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François Degeorge, François Derrien
and Kent L. Womack

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François Degeorge, *University of Lugano and CEPR*
François Derrien, *Rotman School of Management, University of Toronto*
Kent L. Womack, *Tuck School of Business, Dartmouth College*

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Summary

The book-building procedure for selling initial public offerings to investors has captured significant market share from auction alternatives in recent years, despite significantly lower costs in both direct fees and initial underpricing when using the auction mechanism. This paper shows that in the French market, where the frequency of book-building and auctions was about equal in the 1990s, the ostensible advantages to the issuer using book-building were advertising-related quid pro quo benefits. Specifically, we find that book-built issues were more likely to be followed and positively recommended by the lead underwriters and were also more likely to receive "booster shots" post issuance if the shares had fallen. Even non-underwriters' analysts appear to promote book-built issues more, but only when their underwriters stood to gain from acquiring shares in future issues from the recommended firm's lead underwriter. Bookbuilt issues also appeared to garner more press in general (but only after they had chosen book-building, not before). Yet, we do not observe valuation or return differentials to suggest that these types of promotion have any value to the issuing firm. We conclude that underwriters using the book-building procedure have convinced issuers of the questionable value of advertising and promotion of their shares.

Keywords: Auction, IPOs

JEL Classification: D44, D42

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Address for correspondence:

François Degeorge
University of Lugano
CH-6900 Lugano
Switzerland
Phone: 41 91 912 4634
Fax: 41 91 912 4647
E-mail: francois.degeorge@lu.unisi.ch

1) Introduction

To observe the underwriting scandals that have come to light in the U.S. since the market crash of 2000, one might think that the book-building mechanism used to price initial public offerings would be under attack. The reality, however, both in the U.S. and globally, is surprisingly the opposite. In France, for example, where the market was roughly equally split in the 1990s between auctioned and book-built IPOs, auctions are now virtually extinct. In Japan, when book-building was made available to issuers, IPO auctions instantaneously disappeared (See Kutsuna and Smith (2004)). Sherman (2003) reports that in virtually all countries where book-building has been introduced recently, pre-existing auction mechanisms have disappeared or lost significant market shares. In the U.S., competitors to the book-building underwriters such as W.R. Hambrecht that have attempted to create Dutch auctions for selling shares have not, as yet, been successful in gaining meaningful market share.

Convincing theoretical arguments for using auctions in IPOs exist as well as strong empirical support that auctions are less costly, not just in direct fees, but also in minimizing initial underpricing, which is a significant cost to the issuing company. Biais, Bossaert and Rochet (2002) and Biais and Faugeron-Crouzet (2002) show that well-designed auction mechanisms allow underwriters to extract investors' information and to incorporate this information into the IPO price at a limited cost, a virtue previously attributed to book-building by Benveniste and Spindt (1989), Benveniste and Wilhelm (1990), and Sherman (2000). Derrien and Womack (2003) provide empirical support for their theory. They find that auctioned IPOs exhibit lower initial returns than book-building, especially during "hot" IPO markets.

Therefore, the central question we ask is: why do we observe the ostensible failure of auctions despite strong arguments in their favor? Our hypothesis is that corporate issuers and investment banks are in a quid pro quo relationship that extends beyond the obvious direct costs: issuers are willing to pay the higher direct and indirect costs of book-building in exchange for increased and more favorable research coverage when they choose book-building rather than an auction. In a survey of issuers that switched underwriters between their IPO and their SEO, Krigman, Shaw and Womack (2001) find that the most important reason for switching was the lack of analyst coverage. Cliff and Denis (2003) provide evidence consistent with the hypothesis that issuers use IPO underpricing to "purchase" analyst coverage.

In order to test the quid pro quo hypothesis, we examine the behavior of security analysts following IPOs by book-building vs. auction. While this comparison is impossible in the U.S., where book-building is the only procedure available, France offers an interesting investigation field: there, the two mechanisms coexisted for some time.

We find convincing empirical evidence that in addition to placing the IPO shares with investors, underwriters employing book-building implicitly commit to providing more favorable coverage to the companies they take public in the aftermarket. Specifically, we find that analysts affiliated with the lead underwriter of the offering issue more (and more favorable) recommendations for recent book-built IPOs than for auctioned offerings. We also find that these analysts provide "booster shots", that is, positive recommendations following poor stock market performance, to recent book-built IPOs. We do not observe this behavior in auctioned offerings.

An important feature of the book-building mechanism is the complete discretion of the underwriter over the allocation of shares to investors. This feature of book-building recently made financial headlines in the context of several IPO scandals. Unlawful underwriters' practices include "spinning", i.e. giving underpriced IPO shares to executives of prospective investment banking clients in the hope of winning future underwriting business from them, and "laddering", the practice of giving generous IPO allocations to clients in return for the promise that they would buy more shares of the IPO company on the aftermarket.[1]

The discretion underwriters enjoy in the allocation of book-built IPO shares gives them a substantial amount of power. We hypothesize that lead underwriters use this power to "lean on" even unaffiliated analysts to provide positive coverage. We find empirical confirmation of this hypothesis. Specifically, we find that unaffiliated analysts issue positive recommendations on IPOs taken public by an underwriter if this underwriter is about to take another company public soon (using book-building). We do not observe such a behavior for auctioned IPO underwriters.

We also examine press coverage of IPO companies, and find that, even though book-built IPOs are not more covered by the press before they go public (and before they choose their IPO procedure), they receive more press coverage after the IPO. We interpret this result as evidence that book-building underwriters use their resources to influence the press in order to advertise their recent offerings.

An alternative hypothesis, which we denote as the "quality" hypothesis, is proposed by Chemmanur and Liu (2002). They develop a model in which the goal of

[1] In April 2003, ten investment banks agreed to pay $1.4 billion in a global settlement regarding an analyst conflicts of interest probe by the SEC and the NASD. Other recent examples can be found on Jay Ritter's web site (http://bear.cba.ufl.edu/ritter/ipolink.htm).

issuers is to maximize the long-term value of their stock. In this model, company insiders are informed and outsiders are uninformed but can acquire information at a cost. The gains from acquiring information are competed away in auctions, whereas the book-building mechanism allows underwriters to reward informed investors with underpriced shares. Therefore, book-building generates more information production than auctions. A natural prediction of this model is that in equilibrium, firms of higher "quality" (i.e., of higher intrinsic value) choose book-building over auctions, in order to maximize information production and consequently long-term value.

Some of our results are consistent with this "quality" hypothesis: the extra analyst coverage of book-built IPOs may be the consequence of higher information production. However, there is no evidence that the "quality" of book-built offerings is larger than that of auctions (if anything, our results suggest that firms using auctions are actually of higher quality): book-built offerings do not exhibit better long-term performance, are priced at lower multiples, and have lower stock price performance in the year following good recommendations.

The rest of the paper is organized as follows. In Section 2, we present our hypotheses. In Section 3, we briefly describe the institutional features of the French IPO market. In Section 4, we describe the data used in the study. Section 5 presents our empirical results, Section 6 discusses our findings, and Section 7 concludes.

2) Hypotheses

Globally, book-building has become by far the most popular procedure for taking companies public. In fact, in many countries it is essentially the only method used. An alternative mechanism for selling a portion of a company to public investors is to auction

off its shares. While auctions come in many flavors, it is generally accepted that they have attractive properties, in terms of eliciting information from market participants, and maximizing proceeds for the issuer. Moreover, Derrien and Womack (2003) report empirical evidence on the French IPO market, where both auctions and book-building are used to take companies public. They find that auctioned IPOs "leave less money on the table" at the offering (have lower initial returns) than book-built IPOs, especially in "hot" IPO markets. If auctions enable IPO issuers to raise more cash at lower cost, why do issuers often prefer book-building?

Our central hypothesis is that the book-building procedure entails a tacit agreement between issuers and banks. According to this "quid pro quo", issuers are willing to pay the higher direct and indirect costs of book-building in exchange for increased, and more favorable, analyst coverage. Thus, we hypothesize that in addition to placing the IPO shares, book-building underwriters implicitly commit to providing favorable coverage to IPO stocks in the aftermarket.

Coverage comes in several forms, research reports and analyst recommendations being among the most prominent. Obtaining favorable coverage for their stock ranks among the top concerns of the managers of IPO firms. For example, Krigman, Shaw and Womack (2001) document that the desire to increase reputable analyst coverage is a main reason for issuers to switch underwriters when they return to the equity market for an equity offering. Dunbar (2000) finds that IPO underwriters increase their market share if they have analysts in the *Institutional Investor's All-American Research Team*. Rajan and Servaes (1997) find that the intensity of analyst coverage is positively correlated with the degree of initial return. Cliff and Denis (2003) confirm this result, and find that post-

IPO analyst coverage is negatively correlated with the probability of switching underwriters between the IPO and the SEO. They conclude that issuers "purchase" analyst coverage with underpricing. One reason for this interest in analyst coverage is offered by Aggarwal, Krigman and Womack (2002). They develop a model in which issuers use underpricing to generate analyst coverage and maximize the stock price at the end of the lock-up period, that is, when they can sell their retained shares.

Providing coverage, especially favorable coverage, for an IPO stock, is not without costs for an underwriter. In addition to the cost of devoting human resources, there is potentially a reputational cost to be borne, if investors perceive that analyst recommendations are slanted. Yet recent newspaper headlines have shown that investment bankers are sometimes willing to bear such costs. Michaely and Womack (1999) find evidence suggesting that analyst recommendations for IPO stocks are tainted by conflict of interest.

We hypothesize that analysts affiliated with the IPO underwriter are more actively involved in supporting book-built IPOs than auctioned IPOs in the year following the offering. Our hypothesis yields a number of testable predictions. Relative to auctioned IPOs, affiliated analysts in book-built IPOs should provide (1) more analyst reports, (2) more recommendations, (3) more favorable recommendations, and (4) more recommendations when the stock price does poorly (known as "booster shots" – see Michaely and Womack (1999)).

In addition to the lead underwriter's direct contribution to coverage through research reports and recommendations, we hypothesize that the underwriters of book-built IPOs also use their resources to influence the coverage of the IPO stocks by

unaffiliated analysts and other third parties, such as the press. Influencing the press may be achieved simply through a targeted public-relations effort. The channels of influence using unaffiliated analysts are more subtle. An important feature of the book-building mechanism is the complete discretion of the underwriter over the allocation of shares in case of excess demand. This discretion gives the underwriter a substantial amount of power vis-à-vis investors, and in particular vis-à-vis banks that act as brokers for their customers. We hypothesize that underwriters may use this power to induce these banks to provide positive coverage to their recent IPOs.

Consider two investment banks, A and B. Bank A has taken company X public, and is going to take company Y public next month. Bank B was not part of the underwriting syndicate for the IPO of X, nor does it expect to be part of it for the IPO of Y. Yet Bank B hopes to obtain generous share allocations of IPO Y next month. One way to curry favor with Bank A is to issue favorable recommendations on the X stock. Thus, we expect the coverage of a book-built IPO by analysts unaffiliated with the underwriter to be especially favorable when that same underwriter is about to take another company public using the book-building mechanism.

Chemmanur and Liu (2002) offer a related information production theory to explain the choice of auctions vs. fixed-price offerings. They observe that even if auctions allow an issuer to maximize issue proceeds, issuers with favorable private information about the value of their company may prefer a book-built offering if they also care about the long-term value of the stock. The reason is that a book-built offering may induce a higher level of information production about the company, leading to a higher long-term valuation. The predictions of their model are in part similar to those of

our “quid pro quo” story: both frameworks predict lower visibility for auctions, in the form of press coverage or analyst recommendations. Unlike our “quid pro quo” argument, the Chemmanur and Liu (2002) argument does not predict that coverage will be less slanted for auctioned IPOs, only that it will be less abundant. The information production view also has several testable predictions of its own: in particular, book-built IPOs should exhibit higher post-IPO valuations. If the goal of book-built issuers is to maximize the long-term valuation of their stocks, they should also return to the market more often in the years following the IPO.

3) Institutional features of the French IPO market

The French IPO market offers an ideal testing ground for the hypotheses developed in the previous section. Historically, two IPO mechanisms were used there: Offre à Prix Minimal, an auction mechanism, and Offre à Prix Ferme, a fixed-price mechanism. In 1993, the book-building procedure was made available to issuers by the stock market authorities. For a few years, these three mechanisms co-existed. In this paper, we consider auctioned and book-built IPOs between 1993 and 1998, a period over which the two mechanisms were roughly used with equal frequency.

The book-building mechanism used in France is similar to its North-American counterpart.[2] A few weeks before the offering, the issuer and the lead underwriter (or book-manager) agree on an initial price range. Then the “road-show” starts, during which the underwriter and the issuer advertise the offering to potential investors. The underwriter collects indications of interest from investors. These indications of interest

[2] For a more detailed description of the two listing mechanisms and institutional details of the French IPO market, see Derrien and Womack (2003).

specify a quantity of shares, and may or may not specify a price limit. They can be cancelled or modified before the offering. Right before the offering, the lead underwriter closes the order book, sets the IPO price and allocates the shares with complete discretion.

In auctioned IPOs, the price setting and share allocation process is done in the following way. A few weeks before the shares start trading, the issuer and the underwriter agree on a minimum price. Investors are then asked to submit orders. These orders must contain a quantity and a limit price above the minimum price. Contrary to indications of interest submitted in book-built offerings, these orders cannot be withdrawn before the offering. The orders are collected by The Paris Bourse. A few days before the IPO date, the Paris Bourse sets a maximum price, above which orders are eliminated,[3] and proposes several IPO prices to the issuer. There is no written rule as to how these IPO prices are chosen, but discussions with issuers and Paris Bourse employees suggest that they are set slightly below the market clearing price. The issuer and the underwriter choose the IPO price from the set of prices proposed by the Paris Bourse. All orders with prices above the IPO price and below the maximum price are served at the IPO price, and rationing is done on a pro rata basis.

Thus, whereas the role of the underwriter is crucial in book-built offerings, it is much more modest in auctioned IPOs. Moreover, as is the case in most U.S. IPOs, book-built offerings are associated with a firm commitment of the underwriter. On the contrary, auctions are associated with "best effort" contracts, i.e. the underwriter is not committed to buying the shares that are left unsold to the public.

[3] The goal of this maximum price is to prevent investors from free-riding on the mechanism by placing orders at very high prices in order to get IPO shares that are underpriced on average.

Initial public offerings of stock can take place on three exchanges. The Premier Marché is the exchange on which the largest companies are traded. Except for a few large firms, few IPOs take place on this exchange, and issuers generally choose to list on the Second Marché or on the Nouveau Marché. Due to different listing requirements, the Second Marché attracts well-established mature companies, whereas the Nouveau Marché is designed for growth companies. This exchange was created in 1996 following the Nasdaq's model.

The French sell-side security analyst market is similar to its U.S. counterpart. However, contrary to the U.S. IPO market, there is no "quiet period" in France for IPO stocks. Therefore, there is no clustering of initiation of analyst coverage a few weeks after the offering, as is the case in the United States.[4] Analyst coverage can start as early as the IPO date, or even before the company's shares are traded.

4) The data

also ignore companies transferred from the Marché Libre, a transitory exchange that is comparable to the OTC market in the U.S. Indeed, informational issues may be less important for these companies, which have been publicly traded before their IPO, than for "regular" offerings. Thus, our sample contains 204 initial public offerings. 114 of them are book-built offerings, 90 are auctions.

The information about the characteristics of the IPO firms and the details of the offering comes directly from preliminary prospectuses. This information consists of the financial statements of the company in the years preceding the offering, the IPO mechanism used, the number of shares offered, the initial price range (for book-built offerings) and minimum price (for auctions), and the names of lead underwriters and co-managers. For 12 auctioned IPOs, we were not able to identify the lead underwriters. In subsequent tests, whenever we examine hypotheses related to the behavior of analysts affiliated to the lead underwriter, we eliminate these 12 offerings from our sample.

The information on the IPO price was obtained from Euronext, as were aftermarket prices in the year following the IPO. The data on trading volume and bid-ask spreads in the year following the offering comes from Datastream.

For each IPO in our sample, we collected analyst recommendations from the I/B/E/S analyst-by-analyst recommendation database. We consider analyst recommendations issued in the one year period following the IPO. For each recommendation, the date of the recommendation is available, as is the type of the recommendation (classified by I/B/E/S as 1: strong buy, 2: buy, 3: hold, 4: underperform, and 5: sell), and the name of the broker who issued the recommendation. Overall, we identified 845 such recommendations for the 204 IPOs in our sample.

We also collected information on the number of reports written by brokers in the year following the offering and on the number of newspaper articles written about the IPO companies from six months before the offering to one year after the IPO. The number of broker reports is obtained from the Investment research database of Thomson Research. For each IPO company, we know how many broker reports have been written in the year following the offering, as well as the name of the brokerage house that issued the report. The number of newspaper articles in which the names of the IPO companies appeared in headlines or lead paragraphs was collected using Factiva.

Moreover, we hand-collected information on equity issues realized by our IPO companies in the five-year period following their initial offering from the company files stored by Euronext. This information contains the date and amount of each SEO.

5) Empirical results

A. Summary statistics

Table 1 presents descriptive statistics of our IPO sample.

[Insert Table 1 about here.]

In Table 1, Panel A, we present the number of IPOs per year, exchange, and industry. First, we notice that the proportion of book-built IPOs has increased over the period. Whereas between 1993 and 1997, the number of offerings using the two mechanisms was quite balanced, there were twice as many book-buildings as auctions between January and August 1998 (52 vs. 26). As for exchanges, the use of the two mechanisms is well balanced on the Second Marché. On the contrary, all Nouveau

Marché IPOs have used the book-building mechanism, even though choice is permitted by the exchange authorities. The important role of the underwriter as well as the firm commitment contract associated with book-building may be used as a certification mechanism by Nouveau Marché offerings, which are young, growth companies, and for which the listing requirements are not as strict as for Second Marché IPOs.[5] Industries are quite balanced between the two mechanisms, with few exceptions: information technology companies seem to prefer the book-building mechanism, which is probably due to the fact that a large fraction of these IPOs are listed on the Nouveau Marché.

Table 1, Panel B presents the list of lead underwriters that managed our sample IPOs. Three of our lead underwriters are not recorded in the I/B/E/S recommendation database. These three intermediaries were lead underwriters of 9 offerings (6 auctions and 3 book-buildings).[6] Some of the other underwriters of the list are not directly included in I/B/E/S, but one of their subsidiaries or their mother company is. In such cases, we consider the bank and its subsidiary as one single entity. Thus, we consider that analysts affiliated to the mother company are also affiliated to its subsidiary, and vice versa. Panel B of the table also shows that large underwriters are as likely to do auctions as book-building. In fact, the largest lead underwriter in terms of the number of IPOs completed over the period, Banques Populaires, appears to be specialized in auctions (33 of the 37 IPOs underwritten by this bank were auctions).[7]

[5] The intrinsic differences between Nouveau Marché and Second Marché offerings might have biased our statistical tests. We verified that when we eliminate Nouveau Marché offerings from our sample, our results are virtually unchanged.

[6] In subsequent tests, whenever we examine hypotheses related to the behavior of analysts affiliated to the lead underwriter, we eliminate these 9 IPOs.

[7] Since Banques Populaires accounts for about one third of the auction sample, a legitimate concern is that our subsequent results might be driven by the specifics of this bank. We checked that our results are unchanged when we remove the IPOs underwritten by this bank from our sample.

In Table 1, Panel C, we present summary statistics of the IPO sample. Book-built IPO companies are on average larger than auctions. Their size also exhibits more variance (with an interquartile range of FF 431 million, vs. FF 161 million for auctions). On the Second Marché, large issuers tend to choose book-building. On the Nouveau Marché, where issuers are typically small, all IPOs have used this listing mechanism. Book-built offerings are also younger on average. Again, Nouveau Marché offerings explain this result. They also use more underwriters on average, and pay larger IPO fees (7.05% vs. 5.53% for auctioned IPOs). Note that the information on IPO fees was available for only a very small fraction of auctioned offerings (11 out of 90 such IPOs). This may explain why our results differ from the level of underwriting fees for auctioned offerings suggested by practitioners, which is closer to 3% of gross proceeds. Book-built issuers tend to do more SEOs in the five-year period following their IPO (0.51 per firm on average, compared to 0.28 for auctions). They also have larger initial returns, consistent with the findings of Derrien and Womack (2003).

B. The IPO procedure chosen and levels of analyst coverage

Table 2 presents statistics on the number of analyst reports and analyst recommendations issued in the year following the IPO for both mechanisms. The number of analyst reports is obtained from the Investment research database of Thomson Research, whereas individual recommendations come from the I/B/E/S analyst-by-analyst database. Both sources give the name of the broker that issued the report or the recommendation, which allows us to determine the affiliation of the analyst.[8] An analyst

[8] Throughout the paper, we focus on the name of the brokers who issued reports or recommendations, not on the name of individual analysts, and we use the terms “broker” and “analyst” interchangeably.

can be *lead-affiliated*, *non lead-affiliated*, or *unaffiliated*. We consider that the analyst is *lead-affiliated* if he or she works for the lead underwriter of the offering, or one of its subsidiaries, or its mother company. An analyst is *non lead-affiliated* if he or she works for any other underwriter of the IPO (excluding the lead underwriter), one of its subsidiaries, or its mother company. All the analysts that are not affiliated with the lead underwriter or co-underwriters are considered *unaffiliated*.

[Insert Table 2 about here.]

The first column of Table 2, Panel A presents statistics on the number of analysts that issued at least one recommendation in the year following the offering. Lead-affiliated analysts do so much more frequently for book-buildings than for auctions: only 26% of auctions received at least one recommendation from their lead underwriter, as opposed to 62% of book-buildings. Unaffiliated analysts issue more recommendations for book-built offerings: only 29% of book-built IPO firms received no unaffiliated recommendations, as opposed to 47% of auctions, and 18% of book-buildings received recommendations from more than 4 unaffiliated analysts, vs. 9% of auctions.

The second column of Table 2, Panel A breaks down our sample according to the number of analyst research reports covering the IPO. Most companies receive no analyst reports at all in the year following their IPO. But book-built offerings attract the attention of more analysts than auctions: almost none of our auction sample IPOs had such reports written by lead-affiliated analysts, while more than 20% of book-built IPOs did. The same pattern holds, to a lesser extent, for non lead-affiliated and unaffiliated analysts.

The third column of Table 2, Panel A classifies offerings according to the number of recommendations received in the first year of their public life. Again, book-built IPOs

attract more recommendations from lead-affiliated and unaffiliated analysts than their auctioned counterparts.

Table 2, Panel B broadly confirms these results in a multivariate analysis. We run Poisson regressions where the dependent variables are the number of analysts issuing recommendations in the year following the IPO (column 1), the number of analyst reports (column 2), and the number of recommendations received (column 3). The book-building dummy is the explanatory variable of principal interest. To avoid any left-over variable bias, we include other explanatory variables that are likely to influence analyst coverage, and may be correlated with the IPO procedure used. Rajan and Servaes (1997) and Cliff and Denis (2003) find that initial underpricing is strongly associated with analyst coverage, so we include initial returns as an independent variable. An IPO with more underwriters may benefit from greater coverage, hence we include the number of underwriters as well. We include the stock exchange, firm size, IPO year and industry as control variables.[9]

The regressions in Table 2, Panel B strongly suggest that book-building is associated with greater analyst coverage – especially coverage from lead-affiliated analysts. For example, book-built IPOs receive about twice as many recommendations (and 19 times as many reports) from lead-affiliated analysts as auctions (*p*-value: 5% or less).

C. Are lead-affiliated analysts more bullish in book-built IPOs?

[9] To conserve space we do not report the coefficients on the industry or the IPO year dummy variables.

Are analyst recommendations more positive for book-built IPOs than for auctions? Our quid pro quo hypothesis predicts that affiliated analyst recommendations should be.

[Insert Table 3 about here.]

In Table 3, Panel A, we consider all analyst recommendations issued within one year of the initial public offering for our sample of companies.[10] Lead-affiliated analysts are more positive for book-built than for auctioned offerings: 82% of their recommendations on book-buildings are "strong buys" or "buys", compared to 67% for auctions. The same picture appears for non lead-affiliated analysts, whose recommendations are "strong buys" or "buys" 84% of the time for book-buildings (vs. 68% for auctions). Unaffiliated analysts exhibit no difference in bullishness across the two types of offerings.

These results are confirmed by the multiple regressions of Table 3, Panel B. We report ordered probit regressions in which each individual analyst recommendation is used as an observation. In order to take into account the fact that recommendations for the same company can be correlated and that some companies receive more recommendations than others, we calculate *z*-statistics using Huber's (1967) methodology.[11] Both lead-affiliated and non lead-affiliated recommendations are significantly more positive for book-built than for auctioned offerings (i.e. the book-building dummy variable exhibits a significantly negative sign at the 1% and at the 10%

[10] Analysts mostly issue "strong buy" and "buy" recommendations for our sample of IPOs (71% of the recommendations are of one of these two types), consistent with previously documented findings for seasoned companies (Womack (1996)).

[11] In the rest of the paper, we use the same methodology whenever different firms have different numbers of observations.

level for lead-affiliated and non lead-affiliated recommendations respectively). Holding other variables at their sample means, the likelihood of receiving a "strong buy" recommendation from a lead-affiliated analyst increases by 19% (from 25% to 44%) for book-built offerings, and the likelihood of receiving a positive ("strong buy" or "buy") recommendation increases by 22% (from 57% to 79%).[12] This result is consistent with our quid pro quo hypothesis. Unaffiliated analysts, on the contrary, do not issue more favorable recommendations to either of the two types of offerings.

D. Booster shots

In Table 4, we explore analyst recommendations conditional on past stock price performance of IPO firms. Under the quid pro quo hypothesis, we are more likely to observe positive recommendations after poor performance from affiliated analysts, a practice known as giving "booster shots". Table 4, Panel A presents the number of analyst recommendations and their average type depending on the past stock price performance of the IPO. For each recommendation, past performance is calculated as the average daily buy-and-hold return since the offering adjusted using size and book-to-market portfolios of seasoned companies. Seasoned companies are split into 5 size portfolios and 5 book-to-market portfolios, and each IPO is assigned to one of the 25 size/book-to-market portfolios depending on its size and book-to-market values as of IPO date.

[Insert Table 4 about here.]

[12] See Greene (2003), p. 736, on the interpretation of ordered probit coefficients.

Consistent with the quid pro quo hypothesis, the results in the first two columns of Table 4, Panel A suggest that lead-affiliated analysts provide "booster shots" to book-building IPO firms: the worse the past performance, the more favorable the recommendation (the average recommendation type is 1.64 for recommendations in the third of bad performance, 1.96 in the good-past performance third). Moreover, almost half the recommendations for book-built IPOs coming from lead-affiliated analysts follow bad performance (Panel A, first column). In other cells of the table, analyst recommendations are almost always less favorable after bad performance than after good performance. In particular, analysts affiliated with lead underwriters of auctions do not seem more keen on providing recommendations after bad performance, and when they do so, they provide unfavorable recommendations (the average recommendation type is 2.23 for recommendations in the bottom third of performance, vs. 1.93 in the top third).

We examine in greater detail the "booster shot" phenomenon in Panels B and C of Table 4. In Panel B, we run ordered probit regressions in which the dependent variable is the type of recommendation. In addition to the usual set of control variables and a *lead-affiliated* dummy variable, equal to 1 when the analyst is lead-affiliated, we create two interaction variables: *Lead-affiliated*negative past performance* is equal to one when the analyst is lead-affiliated and the adjusted past performance since the offering is negative, 0 otherwise. *(1-Lead-affiliated)*negative past performance* is equal to one when the analyst is not lead-affiliated and the adjusted past performance since the offering is negative, 0 otherwise. We run this regression for book-built and auctioned IPOs separately.

For book-built offerings, the coefficient on the *Lead-affiliated*negative past performance* variable is negative, whereas the coefficient on the *(1-Lead-affiliated)*negative past performance* variable is significantly positive at the 1% level. Thus, after bad performance, lead-affiliated analysts issue more favorable recommendations while other analysts issue less favorable recommendations. These two coefficients are significantly different at the 1% level. This result confirms that "booster shots" are prevalent and significant for lead-affiliated analysts in book-built IPOs. The picture is opposite for auctions: the signs are reversed – that is, following poor stock price performance, lead-affiliated analysts issue *less* favorable recommendations, while other analysts issue more favorable recommendations. Lead-affiliated analysts administer "booster shots" in book-built IPOs, not in auctions.

As another cut on the "booster shot" phenomenon, Table 4, Panel C, examines the total number of positive recommendations ("buy" or "strong buy") given to an IPO by its lead-affiliated analysts in each month of the first post-IPO year. Our objective is to track whether analysts decide to issue positive recommendations on the basis of recent stock price performance. We run Poisson regressions in which the dependent variable is the number of positive recommendations for each firm/month pair. In addition to the usual set of control variables, we include a variable named *Performance change* and the number of months since the IPO. *Performance change* is equal to 1 in a month when the stock's price performance had been positive since the IPO but turned negative in the prior month.[13] (This is exactly the situation in which a booster shot by the underwriter would be expected.)

[13] Past performance is calculated as the Cumulative Abnormal Return since the IPO, using comparable size and book-to-market portfolios as benchmarks.

The results in Table 4, Panel C reinforce the impression conveyed by Panels A and B. For book-built offerings, a recent negative change in stock price performance is associated with an increase in the monthly number of positive recommendations issued by lead-affiliated analysts: book-built IPOs receive about twice as many positive recommendations from lead-affiliated analysts when their performance changed from positive to negative recently (the coefficient of the *Performance change* variable is significantly positive at the 5% level). Such is not the case for auctioned offerings.[14] Overall, the results presented in Table 4 are consistent with our "booster shot" hypothesis that lead-affiliated analysts support book-built IPOs (but not auctioned IPOs) by issuing favorable recommendations after poor stock price performance.

E. Do unaffiliated analysts try to curry favor with the underwriter?

Our attention so far has focused mostly on affiliated analysts. Next, we consider unaffiliated analysts, and examine their incentives to provide support to IPO stocks. Our conjecture (suggested to us by conversations with practitioners) is that book-building underwriters, who choose the allocation of shares, may also influence the behavior of unaffiliated analysts. In order for the lead underwriter to allocate generous amounts of shares to their clients, unaffiliated analysts may be induced to offer coverage that favors this underwriter. One way of doing this is by issuing favorable recommendations on the recent IPOs made by the underwriter. We might expect unaffiliated analysts to be especially prone to this ingratiating behavior when it is most valuable for the underwriter, that is, when the IPO has been doing poorly. This hypothesis, which we label the

[14] For auctioned offerings, we also find that the number of positive recommendations issued by lead-affiliated analysts decreases with the number of months since the IPO. We do not observe this phenomenon for book-built IPOs, which indicates that support by lead-affiliated analysts, in addition to being stronger for book-buildings than for auctions, also lasts longer.

"currying favor" hypothesis, is only relevant for book-built IPOs, since the allocation of auctioned IPO share is non-discriminatory.

In Table 5, we test this hypothesis by counting the number of positive ("buy" or "strong buy") recommendations issued by unaffiliated analysts in two distinct situations:

- when the lead underwriter of the IPO is underwriting another IPO before the end of the next month,[15]
- when the lead underwriter of the IPO is not underwriting another IPO before the end of the next month.

[Insert Table 5 about here.]

Table 5, Panel A shows that book-built IPOs receive more positive recommendations from unaffiliated analysts in the months when their lead underwriter is about to underwrite another book-built offering (0.22 on average) than in the months when this is not the case (0.17 on average). This phenomenon is most pronounced for firms in the bottom third of past performance: poor-performance IPOs receive three times as many unaffiliated positive recommendations per month on average when their lead underwriter is doing another book-building in the next month as when he is not (the difference is statistically significant at the 5% level).

We also find that when unaffiliated analysts' incentives to curry favor with the lead underwriter are low – that is, when the lead underwriter is not about to do another IPO soon – unaffiliated analysts issue all the more positive recommendations as past IPO performance is stronger. This association breaks down when unaffiliated analysts'

[15] We believe that one month is a natural window to consider. Indeed, allocation decisions for book-built IPO shares are presumably not made more than a month in advance.

incentives to curry favor with the underwriter are high -- that is, when the lead underwriter is due to take another company public in the coming month.

Unlike book-built offerings, auctioned IPOs do not exhibit this result. The number of unaffiliated positive recommendations per month is quite similar independently of whether the underwriter is doing another IPO in the following month.

These results are confirmed in the Poisson regressions presented in Table 5, Panel B. In the first column of the table, in which we consider book-built IPO firms, the *New IPO in the next month* variable, equal to 1 when the lead underwriter of the offering is underwriting an IPO the next month, is positively associated with the monthly number of unaffiliated positive recommendations received by an IPO firm (*p*-value: 6%). The coefficient is larger and statistically significant at the 5% level when we consider firm/month pairs in the bottom third of past performance only (in the third column): book-built IPOs in the bottom third of past performance receive 53% more positive recommendations from unaffiliated analysts when their underwriter is about to underwrite another book-building in the next month. Again, no such pattern appears for auctioned IPOs (see columns 2 and 4 of Table 5, Panel B).

F. IPO procedure and press coverage

If book-building underwriters want to support the aftermarket price of the IPO stocks they underwrote, they may also influence other information sources by providing them with more (presumably favorable) information about the firm's prospects. In Table 6, we consider the coverage of book-built vs. auctioned offerings in the press. For each IPO in our sample, we count the number of newspaper articles in which the firm's name appeared in the headline or lead paragraph in the year following its offering.

[Insert Table 6 about here.]

In Panel A of the table, we classify IPO firms depending on the number of newspaper quotes received in the year following the offering. Book-built offerings appear to be significantly more covered by the press than auctioned IPOs: only a quarter of book-built IPO firms receive ten newspaper quotes or less in the year following their IPO, compared to more than 50% of auctions, and about a quarter are cited in more than 30 newspaper articles (vs. about 7% for auctions). This is confirmed in the first column of Table 6, Panel B. In a multivariate analysis controlling for size, industry and other IPO characteristics, we find that the number of articles covering a book-built IPO is 38% higher than for auctioned IPOs (*p*-value: 2%).

Might book-built IPOs be intrinsically more visible or attractive to the press? We examine this possibility by considering press coverage before the offering. Typically, IPOs choose their underwriter and IPO procedure about three months before the offering. Before that date, any difference in press coverage is likely attributable to intrinsic visibility differences. From that date onward, the underwriter's incentives to advertise the IPO in the press are in place.

We split the six-month period before the IPO into two three-month periods, assumed to correspond to before and after the firm chooses its IPO procedure. Table 6, Panel A, suggests that book-built offerings receive more press coverage only after they have chosen the book-building mechanism. Before they choose their IPO procedure, auctioned IPOs receive about the same amount of press coverage as book-built IPOs (70% of book-built IPO firms are never cited in the press, as opposed to 62% of auctions).

After issuers choose their IPO procedure (in the three months preceding the offering), the picture becomes consistent with the post-IPO press coverage: only 26% of book-built IPOs receive five newspaper quotes or less (compared to 64% of auctions), and 39% receive more than ten (compared to 8% for auctions). This result is confirmed in Table 6, Panel B. In the three-month period preceding the offering, book-built IPOs receive 50% more press coverage than auctions (*p*-value: 0.1%). Thus, the extra press coverage enjoyed by book-built IPO firms appears to be the result of their IPO procedure, rather than other intrinsic company characteristics.

G. Do investors disentangle analysts' incentives?

Next, we ask whether investors disentangle analysts' incentives by looking at stock price reactions to positive ("strong buy" or "buy") recommendations for all types of security analysts and the two types of IPO mechanisms. If investors are suspicious of analysts' incentives, they should discount positive recommendations by lead-affiliated analysts, especially when these recommendations are likely to be "booster shots" meant to prop up an IPO's faltering price.

[Insert Table 7 about here.]

Table 7, Panel A reports the stock price reaction to positive recommendations, measured by performance between recommendation date minus one day and recommendation date plus one day adjusted using size and book-to-market portfolios. This reaction is significantly positive in two situations: when non lead-affiliated analysts issue positive recommendations about book-built IPO firms, and when unaffiliated analysts issue positive recommendations about auctioned IPO firms. This is consistent

with the “skeptical market” hypothesis of Bradley, Jordan and Ritter (2004), that is, with investors’ rationality and our previous findings that these analysts seem to provide honest recommendations. More surprising is the positive mean reaction to positive recommendations from lead-affiliated analysts for book-built IPOs.

Next, we explore this point in greater detail. Our previous results indicate that lead-affiliated analysts issue (presumably biased) positive recommendations in order to support the stock price of their IPO firms only when their performance has been disappointing. In Table 7, Panel B, we examine reactions to lead-affiliated analyst positive recommendations for book-buildings, depending on the past performance of the IPO. Consistent with the “skeptical market” view, we find a large difference between reactions to recommendations following bad performance and those that follow good performance: -0.65% vs. 5.79% on average, -0.62% vs. 1.95% for the median, respectively. The average (median) price reactions for firms in the top and bottom thirds of past performance are statistically significantly different from each other at the 5% (the 10%) level. This suggests that investors understand the incentives of lead-affiliated analysts, and react favorably to their positive recommendations only when they follow good past performance. Auctioned offerings exhibit no such effect.

Panels C and D of Table 7 examine the one-year stock price performance following positive recommendations. One-year performance starting two days after the recommendation is calculated as a buy-and-hold return adjusted using size and book-to-market portfolios. Median one-year performances following positive recommendations are statistically significantly negative for all types of analysts for book-built IPO

companies (at the 5% level, the 10% level, and the 5% level for lead-affiliated, non lead-affiliated, and unaffiliated analysts, respectively).

In Table 7, Panel D, we present multiple regressions in which the dependent variable is one-year stock price performance following positive recommendations. We find that the coefficient of the book-building dummy variable is significantly negative at the 5% level when we consider lead-affiliated recommendations: after a positive recommendation from a lead-affiliated analyst, book-built IPOs underperform auctions by 39% on average. If negative average stock price performance following positive recommendations is associated with analyst's bias at the time he or she issues the recommendation, this result is consistent with our previous findings on the behavior of lead-affiliated analysts.

H. Is the choice between auctions and book-building driven by information production considerations?

We now turn our attention to the alternative hypothesis presented in Section 2, that is, the possibility that book-building is chosen by high-quality companies willing to generate information production in the IPO process. Our previous findings are partially consistent with this hypothesis. The fact that book-built offerings receive more analyst recommendations than auctions in the year following their IPO, and the extra press coverage they enjoy, may be the consequence of increased information production around the IPO. However, this theory does not provide an explanation for our results on the apparent bullishness of affiliated analysts in book-built IPOs. Moreover, the information production theory of the choice between auction and book-building has testable predictions of its own. According to the theory, firms choosing book-building to go

public should be of higher quality, and presumably these firms, whose goal is to maximize long-term stock price, should also return more frequently to the equity market to raise cash after the IPO.

In Table 8, we test predictions which we believe emerge directly from the information production theory: other things equal, book-built IPOs should have higher IPO prices relative to observable characteristics than auctions, exhibit higher aftermarket liquidity, and raise more equity in the stock market in the years following their IPO.

[Insert Table 8 about here.]

We do not find support for these predictions. First, we regress the book-to-market value of our IPO firms calculated ten days after the offering[16] against a set of control variables and a book-building dummy variable. The coefficient on the book-building variable is equal to 9.67% and is significantly positive at the 1% level, indicating that, other things equal, book-built offerings have book-to-market values about 10% above those of their auctioned counterparts at the IPO date. Thus, book-built offerings have relatively lower IPO valuations than auctions.

The three measures of liquidity we use in the next regressions are the average trading volume, the average turnover, and the average bid-ask spread (normalized by the mid-price) in the year following the IPO. The regression in column 2 indicates that book-building companies have higher trading volume than auctions, but in the two regressions presented in columns 3 and 4 of the table, they do not appear to have larger turnover or lower bid-ask spreads.

[16] We consider market capitalization using the price at the end of the 10th trading day instead of the IPO price because a higher degree of underpricing (i.e. a lower IPO price) may be chosen by book-building issuers in order to elicit information production.

Finally, we consider seasoned equity offerings done in the five-year period following the IPO, both in terms of number of SEOs done during this period and total amount raised. In Panel C of Table 1, we observed that book-built offerings did more SEOs in the next five years than auctions on average. However, this result does not hold up in the multivariate analysis of Table 8, columns 5 and 6.

6) Discussion

Our central argument is that issuers are willing to pay the higher costs of book-building in exchange for increased and more favorable analyst coverage when they choose book-building rather than an auction. Why, then, does book-building dominate auctions – and why did book-building completely crowd out auctions in France after 1998? Loughran and Ritter (2004) argue that a shift occurred in the late 1990s, especially during the Internet bubble, whereby issuing firms placed increasing weight on analyst coverage. They call this the "analyst lust" hypothesis, and they argue that it can explain in part the surge in IPO underpricing during that period. We conjecture that a similar shift occurred outside the U.S., and that it contributed to the demise of IPO auctions in France. Faced with a choice between auctions (low cost, low coverage) and book-building (high cost, high coverage), firms increasing chose the latter as the perceived importance of analyst coverage grew.[17]

In addition to explaining the preference for book-building, our evidence also sheds light on the issue of the conflicts of interests faced by underwriter-linked analysts in IPOs. Michaely and Womack (1999) provide evidence consistent with a conflict of

[17] One of the forces underlying Loughran and Ritter's "analyst lust" hypothesis is the increase in company valuations in the late 1990s. When companies' growth opportunities fetch higher prices, a small change in expected growth rates results in a larger change in selling price, leading companies to place greater weight on analyst coverage.

interest. On a sample of U.S. IPOs, they find that underwriter analyst recommendations are more bullish than recommendations from unaffiliated analysts. However their evidence is also consistent with Kahneman and Lovallo's (1993) "inside view." According to this view, affiliated analysts view the IPO their bank took public in a narrow frame. Like parents who view their children as special, they are unable to accept the statistical reality that many of their IPOs will turn out to be average or below average, and therefore, they are more likely to issue bullish recommendations than unaffiliated analysts, who are more willing to take a cold, "outside view." If underwriter analyst bullishness were only due to the "inside view" explanation, we would expect no difference in coverage or bullishness between auctioned IPOs and book-built IPOs. Hence our evidence provides additional support for the conflict of interest explanation of underwriter analyst bullishness.

7) Conclusion

Two facts appear indisputable. First, book-building as a selling procedure for initial public offerings has captured most of the market share in most important global equity financing markets in the last 5 years. Second, and not inconsequentially, is the fact that book-building is by far the most costly procedure available in terms of direct fees and indirect initial underpricing. Together, these points beg an important question of what benefits issuers must believe they are receiving for paying extra. They are not obvious at first blush.

Our evidence supports the claim that in France where book-building and auctions were equally popular for much of the 1990s, underwriters and issuers had a non-contractual quid pro quo arrangement where book-building underwriters promoted the

issuing company through more positive research and press coverage. Not only were the lead underwriters involved, but unaffiliated analysts as well. We document that analysts at unaffiliated investment banks also were more likely to promote a book-built issue if they stood to gain shares in future deals from the book-building underwriter.

We find no evidence that the extra compensation paid to book-building underwriters pays future dividends. Book-built IPOs are no more likely to have longer-term higher returns relative to auctioned shares following positive recommendations. In other words, investors in the long run appear able to disentangle analysts' and their banks' incentives in book-built IPOs. Thus, even though book-building, with its higher direct costs, is more lucrative to investment banks, we find no evidence that this mechanism helps issuers. Maybe book-building is a better mechanism than auctions in some aspects not considered in this paper, but if so, its tangible advantages have yet to be articulated and empirically documented.

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Table 1
Descriptive statistics

The sample consists of 204 offerings (114 book-buildings and 90 auctions) completed between January 1993 and August 1998 on the Second Marché and Nouveau Marché of the Paris stock exchange.
Panel A presents the number of IPOs per year, exchange and industry for the two mechanisms.
Panel B presents the lead underwriters' names, and for each of them, the number of auctions and book-buildings in which he was lead underwriter. *Recs not recorded in I/B/E/S* in the column to the right of the table indicates that the recommendations made by the underwriter's brokerage house are not recorded in the I/B/E/S database.
Panel C presents summary statistics of the sample IPOs per listing mechanism. *Market capitalization* is the total number of shares post-issue times the IPO price, in millions of French Francs. *Age* is the age of the company as at IPO date. *Book-to-market* is the ratio of book to market value of equity as at IPO date. *Number of underwriters* is the total number of deal managers involved in the IPO. *Underwriting fees* is the ratio of fees paid to the underwriters to gross proceeds. *Number of SEOs* is the number of equity offerings in the five years following the IPO. *Initial return* is the percent difference between the IPO price and the closing price at the end of the 10th trading day. *IQR* is the interquartile range.

Panel A: Number of observations per IPO year, exchange and industry

		Book-building	Auction	Total
IPO year	1993	1	1	2
	1994	11	11	22
	1995	1	8	9
	1996	19	23	42
	1997	30	21	51
	1998	52	26	78
Exchange	Second Marché	53	90	143
	Nouveau Marché	61	0	61
Industry	Mechanical engineering	4	3	7
	Intermediate goods	3	5	8
	Other capital goods	3	3	6
	Automotive	2	7	9
	Household/Professional goods	8	8	16
	Pharmaceuticals/Cosmetics	7	7	14
	Opticals	1	1	2
	Textile	5	2	7
	Beverages	5	2	7
	Other agrifood	6	2	8
	Electricity/Electronics/Telecommunication	11	6	17
	Information technology	19	10	29
	Communication/Advertising/Broadcasting	6	7	13
	Consumer retailing	11	9	20
	Sport/Entertainment	4	2	6
	Transport/Storage	3	2	5
	Environment/Collective services	8	5	13
	Sales to business	1	4	5
	Hotels/Catering/Tourism	4	4	8
	Insurance	3	1	4

Panel B: Lead underwriters

Underwriter's name	Book-building	Auction	
ABN Amro	2	0	
Aurel	3	0	
BA Robertson Stephens International	1	0	
Banque Française de Service et de Crédit	0	2	
BNP	7	7	
Banques Populaires	4	33	
Banque CPR	5	0	
Banque Colbert	1	0	
Banque Scalbert-Dupont	1	0	
Banque Worms	2	2	Recs not recorded in I/B/E/S
Banque d'Orsay	0	4	Recs not recorded in I/B/E/S
Banque de Neuflize, Schlumberger, Mallet	1	0	
Banque de Vizille	2	0	
Crédit Agricole	10	10	
Caisse des Dépôts et Consignations	3	0	
Crédit Industriel et Commercial	5	7	
Crédit Lyonnais	15	3	
Crédit National	6	5	
Crédit Mutuel	0	2	
Cyril Finance	1	0	Recs not recorded in I/B/E/S
Ferri	4	0	
HSBC	1	0	
Hambrecht & Quist	3	0	
Lazard	2	0	
Lehman Brothers	1	0	
Lyonnaise de banque	0	1	
Merril Lynch	1	0	
Natexis	1	0	
Natwest	1	0	
Nomura	1	0	
Oddo	2	0	
Paribas	8	1	
Pinatton	9	0	
Société Générale	9	1	
SPEF Technology	2	0	

Panel C: IPO characteristics

		Book-building	Auction
Market capitalization (in MFRF)	Mean	567	287
	Median	263	187
	IQR	431	161
	Min	55	62
	Max	6,138	1,356
	N	114	90
Age	Mean	17.65	18.24
	Median	10.00	15.00
	IQR	14.00	16.00
	Min	1.00	1.00
	Max	124.00	61.00
	N	98	86
Book-to-market	Mean	0.26	0.26
	Median	0.17	0.22
	IQR	0.25	0.17
	Min	-0.01	0.03
	Max	1.16	0.76
	N	111	90
Number of underwriters	Mean	2.08	1.79
	Median	2.00	2.00
	IQR	1.00	1.00
	Min	1.00	1.00
	Max	9.00	4.00
	N	114	90
Underwriting fees	Mean	7.05%	5.53%
	Median	6.76%	4.80%
	IQR	4.84%	7.26%
	Min	1.29%	1.56%
	Max	17.14%	12.90%
	N	78	11
Number of SEOs	Mean	0.51	0.28
	Median	0.00	0.00
	IQR	1.00	0.00
	Min	0.00	0.00
	Max	4.00	3.00
	N	114	90
Initial return	Mean	20.57%	15.93%
	Median	8.94%	7.69%
	IQR	32.26%	26.46%
	Min	-24.97%	-38.21%
	Max	155.00%	128.57%
	N	114	90

Table 2

Number of analyst reports and recommendations by analyst affiliation

Panel A presents the number of analysts who issued recommendations, the number of reports and the number of recommendations issued within one year of the IPO. The first, second and third line present results for lead-affiliated analysts, non lead-affiliated analysts, and unaffiliated analysts, respectively. An analyst is considered *lead-affiliated* if he works for the lead underwriter of the IPO, or one of its subsidiaries, or its mother company. An analyst is considered *non lead-affiliated* if he works for one of the underwriters of the IPO (but not the lead underwriter), or one of its subsidiaries, or its mother company. All other analysts are considered *unaffiliated*. The first column presents the count of IPOs depending on the number of analyst issuing recommendations in the year following the offering. The second column presents the count of IPOs depending on the number of analyst reports issued in the year following the offering. The third column presents the count of IPOs depending on the number of recommendations issued in the year following the offering. The numbers in parentheses are the percentages of IPOs in each category.

Panel B presents Poisson regressions (except for the first line/first column, which is a Probit regression). The dependent variables are the number of analysts, number of analyst reports, and number of analyst recommendations in columns 1, 2 and 3, respectively. The explanatory variables are: *Exchange*, a variable equal to 1 for Second Marché IPOs, 0 for Nouveau Marché IPOs; *Log(market capitalization)*; *Initial return*, the percent difference between the IPO price and the closing price at the end of the 10th trading day; *Number of underwriters*; a *book-building* dummy variable. IPO year and industry dummy variables are used as control variables, but their coefficients are not reported. *z*-statistics are in parenthesis.

* (and respectively **, ***) indicates significance at the 10% level (and respectively at the 5% level, at the 1% level).

Panel A: Number of analysts, analyst reports and recommendations by IPO mechanism and type of analyst affiliation

	Number of IPOs recommended by n analysts within one year of the IPO			**Number of IPOs receiving n reports within one year of the IPO**			**Number of IPOs receiving n recommendations within one year of the IPO**		
Analyst affiliation	**n**	**Book-building**	**Auction**	**n**	**Book-building**	**Auction**	**n**	**Book-building**	**Auction**
Lead-affiliated	0	42 (37.9%)	53 (73.6%)	0	91 (79.8%)	75 (96.1%)	0	42 (37.5%)	53 (73.6%)
	1	69 (62.2%)	19 (26.4%)	1	8 (7.0%)	1 (1.3%)	1	46 (41.1%)	10 (13.9%)
				2	6 (5.3%)	2 (2.5%)	2	13 (11.6%)	7 (9.7%)
				3	5 (4.4%)	0	3	5 (4.5%)	0
				4	1 (0.9%)	0	4	3 (2.7%)	1 (1.4%)
				>4	3 (2.6%)	0	>4	2 (1.8%)	1 (1.4%)
Non lead-affiliated	0	72 (63.2%)	49 (54.4%)	0	106 (93.0%)	89 (98.9%)	0	72 (63.2%)	49 (54.4%)
	1	31 (27.2%)	33 (36.7%)	1	2 (1.7%)	0	1	23 (20.2%)	25 (27.8%)
	2	8 (7.0%)	6 (6.7%)	2	5 (4.4%)	0	2	10 (8.8%)	12 (13.3%)
	3	2 (1.8%)	0	3	1 (0.9%)	1 (1.1%)	3	5 (4.4%)	1 (1.1%)
	4	1 (0.9%)	2 (2.2%)				4	2 (1.7%)	0
							>4	2 (1.7%)	3 (3.3%)
Unaffiliated	0	33 (29.0%)	42 (46.7%)	0	58 (50.9%)	60 (66.7%)	0	33 (29.0%)	42 (46.7%)
	1	29 (25.4%)	21 (23.3%)	1	15 (13.2%)	8 (8.9%)	1	25 (21.9%)	19 (2.1%)
	2	9 (7.9%)	10 (11.1%)	2	15 (13.2%)	11 (12.2%)	2	8 (7.0%)	9 (10.0%)
	3	11 (9.6%)	5 (5.6%)	3	9 (7.9%)	6 (6.7%)	3	13 (11.4%)	5 (5.5%)
	4	11 (9.6%)	4 (4.4%)	4	6 (5.3%)	1 (1.1%)	4	9 (7.9%)	2 (2.2%)
	>4	21 (18.4%)	8 (8.9%)	>4	11 (9.6%)	4 (4.4%)	>4	26 (22.8%)	13 (14.4%)

Panel B: Determinants of number of analysts, analyst reports and recommendations by type of analyst affiliation

		Dependent variable		
Analyst affiliation	**Explanatory variables**	**Number of analysts**	**Number of reports**	**Number of recommendations**
	Exchange	0.500	1.673**	0.108
		(1.46)	(2.51)	(0.34)
	Log(market capitalization)	0.135	0.208	-0.064
		(0.89)	(0.66)	(-0.43)
	Initial return	0.668	0.730	0.279
		(1.56)	(1.04)	(0.79)
Lead-affiliated	Number of underwriters	0.113	0.180	0.160
		(1.01)	(0.73)	(1.28)
	Book-building	1.192***	2.964***	0.725**
		(3.87)	(3.41)	(2.18)
	Constant	-4.085**	-25.856***	-14.974***
		(-2.17)	(-5.03)	(-4.69)
	Pseudo-R^2	0.232	0.376	0.123
	Exchange	0.390	3.844	0.544
		(1.19)	(1.63)	(1.58)
	Log(market capitalization)	0.530***	-0.156	0.531***
		(5.04)	(-0.27)	(4.79)
	Initial return	0.419	-3.686**	0.267
		(1.58)	(-2.23)	(0.88)
Non lead-affiliated	Number of underwriters	0.379***	3.210***	0.432***
		(6.08)	(5.81)	(5.70)
	Book-building	-0.223	5.524***	-0.134
		(-0.83)	(2.69)	(-0.46)
	Constant	-7.495***	-55.371	-7.825***
		(-6.61)	--	(-6.58)
	Pseudo-R^2	0.250	0.693	0.315
	Exchange	0.189	0.375	0.149
		(0.92)	(1.31)	(0.62)
	Log(market capitalization)	0.744***	0.921***	0.812***
		(10.83)	(7.14)	(11.64)
	Initial return	1.060***	0.069	1.117***
		(4.94)	(0.23)	(4.67)
Unaffiliated	Number of underwriters	0.049	0.060	0.066
		(1.12)	(0.62)	(1.62)
	Book-building	0.368**	0.049***	0.307**
		(2.46)	(0.19)	(2.06)
	Constant	-10.298***	-26.888***	-10.932***
		(-8.72)	(-14.11)	(-9.27)
	Pseudo-R^2	0.442	0.355	0.504

Table 3
Type of analyst recommendations by analyst affiliation

Panel A presents the number of analyst recommendations within one year of the IPO by type of recommendation for book-buildings vs. auctions. Recommendations can be of 5 types: 1, 2, 3, 4, and 5 correspond to "strong buy", "buy", "hold", "underperform", and "sell", respectively. The number of recommendations of each type is reported for both IPO mechanisms by type of analyst affiliation. An analyst is considered *lead-affiliated* if he works for the lead underwriter of the IPO, or one of its subsidiaries, or its mother company. An analyst is considered *non lead-affiliated* if he works for one of the underwriters of the IPO (but not the lead underwriter), or one of its subsidiaries, or its mother company. All other analysts are considered *unaffiliated*. The number in parenthesis is the percentage of recommendations in the corresponding category.

Ordered Probit regressions appear in Panel B. Types of recommendations from lead-affiliated, non lead-affiliated and unaffiliated analysts are the dependent variables in columns 1, 2 and 3, respectively. For each recommendation, the type of recommendation is regressed against: *Exchange*, a variable equal to 1 for Second Marché IPOs, 0 for Nouveau Marché IPOs; *Log(market capitalization)*; *Initial return*, the percent difference between the IPO price and the closing price at the end of the 10th trading day; *Number of underwriters*; and a *book-building* dummy variable. *z*-statistics, calculated assuming independence across companies using Huber's robust variance estimator, are in parenthesis.

* (and respectively **, ***) indicates significance at the 10% level (and respectively at the 5% level, at the 1% level).

Panel A: Type of analyst recommendations by IPO mechanism and type of analyst affiliation

Analyst affiliation	Type of recommendation	# for book-buildings	# for auctions
Lead-affiliated	1 (strong buy)	53 (48.2%)	11 (33.3%)
	2 (buy)	37 (33.6%)	11 (33.3%)
	3 (hold)	17 (15.4%)	8 (24.2%)
	4 (underperform)	2 (1.8%)	3 (9.1%)
	5 (sell)	1 (0.9%)	0
Non lead-affiliated	1 (strong buy)	30 (39.5%)	24 (33.8%)
	2 (buy)	34 (44.7%)	24 (33.8%)
	3 (hold)	10 (13.2%)	19 (26.8%)
	4 (underperform)	2 (2.6%)	3 (4.2%)
	5 (sell)	0	1 (1.4%)
Unaffiliated	1 (strong buy)	121 (32.5%)	57 (31.1%)
	2 (buy)	137 (36.8%)	76 (41.5%)
	3 (hold)	76 (20.4%)	33 (18.0%)
	4 (underperform)	30 (8.1%)	14 (7.6%)
	5 (sell)	8 (2.1%)	3 (1.6%)

Panel B: Determinants of analysts recommendations by type of analyst affiliation

	Dependent variable: Recommendation type by		
Explanatory variables	**Lead-affiliated**	**Non lead-affiliated**	**Unaffiliated**
Exchange	-0.582**	0.260	-0.075
	(-2.18)	(1.07)	(-0.44)
Log(market capitalization)	0.195*	0.136	-0.010
	(1.78)	(1.13)	(-0.21)
Initial return	0.349	-0.204	-0.036
	(0.94)	(-0.91)	(-0.27)
Number of underwriters	-0.027	-0.039	-0.041
	(-0.37)	(-0.86)	(-1.03)
Book-building	-0.812***	-0.303*	0.015
	(-3.00)	(-1.67)	(0.14)
Pseudo-R^2	0.035	0.018	0.002
Number of observations	143	147	555

Table 4
Analyst recommendations and past stock price performance

Panel A presents the number and average type of analyst recommendations within one year of the IPO by type of analyst affiliation for book-buildings vs. auctions, depending on past performance. Recommendations can be of 5 types: 1, 2, 3, 4, and 5 correspond to "strong buy", "buy", "hold", "underperform", and "sell", respectively. An analyst is considered *lead-affiliated* if he works for the lead underwriter of the IPO, or one of its subsidiaries, or its mother company. An analyst is considered *non lead-affiliated* if he works for one of the underwriters of the IPO (but not the lead underwriter), or one of its subsidiaries, or its mother company. All other analysts are considered *unaffiliated. Past performance* is the average daily buy-and-hold return adjusted using size/book-to-market portfolios between the IPO date and the recommendation date minus two days. This variable is divided into thirds, and each analyst recommendation is assigned to one third. The number in parentheses is the percentage of recommendations in the corresponding category.

Ordered Probit regressions appear in Panel B. For each analyst recommendation, the type of recommendation is the dependent variable. Book-built IPOs are in column 1, auctions in column 2. The independent variables are: *Exchange*, a variable equal to 1 for Second Marché IPOs, 0 for Nouveau Marché IPOs; *Log(market capitalization)*; *Lead-affiliated*, a variable equal to one if the analyst is lead-affiliated, 0 otherwise; and two interaction variables obtained by multiplying *Lead-affiliated* and 1-*Lead-affiliated* by 1 if past performance is negative, 0 otherwise.

Panel C presents Poisson regressions. The dependent variable is the number of positive recommendations (type 1, "strong buy", or 2, "buy") from lead-affiliated analysts for a given firm/month. The explanatory variables are *Exchange; Log(market capitalization)*; *Months since IPO*, the number of months between the IPO date and the beginning of the month considered; *Performance change*, equal to 1 in a month when the stock's cumulative adjusted price performance had been positive since the IPO but turned negative in the prior month.

z-statistics, calculated assuming independence across companies using Huber's robust variance estimator, are in parenthesis. Coefficients with an "a" (and, respectively, with a "b", a "c") in superscript are significantly different from each other at the 1% level (and, respectively, at the 5% level, at the 10% level).

* (and respectively **, ***) indicates significance at the 10% level (and respectively at the 5% level, at the 1% level).

Panel A: Analyst recommendations by IPO mechanism and type of analyst affiliation depending on past performance

		Book-building		Auction	
Analyst affiliation	**Third of past performance**	**Number of recommendations**	**Average type of recommendations**	**Number of recommendations**	**Average type of recommendations**
Lead-affiliated	1 (bottom)	50 (47.2%)	1.64	13 (39.4%)	2.23
	2 (middle)	32 (30.2%)	1.75	6 (18.2%)	2.17
	3 (top)	24 (22.6%)	1.96	14 (42.4%)	1.93
Non lead-affiliated	1 (bottom)	28 (38.4%)	1.96	26 (37.7%)	1.88
	2 (middle)	19 (26.0%)	1.74	17 (24.6%)	2.18
	3 (top)	26 (35.6%)	1.69	26 (37.7%)	2.23
Unaffiliated	1 (bottom)	123 (34.4%)	2.33	31 (17.7%)	2.19
	2 (middle)	132 (37.0%)	1.99	65 (37.1%)	2.17
	3 (top)	102 (28.6%)	2.02	79 (45.1%)	2.00

Panel B: Determinants of analysts recommendations – Ordered probit coefficients

	Dependent variable: Type of recommendation	
Explanatory variables	**Book-building**	**Auction**
Exchange	-0.153	--
	(-0.94)	
Log(market capitalization)	0.054	0.057
	(0.94)	(0.62)
Lead-affiliated	-0.165	-0.181
	(-1.09)	(-0.66)
Lead-affiliated * negative past performance	-0.279[a]	0.689**[c]
	(-1.26)	(2.00)
(1-Lead-affiliated) * negative past performance	0.459***[a]	-0.068[c]
	(3.45)	(-0.33)
Pseudo-R^2	0.019	0.004
Number of observations	558	287

Panel C: Determinants of the monthly number of positive ("buy" or "strong buy") recommendations from lead-affiliated analysts – Poisson regression coefficients

	Dependent variable: Number of positive recommendations from lead-affiliated analysts for this firm/month	
Explanatory variables	**Book-building**	**Auction**
Exchange	0.353	--
	(1.15)	
Log(market capitalization)	-0.045	-0.036
	(-0.36)	(-0.09)
Months since IPO	-0.048	-0.238***
	(-1.19)	(-2.77)
Performance change	0.708**	0.031
	(2.15)	(0.03)
Constant	-2.053	-1.794
	(-1.43)	(-0.39)
Number of observations	1,221	792

Table 5
Tests of the "currying favor" hypothesis

Panel A presents the average number of positive recommendations (type 1, "strong buy", or 2, "buy") from unaffiliated analysts for a given firm/month, depending on past performance of the company and whether the underwriter of the IPO is underwriting another IPO between the beginning of this month and the end of next month. An analyst is considered *unaffiliated* if he does not work for any of the IPO underwriters. *Past performance* is the average monthly buy-and-hold return adjusted using size/book-to-market portfolios between the IPO date and the beginning of the month considered. This variable is divided into thirds, and each firm/month pair is assigned to one of the thirds. In the first line of Panel A, we consider only book-built IPOs, and break down the sample of firm/month pairs depending on whether the lead underwriter of the IPO is underwriting another book-built IPO in the next month. In the second line of Panel A, we consider auctioned IPOs, and separate the sample of firm/month pairs depending on whether the lead underwriter of the IPO is underwriting another IPO (auctioned or book-built) in the next month. An "a" (and, respectively, a "b") in superscript indicates significant difference between column-2 and column-4 numbers at the 1% level (and, respectively, at the 5% level) in tests of equality of means with unequal variance.

Panel B presents Poisson regressions, in which the dependent variable is the number of positive recommendations for a given firm/month pair from unaffiliated analysts for all firm/month pairs (columns 1 and 2) and for firm/month pairs in the bottom third of past performance (columns 3 and 4). The explanatory variables are *Exchange; Log(market capitalization)*; *Months since IPO*, the number of months between the IPO date and the beginning of the month considered; *Past performance*; and *New IPO in the next month*, equal to 1 if the lead underwriter of the IPO is underwriting another IPO in the next month, 0 otherwise. *z*-statistics, calculated assuming independence across companies using Huber's robust variance estimator, are in parentheses.
* (and respectively **, ***) indicates significance at the 10% level (and respectively at the 5% level, at the 1% level).

Panel A: Number of unaffiliated analyst positive recommendations per month depending on past performance and whether the underwriter is underwriting another IPO in the next month

		Is the lead underwriter doing another IPO in the next month?			
		No IPO in the next month		IPO in the next month	
IPO mechanism	**Third of past performance**	**Number of firm/month pairs**	**Average number of positive recommendations**	**Number of firm/month pairs**	**Average number of positive recommendations**
Book-building	All	1,153	0.17	215	0.22
	1 (bottom)	467	0.10[b]	54	0.30[b]
	2 (middle)	365	0.17	70	0.17
	3 (top)	321	0.28	91	0.22
Auction	All	740	0.13	339	0.11
	1 (bottom)	272	0.03	99	0.02
	2 (middle)	226	0.08	125	0.13
	3 (top)	242	0.27	115	0.17

Panel B: Determinants of the monthly number of positive recommendations from unaffiliated analysts

Dependent variable: Number of positive recommendations this month	**All firm/month pairs**		**Firm/month pairs in the bottom third of past performance**	
Explanatory variables	**Book-building**	**Auction**	**Book-building**	**Auction**
Exchange	0.123	--	0.152	--
	(0.73)		(0.54)	
Log(market capitalization)	0.822***	1.437***	0.840***	1.898***
	(13.66)	(11.69)	(8.13)	(2.65)
Months since IPO	0.007	-0.094**	-0.005	-0.037
	(0.34)	(-2.08)	(-0.14)	(-0.35)
Past performance	0.454***	0.858***	0.915***	0.375
	(9.95)	(8.81)	(2.80)	(0.31)
New IPO in the next month	0.303*	-0.110	0.427**	-0.107
	(1.86)	(-0.48)	(2.25)	(-0.14)
Constant	-12.865***	-20.138***	-13.075***	-26.933***
	(-16.44)	(-12.80)	(-9.18)	(-2.80)
Number of observations	1,368	1,079	521	371

Table 6
Press coverage for book-built vs. auctioned IPOs

Panel A presents the count of IPOs depending on the number of newspaper articles written about the company within one year of the IPO, between IPO date minus 3 months and IPO date, and between IPO date minus 6 months and IPO date minus 3 months (the percentage out of the total number of each IPO type is in parenthesis).

Panel B presents Poisson regressions. The dependent variables are the number of newspaper articles written within one year of the IPO (column 1), between IPO date minus 3 months and IPO date (column 2), and between IPO date minus 6 months and IPO date minus 3 months (column 3). The explanatory variables are: *Exchange*, a variable equal to 1 for Second Marché IPOs, 0 for Nouveau Marché IPOs; *Log(market capitalization)*; *Initial return*, the percent difference between the IPO price and the closing price at the end of the 10th trading day; and a *book-building* dummy variable. IPO year and industry dummy variables are also used as control variables, but their coefficients are not reported. *z*-statistics are in parenthesis.

* (and respectively **, ***) indicates significance at the 10% level (and respectively at the 5% level, at the 1% level).

Panel A: Number of newspaper articles by IPO mechanism

	Number of IPOs receiving n newspaper articles		
Period	**n**	**Book-building**	**Auction**
IPO date to IPO date + 1 year	0 to 5	13 (11.4%)	26 (28.9%)
	6 to 10	17 (14.9%)	23 (25.6%)
	11 to 20	35 (30.7%)	18 (20.0%)
	21 to 30	20 (17.5%)	17 (18.9%)
	>30	29 (25.4%)	6 (6.7%)
IPO date – 3 months to IPO date	0 to 5	30 (26.3%)	58 (64.4%)
	6 to 10	39 (34.2%)	25 (27.8%)
	11 to 20	35 (30.7%)	7 (7.8%)
	>20	10 (8.8%)	0
IPO date – 6 months to IPO date – 3 months	0	80 (70.2%)	56 (62.2%)
	1 to 3	23 (20.2%)	27 (30.0%)
	>3	11 (9.6%)	7 (7.8%)

Panel B: Determinants of number of newspaper articles

	Dependent variable: Number of newspaper articles		
Explanatory variables	**IPO date to IPO date + 1 year**	**IPO date - 3 months to IPO date**	**IPO date - 6 months to IPO date - 3 months**
Exchange	-0.091	-0.209	-0.170
	(-0.55)	(-1.32)	(-0.37)
Log(market capitalization)	0.487***	0.332***	0.763***
	(6.61)	(4.20)	(4.19)
Initial return	-0.005	--	--
	(-0.04)		
Book-building	0.324**	0.409***	-0.373
	(2.38)	(3.15)	(-0.81)
Constant	-4.250***	-3.049***	-9.099***
	(-4.85)	(-2.81)	(-4.43)
Pseudo-R^2	0.412	0.274	0.302

Table 7

Stock price reaction and one-year stock price performance following positive analyst recommendations

Panel A presents the mean and median immediate stock price reactions to positive recommendations (type 1, "strong buy", or 2, "buy") for the three types of analyst affiliation. Stock price reaction is the buy-and-hold return adjusted using size/book-to-market portfolios between recommendation date minus 1 day and recommendation date plus 1 day. An analyst is considered *lead-affiliated* if he works for the lead underwriter of the IPO, or one of its subsidiaries, or its mother company. An analyst is considered *non lead-affiliated* if he works for one of the underwriters of the IPO (but not the lead underwriter), or one of its subsidiaries, or its mother company. All other analysts are considered *unaffiliated*.

Panel B presents the mean and median of immediate stock price reaction to positive recommendations by lead-affiliated analysts only, depending on past stock price performance. *Past performance* is the average daily buy-and-hold return adjusted using size/book-to-market portfolios between IPO date and recommendation date minus 2 days. This variable is divided into thirds, and each recommendation is assigned to one third. An "a" (and, respectively, a "b", a "c") in superscript indicates significant difference between numbers at the 1% level (and, respectively, at the 5% level, at the 10% level) in tests of equality of means with unequal variance.

Panel C presents the mean and median of 12-month stock price performance following positive recommendations, by type of analyst affiliation. Stock price performance is the buy-and-hold return adjusted using size/book-to-market portfolios between recommendation date plus 2 days and recommendation date plus 2 days plus twelve months.

Panel D presents OLS regressions of 12-month stock price performance following recommendations against the following variables, for the three types of analyst affiliation: *Exchange*, a variable equal to 1 for Second Marché IPOs, 0 for Nouveau Marché IPOs; *Log(market capitalization)*; *Past performance*; and a *book-building* dummy variable. IPO year and industry dummy variables are used as control variables, but their coefficients are not reported. *z*-statistics, calculated assuming independence across companies using Huber's robust variance estimator, are in parenthesis.

* (and respectively **, ***) indicates significance at the 10% level (and respectively at the 5% level, at the 1% level).

Panel A: Stock price reaction to positive recommendations by analyst affiliation

Analyst affiliation		Book-building	Auction
Lead-affiliated	Mean	1.12%	1.10%
	Median	0.07%	1.20%
	# of recommendations	88	22
Non lead-affiliated	Mean	1.57%*	-0.67%
	Median	1.12%*	-0.51%
	# of recommendations	61	46
Unaffiliated	Mean	0.28%	0.88%**
	Median	-0.37%	0.44%
	# of recommendations	245	130

Panel B: Stock price reaction to positive recommendations depending on past performance (lead-affiliated analysts only)

Third of past performance		Book-building	Auction
1 (bottom)	Mean	-0.65%[b]	-1.13%
	Median	-0.62%[c]	1.18%
	# of recommendations	43	7
2 (middle)	Mean	1.18%	4.30%
	Median	0.26%	4.35%
	# of recommendations	26	4
3 (top)	Mean	5.79%*[b]	1.34%
	Median	1.95%[c]	-0.43%
	# of recommendations	17	11

Panel C: 12-month stock price performance following positive recommendations by analyst affiliation

Analyst affiliation		Book-building	Auction
Lead-affiliated	Mean	-5.02%	2.22%
	Median	-13.67%**	-21.91%
	# of recommendations	89	22
Non lead-affiliated	Mean	-6.27%	-5.81%
	Median	-19.85%*	-22.67%
	# of recommendations	63	48
Unaffiliated	Mean	2.61%	-0.31%
	Median	-9.20%**	-0.26%
	# of recommendations	253	129

Panel D: Determinants of 12-month performance following positive recommendations by type of analyst affiliation

	Dependent variable: 12-month stock price performance		
Explanatory variables	**Lead-affiliated**	**Non lead-affiliated**	**Unaffiliated**
Exchange	-0.517*	0.036	-0.420
	(-1.73)	(0.14)	(-1.45)
Log(market capitalization)	0.215*	-0.080	0.070
	(1.84)	(-0.83)	(0.93)
Past performance	6.752	-4.242	6.641
	(0.28)	(-0.65)	(1.15)
Book-building	-0.392**	0.0033	-0.345*
	(-2.16)	(0.19)	(-1.88)
R^2	0.322	0.392	0.228
Number of observations	107	107	365

Table 8

IPO prices, liquidity, and probability of doing SEOs for book-built vs. auctioned IPOs

This table present regressions (OLS in all columns except column 5, where the independent variable is *Number of SEOs* and Poisson regression is used). The independent variables are *book-to-market*, where market capitalization is calculated at the end of the 10th trading day; *Log(volume)*, equal to the natural logarithm of average daily trading volume in the year following the IPO; *Log(Turnover)*, the natural logarithm of average daily trading volume divided by the float at IPO date; *Log(spread)*, the average bid-ask spread (in percent of the mid-price) in the year following the IPO; *Number of SEOs*, the number of Seasoned Equity Offerings in the five-year period following the IPO; and *Log(amount raised)*, the natural logarithm of the total amount raised in equity in the five-year period following the IPO, for firms with at least one SEO in this period. The independent variables are: *Exchange*, a variable equal to 1 for Second Marché IPOs, 0 for Nouveau Marché IPOs; *Log(market capitalization)*; *Initial return*, the percent difference between the IPO price and the closing price at the end of the 10th trading day; and a *book-building* dummy variable. IPO year and industry dummy variables are used as control variables, but their coefficients are not reported. *t*-statistics are in parenthesis.

* (and respectively **, ***) indicates significance at the 10% level (and respectively at the 5% level, at the 1% level).

	Dependent variable					
Explanatory variables	**Book-to-market**	**Log(volume)**	**Log(turnover)**	**Log(spread)**	**Number of SEOs**	**Log(amount raised)**
Exchange	0.164***	-0.215	-0.082	0.119	-1.042**	0.772
	(4.24)	(-1.01)	(-0.44)	(1.10)	(-2.00)	(1.04)
Log(market capitalization)	0.008	0.952***	0.080	-0.264***	-0.038	0.890***
	(0.59)	(10.10)	(0.87)	(-6.26)	(-0.24)	(2.80)
Initial return	--	1.219***	1.364***	-0.513***	0.510*	-0.359
		(5.61)	(5.28)	(-4.73)	(1.79)	(-0.80)
Book-building	0.092**	0.346*	-0.266	0.122	-0.262	1.166
	(2.41)	(1.88)	(-1.62)	(1.33)	(-0.49)	(1.47)
Constant	-0.179	-8.062***	-0.477	-1.095*	-14.529***	4.379
	(-0.94)	(-5.67)	(-0.32)	(-1.83)	(-6.33)	(1.05)
R^2	0.168	0.749	0.470	0.577	0.193	0.622
Number of observations	201	141	135	141	204	59

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(lix) This paper was presented at the ENGIME Workshop on “Mapping Diversity”, Leuven, May 16-17, 2002
(lx) This paper was presented at the EuroConference on “Auctions and Market Design: Theory, Evidence and Applications”, organised by the Fondazione Eni Enrico Mattei, Milan, September 26-28, 2002
(lxi) This paper was presented at the Eighth Meeting of the Coalition Theory Network organised by the GREQAM, Aix-en-Provence, France, January 24-25, 2003
(lxii) This paper was presented at the ENGIME Workshop on “Communication across Cultures in Multicultural Cities”, The Hague, November 7-8, 2002
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(lxv) This paper was presented at the EuroConference on “Auctions and Market Design: Theory, Evidence and Applications” organised by Fondazione Eni Enrico Mattei and sponsored by the EU, Milan, September 25-27, 2003
(lxvi) This paper has been presented at the 4th BioEcon Workshop on “Economic Analysis of Policies for Biodiversity Conservation” organised on behalf of the BIOECON Network by Fondazione Eni Enrico Mattei, Venice International University (VIU) and University College London (UCL) , Venice, August 28-29, 2003
(lxvii) This paper has been presented at the international conference on “Tourism and Sustainable Economic Development – Macro and Micro Economic Issues” jointly organised by CRENoS (Università di Cagliari e Sassari, Italy) and Fondazione Eni Enrico Mattei, and supported by the World Bank, Sardinia, September 19-20, 2003
(lxviii) This paper was presented at the ENGIME Workshop on “Governance and Policies in Multicultural Cities”, Rome, June 5-6, 2003
(lxix) This paper was presented at the Fourth EEP Plenary Workshop and EEP Conference “The Future of Climate Policy”, Cagliari, Italy, 27-28 March 2003
(lxx) This paper was presented at the 9th Coalition Theory Workshop on “Collective Decisions and Institutional Design”, organised by the Universitat Autònoma de Barcelona and held in Barcelona, Spain, January 30-31, 2004
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