0184	0.0109	0.0239**	0.0188	0.0115
	(0.0112)	(0.0129)	(0.0151)	(0.0110)	(0.0127)	(0.0148)	(0.0111)	(0.0128)	(0.0151)
Constant	0.265***	0.236***	0.237***	0.261***	0.220***	0.224***	0.271***	0.228***	0.238***
	(0.0236)	(0.0266)	(0.0299)	(0.0236)	(0.0263)	(0.0296)	(0.0230)	(0.0257)	(0.0288)
Observations	2,240	1,959	1,697	2,240	1,959	1,697	2,240	1,959	1,697
R-squared	0.109	0.073	0.082	0.115	0.085	0.094	0.111	0.082	0.087

Appendix Table A. The sample selection process of IPO firms

This table lists the filters we used to select IPO transactions. We start from US IPOs from 1997 to 2017 after applying filters described in Section 3.1, and drop cases by steps as listed below. The final sample consists of 2,289 IPO transactions.

Data Type	Data Source and Exclusion criteria	Sample of IPOs	Sample of ICRs
IPO data	Sample period is 1997-2017, exclude close-end fund etc, and require trading starts within 10 days after the IPO date. Data are from the SDC database.	3,128	--
Initial coverage reports (ICRs)	ICRs issued within six months after the IPO. Data are from the Investext database.	2,887	10,223
Underwriter information	Underwriters and co-managers information are disclosed in TOB; if missing in TOB, complemented with the SEC Edgar 424B IPO prospectus information.	2,887	10,223
Financial characteristics	Finance position and performance data are available for years -1 and +1, and years +2 and +3 are collected if any, where year 0 is the IPO year. Data are collected from COMPUSTAT.	2,588	9,272
Total Assets value > $1m	IPO firms' inflation-adjusted total assets value at year -1 are available and exceed $1 million.	2,568	9,225
Sales Revenue value > $1m	IPO firms' inflation-adjusted sales revenue value at year -1 are available and exceed $1 million.	2,289	8,420

Appendix B. Variable definitions

Panel A contains the variable definitions for the dependent variables. Panel B contains the definitions for variables extracted from initial coverage reports. Panel C contains the definitions for firm-specific variables.

Panel A: Operating performance variables

Performance	Following Jain and Kini (1994) and Purnanandam and Swaminathan (2004), an IPO firm's return on assets (ROA) is calculated as the EBITDA divided by total assets. EBITDA is earnings before interest, taxes, depreciation, and amortization.
Adjusted Performance	The industry-adjusted performance of a firm is the difference between its change in operating performance and the median change in contemporaneous performance of all firms in its industry.

Panel B: Initial coverage report related variables

FMA	Dummy variable equals 1 if the IPO firm is identified as a first-mover/ early-mover/ second-mover, and 0 otherwise.
Affiliation	Dummy variables equals 1 if an investment bank is one of the IPO firms' underwriters or co-managers, 0 if otherwise.
GARS	Dummy variable equals 1 if an ICR was issued after the Global Analyst Research Settlement in 2003, and 0 otherwise.
NO. of Coverage	The number of investment banks which issued ICRs to an IPO firm.
NO. of Unaff.	The number of unaffiliated investment banks which issued ICRs to an IPO firm.
NO. of Affiliated	The number of affiliated investment banks, including both lead-underwriters and co-managers, which issued ICRs to an IPO firm.
NO. of Lead	The number of lead-underwriters participated in the listing process of an IPO firm.
NO. of Co.	The number of co-managers participated in the listing process of an IPO firm.

Panel C: Firm-specific variables

Age	The natural log of the number of years between when the firm was founded and the IPO issue date.
Industry	A firm's Fama-French industry is the 3-digit SIC code, which has 49 industry categories.
Size	The natural logarithm of book value of total assets at year -1, where year 0 is the IPO listing year.
Leverage	Book value of long-term debts over book value of total assets.
VC	Dummy variable equals 1 if an IPO firm has a venture capital backing, and 0 otherwise.
PE	Dummy variable equals 1 if an IPO firm has a venture capital or private equity backing.

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