

Bookbuilding, Auctions, and the Future of the IPO Process

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Imagine attempting to explain to a visitor, from another era or another planet, the economic rationale behind various institutions in the American economy at the start of the twenty-first century. Few practices seem more difficult to justify to the outsider than the current procedure for the issuance of equity securities.

—Lawrence Ausubel¹

Lawrence Ausubel is an applied auction theorist who advocates use of the “Ausubel auction,” a patented ascending-price electronic auction that, in his words, “may be especially well suited for security issuance.”² As a principal of Market Design Inc., a firm comprising many of the best academic minds studying auctions, Ausubel has helped design electronic markets for assets ranging from mineral rights and electricity to rights over the telecommunications frequency spectrum. Thus his critique of the current procedure for selling initial public offerings (IPOs) of equity—a well-established set of practices known as “bookbuilding”—warrants serious consideration.

But if bookbuilding is so obviously flawed, anyone who believes in the power of markets to wring out inefficiency must ask why this practice has not only survived (at least in some form) for over two centuries, but has in fact gained considerable market share worldwide in recent years. Despite withering criticism related to dot-com period abuses, bookbuilding flourished during the 1990s. By 1999, about 90% of European IPOs were sold using bookbuilding methods, up from only 30% in 1994. During the early stages of this European shift to bookbuilding, U.S. banks were responsible for many of these international transactions. But by the end of the decade, bookbuilding had

become standard practice for domestic offerings led by European banks.³ Moreover, as Ann Sherman pointed out in a recent study, “IPO auctions were tried in Italy, the Netherlands, Portugal, Sweden, Switzerland and the U.K. in the 1980s, and in Argentina, Malaysia, Singapore, Taiwan and Turkey in the 1990s, but they were abandoned in all of these countries before bookbuilding became popular.”⁴

In a 1999 article in this journal, I tried to explain how and why bookbuilding emerged as the dominant means of taking companies public in the U.S., and why market participants from an earlier era gravitated toward and then stayed with bookbuilding practices.⁵ There I suggested that such practices evolved as a technologically feasible response to major challenges in raising capital—economists refer to them as “imperfections”—in early securities markets. Perhaps the easiest way to describe such imperfections is by presenting an economist’s definition of a well-functioning market. John McMillan, also a principal in Market Design Inc., has argued that successful markets have the following characteristics:⁶

- information flows smoothly;
- property rights are protected;
- people can be trusted to live up to their promises;
- side effects on third parties are curtailed; and
- competition is fostered.

1. Lawrence Ausubel, “Implications of Auction Theory for New Issues Markets,” *Brookings-Wharton Papers on Financial Services* (2002).

2. Ausubel (2002), cited in footnote 1, p. 324.

3. See Alexander Ljungqvist, Tim Jenkinson, and William Wilhelm, “Global Integration in Primary Equity Markets: The Role of U.S. Banks and U.S. Investors,” *Review of Financial Studies* (Spring 2003).

4. See Ann Sherman, “Global Trends in IPO Methods: Bookbuilding vs. Auctions with Endogenous Entry,” *Journal of Financial Economics* (forthcoming), and Ravi Jagannathan

and Ann Sherman, “Why Do IPO Auctions Fail?,” Working paper, Northwestern University (2004).

5. William Wilhelm, “Internet Investment Banking: The Impact of Information Technology on Relationship Banking,” *Journal of Applied Corporate Finance*, Vol. 12, No. 1 (Spring 1999). My arguments are extended considerably in William Wilhelm and Joseph Downing, *Information Markets* (Cambridge: Harvard Business School Press, 2001).

6. John McMillan, *Reinventing the Bazaar* (New York: Norton, 2002, p. ix).

In the early stages of capital market development, communications were slow and unreliable, and information did not flow smoothly. Property rights were weak, especially in international trade where much of the innovation in securities issuance took place. As a consequence of limited information and weak property rights, people could not simply be trusted to live up to promises and capital market failures were frequent. Competition in securities offerings was limited by the technological impossibility of gathering in one place and time a large number of bidders for a multi-unit securities auction.

Bookbuilding practices evolved against this background.⁷ As these barriers to primary market success continue to diminish, and given (very) recent advances in multi-unit auction theory and communications technology, we should expect traditional practices to be reshaped, at the very least. But the expectation that bookbuilding will be cast aside completely in favor of untested alternatives appears to me a failure to appreciate a successful institutional adaptation to major market imperfections—some of which, as I will suggest, can never be wholly eliminated.

Bookbuilding involves the submitting of (legally) non-binding bids by a relatively exclusive group of institutional investors. The book manager, in consultation with the issuing company, uses this crude approximation of the market demand curve to establish the price at which the share offering is sold and exercises considerable discretion in the allocation of shares. I have italicized “market” in the preceding sentence because bookbuilding is a process of building a market (for the issuer’s shares) where no market exists. On average, the offering price is 15-20% less than the price at which shares begin trading in the secondary market. Those institutional investors that submit the most aggressive bids to the book generally receive the largest initial share allocations at the offering price and thus are in the best position to profit from a secondary-market price increase. The available evidence, which I discuss later, suggests that the book manager’s focus on institutional investors typically leaves about one third of the shares on offer for retail investors who were excluded from the bidding process.

Auction theorists might therefore criticize bookbuilding as failing to meet two objectives one might set for the sale of an asset. First, in view of the average first-day price run-ups, the offering price generally does not “clear” the market by equating demand for shares with the supply on offer from the issuer. (But one might also note that neither well-established—for example, French—nor recent—say, W.R.

Hambrecht’s—experiments with IPO auctions satisfy this criterion.) Second, as is evident from the heavy secondary market trading volume at rising prices, IPO shares are not initially placed with those who value them the most.⁸ Many observers would argue further that the discretion granted bankers under current practice provides greater opportunity for abuse than presumably would arise if shares were sold at auction.

Notably missing from most debates of the relative merits of auctions and bookbuilding is any attempt to precisely differentiate these alternative mechanisms for pricing and allocating scarce resources. In part, this reflects the fact that any auction is simply a set of rules specifying how the seller and bidders will interact with one another during the process of discovering a price and assigning ownership at that price. But that is not to say that the rules are always simple. Prior to the July 1994 spectrum auction run by the Federal Communications Commission (FCC), “Months of work by FCC officials and the theorist-consultants went into ensuring the auction rules had no gaps that could be exploited by shrewd bidders: the rules cover more than 130 pages.”⁹ Auction theorists are well aware of the importance of getting the rules right, but complexity of this sort might come as a surprise to those whose confidence in auctions arises from a perception of their transparency and simplicity.

Bookbuilding has its own rules. But whereas the FCC auction rules are explicit, the “rules” of bookbuilding are implicit and provide considerable latitude for exercising human judgment.¹⁰ This does not mean that the rules of bookbuilding are arbitrary or not well understood by participants. In fact, one might argue that after thousands of experiments carried out over the better part of two centuries, the rules of bookbuilding and their consequences are far better understood by market participants than any set of explicit rules that could be drawn up to replace them, at least in the near term.

Does the discretion exercised by the banker in a bookbuilding exercise distinguish it from an auction? First, let’s set aside whether such discretion provides greater opportunity for abuse. Even U.S. Treasury auctions have not been immune from abuse, and agency problems in the oversight of such auctions may have contributed to such abuse. Bookbuilding, by contrast, is carried out by an intermediary with a considerable stake in protecting its reputation for fair dealing. Concern about reputation does not rule out abuse, but it almost certainly works to moderate abusive behavior.

7. Fritz Redlich argues that “the loan contractor ranks first among the ancestors of the modern investment banker”; see “The Molding of American Banking” (Johnson Reprint Corp., 1968). S. R. Cope provides a detailed description of late 18th-century British loan contracting practices and their origins, and the parallels with virtually every dimension of modern bookbuilding practice are striking; see “The Goldsmiths and the Development of the London Money Market during the Napoleonic Wars,” *Economica*, Vol. 34 (May 1942).

8. Conditional on the offering price.

9. McMillan (2002), cited earlier, p. 82.

10. For a detailed description of bookbuilding practices, see Lawrence Benveniste and William Wilhelm, “Initial Public Offerings: Going by the Book,” *Journal of Applied Corporate Finance*, Vol. 10, No. 1 (Spring 1997).

Still, most auction theorists would view discretionary behavior unfavorably because incentives to bid aggressively are easily distorted if bidders cannot be sure how the seller will respond to their bids. But, as I will discuss later, Google's auction for shares in its recent IPO reserved considerable latitude for Google to override the auction rules and provided little guidance as to when and how rules might be overridden. Moreover, in complex settings where it is impossible to write an enforceable contract that envisions every possible contingency, an incomplete contract backed by a reputable intermediary can have great force.

Part of my intent here, then, is to cast doubt on the merit of the debate surrounding auctions and bookbuilding. I believe that pitting auctions against bookbuilding distorts the discussion. Auctions are not generic, and both bookbuilding and auctions in their many forms fall within a broad class of mechanisms for pricing and allocating scarce resources. They are distinguished by different sets of rules, with each set presumably designed to be optimal for the company and set of circumstances at hand. The Nobel Prize-winning work of William Vickrey first called attention to the "robustness"—or revenue-generating equivalence—of certain types of widely recognized auctions across a broad range of settings. But, as we saw earlier, the auction designed in 1994 for the FCC illuminates the fact that, as the setting grows more complex, so too can the optimal rules. From this more general perspective, it is possible to draw comparisons between alternative mechanisms on concrete dimensions of performance, particularly their expected effectiveness in maximizing net revenue.¹¹

To my mind, there is one noteworthy distinguishing feature of bookbuilding that receives relatively little (positive) attention but perhaps will go far in determining whether bookbuilding practices will be displaced or substantially altered to look more like what is perceived as an auction. Specifically, bookbuilding takes place within a network of relationships between the book manager and the institutional investors who participate in the bookbuilding effort. Banks deal repeatedly with these investors and thus have ample opportunity for developing a reputation for fair dealing. When the situation is sufficiently complex that it is impossible to specify precisely all possible contingencies in an asset sale, a reputation for fair dealing can go far in bridging the gaps in such "incomplete" contracts.

I will spend much of the rest of this article discussing how investment banks sustain relationships with institutional investors and how they are put to work on behalf of

issuers. My primary purpose in doing so will be to set the stage for discussing how recent advances in communications technology and auction theory might reshape current securities underwriting practices. But I hope that my discussion will also shed light on the substantial body of institutional structure embodied in current bookbuilding practices. If we've learned nothing more from the experience of eastern European countries transitioning to market economies, or from recent efforts to privatize our own markets for electricity, it is that institutions are central to economic function and that alternatives to existing structure are not built overnight.

What Do Investment Bankers Do?

In an IPO, investment bankers serve as intermediaries between companies seeking capital and investors capable of providing the capital. A demand for intermediaries arises when there are market frictions that drive a wedge between buyers and sellers. In financial markets generally and IPOs in particular, friction arises primarily from what economists refer to as "asymmetric information." Companies seeking capital know more about their prospects than investors, and investors know more about the terms on which they are willing to provide capital. Each party has an incentive to protect its informational advantage, but the potential for opportunistic behavior stemming from this advantage drives a wedge between the issuer and potential investors. In the extreme, trade breaks down when information cannot move freely between potential counterparties.

Investment bankers, as a consequence of the trust built up through repeated dealings with investors and issuers, are able to filter out information that counterparties are unwilling to share with one another or with competitors while passing along the information essential for sustaining trade. Successful investment bankers effectively balance competing interests in strategic information within large networks of clients and investors. In this sense, investment banks and their bankers can be characterized as coordinators of large-scale, strategic information networks.¹²

To make this idea concrete, consider that a firm like Google has enormous incentive to prevent competitors from gaining a clear picture of its competitive strategy (and was criticized roundly for its tightlipped characterization of its plans for the future). And yet, if the firm's vision cannot be accurately conveyed to prospective investors, Google will surely pay a higher price for equity capital than otherwise. Similarly, large institutional investors like Fidelity or Putnam have little motive for sharing widely their expressions of inter-

11. There is a substantial literature that attempts to do so. Lawrence Benveniste and Paul Spindt were the first to take up this question in the IPO setting and their analytical framework spawned a good deal of work comparing bookbuilding to alternative mechanisms, including certain auctions; see "How Investment Bankers Determine the Offer Price and Allocation of New Issues," *Journal of Financial Economics*, Vol. 37 (1989).

12. Economists often characterize information as a non-rival good in the sense that my

use of information does not preclude concurrent use by others in an alternative capacity. I refer to information as *strategic* when multiple parties have competing interests in its use at a point in time because first use yields advantage. In financial markets, being first to trade on information not currently reflected in prices has obvious advantages. For an elaboration of this distinction see William Wilhelm and Joseph Downing (2001), cited earlier.

est in an issuer's IPO. These firms invest millions annually in the research that informs their expressions of interest. Were their bids to become common knowledge, any expected gains from research would be compromised and the incentive to invest in research in the first place would be undermined.

Bookbuilding practices serve these interests directly. When an investment bank stands behind an IPO, it sends a message to investors because it puts a hard-won reputation at risk. At the end of the day, an investment bank's reputation is all that sets it apart from potential competitors in many functions.¹³ However, any investment banker worth his salt would point to a subtler, but still reputation-dependent, function—filtering and shaping investors' interpretation of information about the issuer's prospects. Blending insights provided by the banker with their own information enables investors to provide a more meaningful expression of interest in the offering. Although such expressions are recorded in the book, they are generally not transparent to other bidders. On the other hand it is conceivable, given the banker's discretion, that an investor might also receive some guidance about the current status of the book. Bankers are presumably willing to provide such guidance if they believe that doing so will yield benefits to the issuer while not undermining the interests of investors whose expressions are being revealed (if only in broad terms). Concerns about reputation force bankers to weigh carefully how they balance the interests of various parties to the transaction against one another.

I've just described the point of entry to a hornet's nest. The Securities Exchange Commission (SEC) intends that the issuer's prospectus contain all information relevant to the investment decision.¹⁴ It is the document of record for which the issuer and its bank(s) are held liable, and it is a public document on the grounds that all potential investors should have equal access to such information. But only the naïve observer would take this latter claim at face value, and this is the reason for frequent criticism of the exclusion of retail investors from the roadshows in which senior managers of the issuing firms communicate directly with select groups of institutional investors. In the event of egregious violations, the SEC can require the issuer to refile and revise its prospectus to reflect information disseminated outside the regulated channel of the communication. In the case of Google, for example, the SEC demanded that the prospectus contain the full text of Playboy's interview of the firm's management team.

So why not open the roadshows to retail investors, especially now that advances in electronic communications have brought large-scale gatherings within the realm of the

technologically feasible? There are a number of reasons why roadshows will continue to be directed primarily, if not exclusively, at institutional investors. First is the matter of liability. The SEC could have chosen to limit underwriters' potential liability to retail investors in connection with the information presented by issuers at roadshows, but it has not elected to do so, apparently on the grounds that some investors could easily be misled through direct communication from the issuer or its bankers.

But even if the SEC addressed the obstacle of heightened liability, it's not clear to me that issuers would benefit from including retail investors in roadshows. There are likely to be significant costs associated with preventing the kinds of informal communication with sophisticated investors that takes place at roadshows. As I have argued in this journal and elsewhere, sophisticated investors become so at a price and this element of favoritism can be justified as a fair reward for the additional information such investors bring to the process of price discovery.¹⁵ Even if there were no concern about possible manipulation of naïve investors by issuers and their underwriters, requiring that all communications be transmitted to all potential investors could cause issuers to disclose less information. If so, the wedge between the issuer and sellers would be driven deeper. In any event, the tradeoff here is worth careful consideration.

As an instructive example, consider the workings of the private placement markets for debt and equity. One important role played by such markets is to address issuers' concerns about sharing sensitive information by enabling the companies to enter negotiations brokered by an investment bank with a small group of sophisticated investors. Private debt and equity markets are substantial if not highly visible, and this approach makes economic sense when strategic considerations are paramount or informational frictions are severe. But there may be a high price paid in reduced liquidity and from narrowing competition among potential bidders. Indeed, in their analysis of the costs associated with restricting competition in a simple auction setting, Jeremy Bulow and Paul Klemperer go so far as to suggest that "no amount of bargaining power is as valuable to the seller as attracting one extra bona fide bidder."¹⁶ I cannot do justice in this article to the subtlety of their argument, nor do I feel comfortable commenting on where the argument might fail in the present context. However, it is sufficiently compelling that it poses a serious burden of proof for practices like bookbuilding. The case I will try to make in the following pages is that whatever merits lie in bookbuilding probably arise from the compromise it strikes between negotiating

13. However, there is considerable evidence that commercial banks have been successful in gaining entry to the investment banking industry by tying capital-intensive services to those, like securities underwriting, that depend more heavily on reputation.

14. Nonetheless, projections of future earnings are typically not included in the pro-

spectus because of concerns about liability discussed below.

15. See Lawrence Benveniste and William Wilhelm (1997), cited earlier.

16. "Auctions versus Negotiations," *American Economic Review* (March 1996).

through a reputable intermediary and generating substantial competition among a select group of potential bidders. Any such merits derive from the relationships bankers maintain with investors and issuing firms.

My argument thus far hinges on two assumptions: the ability of more sophisticated investors to create value by investing in research; and the ability of investment banks, through their relationships with those investors, to reward such investment in research more effectively than could be done with the explicit contracts between issuers and investors that are embodied in the electronic auction process. This part of the argument might be challenged on two levels. First, one might question the value of investors' research. If that value is small, then a set of simple, explicit rules could improve upon the implicit rules of bookbuilding. But if this is not the case, the banker's discretion to limit participation to a relatively narrow set of institutional investors can strengthen incentives for information production and so increase the issuer's expected revenue from the offering.¹⁷

Suppose we accept that the research efforts of institutional investors promote primary market efficiency. One might also question whether rewarding such effort with greater access to discounted IPO shares is the most efficient means of achieving the goal at hand. This remains very much an open question for researchers. One possible argument in favor of this approach is that companies, rightly or wrongly, care very much about who owns their shares. As I will discuss later, maintaining a mutually beneficial relationship with a select group of institutional investors enables the investment bank to influence their behavior in ways that may serve this interest of the issuing company.¹⁸

In summary, investment bankers can be viewed as coordinators of large-scale, long-lived information networks. Demand for this coordination function arises mainly from competing interests in information among both issuers and potential investors. Investment banks promote information exchange where it otherwise would not occur by building trust in their judgment among investors and securities issuers. Without this information exchange, fewer companies would go public, fewer positive-NPV projects would get funded, and overall economic growth would be lower than otherwise. By virtue of their intermediary status, investment bankers face conflicts of interest; but their incentives to build and protect their reputations for fair dealing, without

which their banks would have little ability to promote information exchange, moderates incentives for abuse that stem from their conflicted status.

Institutional Manifestations of Investment Banking Relationships

The Economic Function of Institutional Investors

Lawrence Benveniste and Paul Spindt were the first to suggest that investment bankers' treatment of institutional investors in the IPO process reflects an incentive scheme that is similar to what takes place in a simple auction. In most auctions, aggressive bidders are favored in the sense that they are more likely to receive the good for sale. In a so-called "second-price" auction, the most aggressive bidder receives the good for sale at a discount from his bid price on the grounds that a commitment to this rule will induce more aggressive bidding. If one views the typical bookbuilding effort for the IPO as an analogue to such simple auctions, the similarity of outcome is apparent: more aggressive bidders generally receive larger allocations and these allocations are sold at a price less than the value suggested by their expressions of interest.

Given the substantial body of research favoring this interpretation of bookbuilding, the question is not whether bookbuilding provides incentives for forthright bidding among institutional investors. The critical question, from an efficiency standpoint, is whether the unwritten rules of bookbuilding are the best scheme for accomplishing what is presumably the issuer's primary goal—maximizing its net revenue from the IPO.¹⁹ In their widely cited article, Benveniste and Spindt provided a theoretical demonstration of bookbuilding's capacity on this score. Their highly stylized characterization of bookbuilding maximizes the issuer's expected revenue under a precisely specified set of assumptions.²⁰

But economic theorists will argue endlessly over the fine points of alternative assumptions and selling mechanisms, and limited opportunities for controlled experimentation make it difficult to assess their practical force. In some of my recent work, I've taken an indirect approach to addressing such questions that exploits broad differences in underwriting methods across different countries. For example, if there is any benefit from retaining a large human element in securities offerings, it must arise from discretionary behav-

18. Brian Bushee provides evidence that lends credence to interest in discouraging the practice of flipping IPO allocations; see "Identifying and Attracting the 'Right' Investors: Evidence on the Behavior of Institutional Investors," *Journal of Applied Corporate Finance*, Vol. 16, No. 4 (Fall 2004). I will focus primarily on exploiting the relationship for informational purposes.

19. For a succinct review of this research, see Tim Jenkinson and Alexander Ljungqvist, *Going Public* (Cambridge: Oxford University Press, 2001, 2nd ed.), Chapter 3.4. Direct evidence bearing on the theory drawn from the "books" of two European banks is provided by Francesca Cornelli and David Goldreich, "Bookbuilding and Strategic Allocation," *Journal of Finance*, Vol. 56 (December 2001); Cornelli and Goldreich, "How Informative is the Order Book?," *Journal of Finance*, Vol. 58 (August 2003); and Tim Jenkinson and Howard Jones,

"Bids and Allocations in European IPO Bookbuilding," *Journal of Finance*, Vol. 59 (October 2004). The findings in these papers must be interpreted with some care because of differences in bookbuilding practices between Europe and the U.S. A discussion of the institutional differences and their potential consequences is provided by Tim Jenkinson, Alan Morrison, and William Wilhelm in "Why are European IPOs So Rarely Priced Outside the Indicative Price Range?," Working paper, University of Oxford and University of Virginia (2004).

20. This result is robust to a variety of variations on the central theme of their work. Moreover, Bruno Biais and AnneMarie Faugeron-Crouzet demonstrate the economic equivalence of stylized characterizations of bookbuilding and a French IPO auction mechanism (the *Mise en Vente*); see "IPO Auctions: English, Dutch, French, and Internet," *Journal of Financial Intermediation* (January 2002).

ior—that is, human judgment—that one cannot readily code into the rules for an electronic auction. A natural way of examining the merits of human judgment in securities offerings is to compare outcomes in settings where bankers face relatively few constraints on pricing and distribution of securities offerings to outcomes in settings that severely limit banker discretion.

In a paper published in 2003, Alexander Ljungqvist, Tim Jenkinson, and I documented the widespread adoption of U.S. bookbuilding practices in Europe and Asia during the 1990s.²¹ In general, the adoption of bookbuilding practices gives bankers greater discretion over the pricing and allocation of securities than the practices they displaced. We examined 2,143 IPOs brought to market in 65 countries outside the U.S. between 1992 and mid-1999, of which about 1,300 involved a bookbuilding effort. As I suggested earlier, by the end of the decade bookbuilding had largely displaced traditional methods. What's more, this displacement took place even though the direct costs of bookbuilding were about double those of local alternatives. When a U.S. bank led the bookbuilding effort, we found that they charged an average premium of 73 basis points over “domestic” banks.

What's important to keep in mind, however, is that the direct costs of an IPO are actually quite small relative to the apparent indirect cost associated with IPO “underpricing,” as typically measured by the size of the large first-day returns. After controlling for both the growing market share captured by U.S. banks and the higher fees they generally charged, we concluded that the total costs of issuance (including indirect costs associated with first-day price runups) declined. In other words, granting bankers more discretion was directly correlated with diminishing costs of issuance. Also worth noting is that the net benefits we estimated for bookbuilding were associated largely with U.S. banks distributing shares to U.S. investors, which suggests that the mature investor networks maintained by U.S. banks contributed substantially to reducing issuance costs.

In a 2002 study, Alexander Ljungqvist and I also examined cross-country differences in share allocation practices and offering types (including auctions) and their effects on IPO outcomes.²² We found that although allocation policies generally favor institutional investors in the U.S. and worldwide, there is a good deal of variation in regulatory constraints on allocation policies across countries. At one extreme, Germany, like the U.S., imposes few constraints on how shares are allocated. France and the U.K. lie in a broad middle ground where issuers can select from a range of underwriting practices and banks are subject to a variety of constraints on the discretion they can exercise in share alloca-

tions. From a research perspective, the ability to observe IPOs across different regulatory regimes in which issuers can select from a menu of alternatives is quite useful.

In general, we found that larger institutional allocations were associated with larger revisions in offer prices from those initially suggested in the issuer's prospectus. Most researchers interpret larger revisions as a response to the arrival of new information embedded in the expressions of interest from institutional investors during the bookbuilding effort. But in settings where bankers' discretion was constrained, we observed smaller revisions in offer prices, suggesting less information revelation and price discovery. Finally, although the indirect costs of issuance associated with first-day returns were higher in cases with large revisions, we also found greater underpricing (holding revision size and all else constant) when institutional allocations were small. We interpreted this evidence as suggesting that price discovery is costly but less so when banks have the discretion to make larger allocations to institutional investors.

One might appeal to the work of Bulow and Klemperer mentioned earlier to argue against larger allocations for institutional investors on the grounds that it undermines competition among bidders. This argument depends on the rate at which competition from admitting additional bidders tapers off as the banking relationships become less exclusive. I am not aware that this tradeoff has been measured directly, but we do at least have evidence suggesting that the number of bidders in a typical bookbuilding effort is not inconsequential and that the connection between bidding behavior and allocations is not arbitrary.

In their 2004 *Journal of Finance* article cited earlier, Tim Jenkinson and Howard Jones looked at 27 European bookbuilt IPOs conducted between 1996 and 2001. The bookrunner for these offerings received 5,540 bids from 2,018 different bidders. About 10% (202) of the bidders placed bids in more than six of the 27 offerings, and such frequent bidders accounted for about 36% of all bids. Thirty-nine bidders (about 2% of all bidders) participated in more than ten of the offerings, accounting for 11% of all bids. More frequent bidders were also more likely to submit multiple bids when they participated. Multiple bids arise when a bidder updates an earlier bid, which might be interpreted as reflecting the entry of new information into the book. The more frequent bidders also submitted larger bids and received a larger fraction of the shares they requested.

In their 2003 *Journal of Finance* article, Francesca Cornelli and David Goldreich examined 37 IPOs and 26 seasoned equity offerings (SEOs) placed between 1995 and 1999 by a large European bank with an international

21. Ljungqvist, Jenkinson, and Wilhelm (2003), cited earlier.

22. “IPO Allocations: Discriminatory or Discretionary?,” *Journal of Financial Econom-*

ics, Vol. 65 (2002).

presence. The books for these 63 offerings yielded 7,905 different bidders. Over 300 bidders participated in at least ten offerings and they accounted for about 37% of all bids submitted to the bookrunner. The IPOs attracted a median of 375 bids. And even the SEOs, where one might expect investors to contribute little at the margin to the information reflected in the trading price of outstanding shares, attracted a median of 172 bids. The sample IPOs were oversubscribed 4.5 times at the median, and the SEOs were oversubscribed by a factor of 2.8 times. The key finding of this study is that limit price bids submitted by large and frequent bidders strongly influence offer prices.

Although the data for these studies were made available under the condition of protecting the confidentiality of each bank's identity, we know that neither bank was among the largest underwriters worldwide by virtue of the fact that both based their operations in Europe. Thus it is reasonable to infer that the investor networks of these banks and those which they invited to join their syndicates were not as broad as those assembled by the dominant underwriters of IPOs.

Is the Cornelli and Goldreich finding of a 375-bid median for their sample IPOs a large number? Some perspective can be gained by comparison to the U.S. Treasury Auction for 13-week bills held on November 1, 2004. Fewer than 30 primary dealers were authorized to submit competitive bids that amounted to approximately \$36 billion in face value. They received allocations amounting to about \$19 billion (69%) of the \$27.7 billion in bills sold, with the remainder allocated to non-competitive bidders (including the Federal Reserve) in the amounts they requested. In other words, far fewer competitive bidders participated in this massively larger Treasury offering than participated in the European IPOs.

Does the book managers' focus on institutional investors lead to abusive behavior? Evidence from the dot-com bubble leaves little doubt that it can. On the other hand, I am not aware of evidence of systematic abuse outside this period. We do, however, have evidence that U.S. bookbuilding practices, which depend heavily on interaction with institutional investors, generate lower total issuance costs than existing alternatives.

I believe that under normal market conditions, reputational considerations have checked widespread abuse of the banker's discretion. Having said this, I should note that technological advances are rapidly diminishing the costs of alternatives to bookbuilding. Given the market's heightened awareness of the potential for abuse under existing practices, barriers to entry for alternatives like electronic auctions are certainly lower,

especially for issuers whose circumstances may not require the heavy intermediation that comes with bookbuilding.

Conflicts of Interest

Although not directly related to bookbuilding practices, the investment banking industry has drawn considerable criticism for conflicts of interest between their securities issuance and research operations. Conflicts of interest are a given for any intermediary whose function is balancing the competing interests of counterparties to a transaction. But, as we have noted, market forces—most important, the interests of the “repeat” players in the business in maintaining their reputations for fair dealing—can moderate their negative consequences.

Perhaps the most serious criticism of the industry in recent years is that research analysts, under pressure from investment bankers, systematically misled investors about the prospects of companies being taken public by their banks. Presumably banks would have little incentive to mislead the institutional investors with whom they deal repeatedly. On the other hand, they may have ample incentive to mislead investors with whom they do not deal repeatedly, especially if a demonstrated willingness to do so attracts underwriting mandates.

The criticism that research analysts exhibit positive biases in their earnings forecasts is long-standing and well documented by academic research. That being the case, one wonders both whether investors account for these known biases and whether issuing firms are moved to favor one bank over another on the basis of the bank's analyst forecasts or recommendations. In a study forthcoming in the *Journal of Finance*, Alexander Lundquist, Felicia Marston, and I have attempted to shed light on this second question by examining 16,625 U.S. debt and equity offerings between December 1993 and June 2002.²³ In this study, we extended the analysis beyond the IPO market because we believe that accounting for an issuer's past banking relationships is essential to any reasonable analysis of their choice of bank for the transaction at hand. Thus, we tracked all debt, equity, and loan transactions involving each issuer dating back to 1988 and used this information to construct measures of the strength of the issuer's relationships with a set of commercial and investment banks we identified as plausible competitors for the issuer's current mandate. We also recognized that any incentives analysts have to bias forecasts or recommendations will be tempered by their incentive to build and maintain a reputation for objectivity and forecast accuracy.²⁴ Controlling for the strength of their various banking relationships and the analyst's incentive to protect his or her

23. Alexander Ljungqvist, Felicia Marston, and William Wilhelm, “Competing for Underwriting Mandates: Banking Relationships and Analyst Recommendations,” *Journal of Finance* (forthcoming).

24. For supporting evidence, see Harrison Hong and Jeffrey Kubik, “Analyzing the

Analysts: Career Concerns and Biased Earnings Forecasts,” *Journal of Finance* (2003) and Harrison Hong, Jeffrey Kubik, and Amit Solomon, “Security Analysts' Career Concerns and the Herding of Earnings Forecasts,” *Rand Journal of Economics* (2000).

own reputation, we asked whether aggressive recommendations or forecasts relating to an issuing firm (relative to those provided by analysts at competing banks) increased the probability of the analyst's bank winning that firm's underwriting mandate.

What we found, first of all, is that analyst forecasts are sensitive to their environment. For example, analysts in banks competing for underwriting mandates during the dot-com era, when the revenue stream from securities offerings was especially large, were more aggressive on average in their recommendations and forecasts. Other things equal, though, and contrary to the popular wisdom and widespread allegations, we also found that more reputable analysts and analysts working for more reputable banks were less aggressive in their behavior. Nevertheless, during the 1999-2000 period, when the stakes were particularly high, even "all-star" analysts (as rated by the Institutional Investor) were more aggressive with their recommendations. Thus reputational considerations, while tempering analyst behavior, appear to have been overwhelmed during the dot-com era.

On the other hand, we found no evidence that more aggressive recommendations or forecasts influenced whether the analyst's bank won either debt or equity underwriting mandates. Far more important appears to have been the strength of the bank's relationship with the issuer, as measured by the share of the issuer's past securities offerings (both debt and equity) underwritten by the bank and, to a somewhat lesser extent, the strength of prior lending relationships.²⁵ In sum, our findings point once again to the importance of relationships in investment banking (in this case, client relationships) and to the moderating effects of reputational considerations in situations where the banking function poses conflicts of interest.

Bundling

There is another manifestation of investment banks' dependence on both investor and client relationships that, while less concrete, is perhaps of greatest importance in the design of viable alternatives to bookbuilding. Benveniste and Spindt observed in their seminal article that investment banks can improve bidding incentives and thus reduce indirect issuance costs by persuading repeat investors to approach an individual IPO as one of a series that their relationship with the bank opened to them. The idea is subtle but boils

down to the fact that the bank can diminish underpricing *on average* by having the flexibility to "overprice" some deals. If investors did not approach individual IPOs as part of a bundle, they'd simply decline an overpriced deal and any benefits from additional pricing flexibility would be lost. Since it would be difficult to contract over this sort of product bundling, it necessarily could take place only within a relationship capable of sustaining an implicit agreement.

For the same reason that contracting is infeasible in this situation, it is also impossible to observe such behavior directly. On the other hand, we do know that many banks are recognized for their special capability in particular industries. For example, of the 15 trucking-industry IPOs completed between 1990 and 1994, nine were underwritten by Alex. Brown. In this case, the bank essentially functions as a "gatekeeper" for investors in the industry segment.

The leverage gained in this gatekeeping capacity also provides leverage with individual issuers that can be used to improve the average outcome for issuers collectively. The idea here is that if two companies considering going public around the same time have prospects that are best judged relative to a common vein of information, each firm has an incentive to wait for the other to go first and then "free ride" on the (costly) information that spills over from the first-mover's bookbuilding effort. If not checked, this incentive leads to inefficient deferral of public offerings as firms try to avoid bearing the higher costs of being the first to approach investors mining this vein.²⁶

If instead banks can use their gatekeeping capacity to spread the costs of information acquisition across similar firms, we should observe clustering of IPOs in time, especially with an industry or within a group of firms subject to a common technological advance. Moreover, when such clustering occurs, it should lead to lower average first-day underpricing—and, presumably, higher net proceeds from the offering.²⁷

In sum, to the extent that a bank's relationships enables it to present IPOs as a bundle rather than independent deals, flexibility is gained that can translate into reduced (indirect) issuance costs for issuing firms. On the other hand, the advantages of bundling may not be limited to bookbuilding. There is no reason in principle that an electronic selling mechanism could not condition allocations on a bidder's participation in past offerings. But I am not aware that this

25. Timothy Burch, Vikram Nanda, and Vincent Warther report that over the 1975-2001 period, loyalty to an underwriting bank is associated with lower fees for common stock offerings but the opposite is true for debt offerings; see "Does It Pay to Be Loyal? An Empirical Analysis of Underwriting Relationships and Fees," *Journal of Financial Economics* (forthcoming).

26. This idea is formally developed in Lawrence Benveniste, Walid Busaba, and William Wilhelm, "Information Externalities and the Role of Underwriters in Primary Equity Markets," *Journal of Financial Intermediation* (2002).

27. Again, I'm assuming that underpricing is a useful measure of the indirect costs of issuance—one that is related to the costs of information production. In a study recently

published in the *Journal of Finance*, three colleagues and I examined more than 6,000 U.S. IPOs over the 1985-2000 period and found considerable support for these hypotheses. Among other things, we found evidence of information "spillovers" from the bookbuilding process that influenced decisions as to whether subsequent IPOs were completed or withdrawn and, in the case of completed IPOs, their offer price relative to prior expectations. We also found that underpricing was lower on average when more firms sharing a common valuation factor go public in short succession. See Lawrence Benveniste, Alexander Ljungqvist, William Wilhelm, and Xiaoyun Yu, "Evidence of Information Spillovers in the Production of Investment Banking Services," *Journal of Finance*, Vol. 58 (April 2003).

possibility has been widely contemplated, and the benefits of bundling may turn out to derive primarily from the use of bookbuilding practices to manage banking relationships.

Anticompetitive Behavior

The institutional structure of the investment banking industry began to take shape toward the end of the 19th century and almost immediately entered a cycle of criticism for anticompetitive behavior. The underwriting syndicate is central to both the institutional development and this criticism.

The syndicate is a strange beast. Thus far I've described securities underwriting as if it were a function carried out on behalf of an issuer by a single investment bank. Generally that is not the case. Issuers select a manager for their securities offering; and the manager, in consultation with the issuer, then forms a syndicate of banks to assist in the pricing, underwriting, and distribution of the offering. The syndicate is bound by a set of formal contracts. Upon completion of the offering, the syndicate is dissolved and the member banks go their separate ways. Thus the syndicate is a contractual mechanism for bringing together the independent networks of many banks for the *transaction at hand*.

Syndicates draw criticism because they look like exclusive clubs. Although the legal structure is short-lived, the same banks tend to come together repeatedly with the leadership position revolving among a stable but informal membership. Gaining entry to syndicates appears to be the primary avenue to gaining underwriting market share, but the exclusivity of syndicates serves as a substantial barrier to entry.

At first glance, there would appear to be considerable economic inefficiency arising from the repeated formation and dissolution of relatively stable work teams. It is worth considering why banks don't consolidate "permanently" if their independent networks are consistently unable to meet the needs of issuing firms. Or, to put the matter a little differently, given that such consolidation is taking place on a massive scale, why have syndicates remained a persistent feature of the industry?

In a paper published in the *Journal of Finance* in 2001, Pegaret Pichler and I argued that the syndicate's unusual features and persistence reflect what might be called the "relationship-intensity" of the underwriting function.²⁸ Relationship management is an inherently ambiguous task. As a consequence, it is difficult to monitor any single relationship manager's effort and success. A banker may work with a

client or investor for an extended period with little tangible payoff before truly gaining the client's trust. Similarly, once trust is gained, in the absence of a gross violation, it will likely erode slowly even if little effort is made to maintain it. Thus, relationship management, unless carefully monitored, provides individual bankers enormous opportunity for free riding on their firm's name and on the effort of their peers.

Until very recently, investment banks dealt with this problem by operating at astonishingly small scale relative to the firms and government agencies they served.²⁹ Large modern banks attempt to cope with scale-induced incentive distortions through a combination of subjective evaluations and objective activity measures (for example, number of client contacts). The latter are relatively low-cost but necessarily crude instruments. The former are costly but potentially valuable in shedding light on behavior whose effectiveness is difficult to quantify. Goldman Sachs reported in its 1999 IPO registration statement that, in 1998, its "360-degree" evaluation system involved over 140,000 performance evaluations (in a firm with fewer than 15,000 employees). I believe that the tension between the necessity and costs of monitoring subtle banking functions essentially determines the limits of formal organization in investment banking. The larger the group of bankers engaged in functions that depend on subtle behaviors, the greater the threat of free riding, which in turn undermines incentives to carry out the function effectively in the first place. This tension limits the feasible scale of any single bank's operations in a way that may be inconsistent with client demands.

The syndicate's capacity for temporarily joining the networks of competing banks mitigates this problem. The modern banking behemoth exists in spite of this problem, but almost surely does not provide the optimal organizational setting for managing relationship networks. The syndicate complements the necessary but imperfect evaluation schemes used in large banks by creating an extra layer of periodic external evaluation. The competition for underwriting mandates is like a tournament: the bank that wins the mandate, and thus leads the syndicate, captures the lion's share of fees but is also put into the spotlight. If it performs poorly, presumably as a consequence of a neglected network, it is less likely to win future mandates.

In sum, if our characterization of the syndicate is accurate, syndicates effectively promote competition by enabling more investment banks to operate at smaller scale

28. "A Theory of the Syndicate: Form Follows Function," *Journal of Finance* (December 2001). For a non-technical elaboration of the ideas in this paper along with a description of the historical origins of underwriting syndicates, see my article, "The Internet and Financial Market Structure," *Oxford Review of Economic Policy* (June 2001) or Wilhelm and Downing (2001), cited earlier. Shane Corwin and Paul Schultz provide a detailed description of current syndicate practices along with evidence favoring information production from within investor networks over risk sharing as the syndicate's primary function in "The Role of IPO Underwriting Syndicates: Pricing, Information Production, and Underwriter Competition," *Journal of Finance* (forthcoming).

29. At the height of his powers around the turn of the 20th century, J.P. Morgan ran an operation comprising 11 partners, all of whom sat in the same room. Oversight of one's partners had literal meaning in this setting. As recently as 1970, Morgan Stanley had only 34 partners and about 250 employees in total. Technological advances and global economic integration have forced investment banks to grow in dramatic fashion since 1970. According to the 2002-2003 *Industry Yearbook* produced by the Securities Industry Association, Morgan Stanley ranked first by number of employees with over 61,000 people and even 50th ranked Jeffries Group employed 1,200.

knowing that they have a reliable means of combining forces when necessary. If the industry successfully consolidates to the point where syndicates are no longer necessary to achieve optimal scale in distribution, it is conceivable that competition will be less fierce than we currently observe among banks fighting to win underwriting mandates.

A second manifestation of anticompetitive behavior arises in the context of bank's client relationships. As I suggested earlier, the strongest determinant of whether a bank wins an issuer's underwriting mandate is whether (and how much) the bank has worked for the issuer in the past. In extreme cases, such as that involving Ford and Goldman Sachs, issuers have been known to maintain an exclusive banking relationship over the course of decades. But commercial banks seeking entry to investment banking during the 1990s challenged even this strongest of banking relationships by bundling or "tying" their lending facilities with access to a firm's more lucrative capital market transactions. In either case, the bank attempts to erect a barrier to competition for a particular client's business.

In my 1999 article in this journal, I suggested that

One rationale for this business model is that financial products are relatively easy to reverse engineer, represent intellectual property that is difficult to prevent others from using, and yet have relatively high development costs. In the absence of strong relationships, client firms might share an innovative bank's ideas with a competing bank that has not borne development costs with the expectation that the latter will provide the product or service at a lower price. By preventing such behavior, client/bank relationships provided a mechanism for efficient sharing of R&D costs.

Since I made this argument, however, there has been a potentially significant change in the marketplace for financial innovation. Financial patenting has increased sharply in the aftermath of the 1998 decision in a lawsuit between Signature Financial Group and State Street Bank that established a precedent for the patentability of business methods.³⁰ Several finance scholars have argued that the difficulty of establishing strong property rights over key assets helps to explain various features of the investment-banking industry's structure, including its oligopolistic structure.³¹ If formal property rights are now more easily established, one might expect a weakening of client relationships if their economic purpose had much to do with sustaining innovation.

On the other hand, it does not necessarily follow that

competition will increase. Suppose that the SEC tomorrow required issuers to sell their IPOs through auctions. Thanks to the court ruling above, there is now a real possibility that an auction, especially one carried out over an electronic platform, will infringe on patented methods. Consider, for example, the following abstract for U.S. patent number 6,026,383:

An automated system for conducting an auction and a method for operating the system. The system comprises a plurality of bid entry terminals and a bidding information processor communicatively coupled to the bid entry terminals. Bidders at the bid entry terminals observe displayed information and enter bids accordingly. The bidding information processor and the bid entry terminals communicate and process information in order to conduct an auction. The method involves conducting an auction in which the price paid by bidders is independent of their own bids, in which participants are provided with information concerning their competitors' bids as the auction progresses, and in which the confidentiality of high values is maintained.

With business method patenting, we've entered uncharted territory with a rapidly growing number of potential obstacles to competition.

What Can We Learn from the Dot-Com Bubble?

I began this article by citing Lawrence Ausubel's critique of bookbuilding. Ausubel's article makes numerous appeals to the behavior of IPOs during the dot-com bubble, especially the average first-day returns of 72% in 1999 and 56% in 2000. If bookbuilding was indeed responsible for the bubble, we have a problem on our hands. But before leaping to this conclusion, one might ask whether the markets changed (temporarily or permanently) in a way that upset an otherwise acceptable institutional equilibrium.

Alexander Ljungqvist and I shed some light on this question by comparing the ownership structure of IPO firms before and during the dot-com bubble.³² One of our key findings was the sharp decline in pre-IPO ownership stakes among the senior managers of issuing firms during the dot-com bubble. In 1996, CEO ownership stakes prior to an IPO averaged 22.7%. By 2000 they had declined by nearly half. Similar declines were observed in the stakes of venture capitalists, investment banks, and other corporations with holdings in issuing firms.

This change is noteworthy because it suggests greater fragmentation of ownership. Other things equal, this

30. See Josh Lerner, "Where Does State Street Lead? A First Look at Finance Patents, 1971-2000," *Journal of Finance*, Vol. 57 (April 2002).

31. See Bharat Anand and Alexander Galetovic, "Information, Nonexcludability, and Financial Market Structure," *Journal of Business*, Vol. 73 (2000); Robert Eccles and Dwight Crane, *Doing Deals* (Cambridge: Harvard Business School Press, 1988); and John Persons and Vincent Warther, "Boom and Bust Patterns in the Adoption of Financial

Innovations," *Review of Financial Studies*, Vol. 10 (Winter 1997).

32. Alexander Ljungqvist and William Wilhelm, "IPO Pricing in the Dot-Com Bubble," *Journal of Finance*, Vol. 58 (April 2003). In a related paper we also provide evidence that managers of issuing firms behaved in a manner inconsistent with economically rational behavior; see "Does Prospect Theory Explain IPO Market Behavior?," *Journal of Finance* (forthcoming).

weakens senior management's incentive to bargain aggressively with the investment bank leading its IPO. The investment banks in turn have less incentive to bargain hard with potential investors. To the extent this was occurring, we would expect to see a direct connection between companies with less concentrated ownership stakes and higher initial returns. After controlling for a variety of other factors, this is precisely what we found.

I do not believe that this change in ownership structure, as large as it was, can fully account for the extreme behavior of primary markets during the dot-com bubble. However, our findings should give pause to those who would attempt to build general arguments on broad features of this highly unusual period in the history of our capital markets. If ever there was a period where the rationality of at least some investors can be challenged, the dot-com era takes the prize. One distinguishing feature of this period was a sharp increase in participation among retail investors. A widely cited benefit of auctions is their potential for broadening participation, particularly from among the retail investor community. But setting aside questions of "fairness" that do not admit economic analysis, there are tradeoffs in broader retail participation that are worth examining.

In my 1999 JACF article, I argued that having a deep retail distribution network provides a fallback position for the underwriter when it is "bargaining" with institutional investors over an acceptable offer price. Investors who disguise their true beliefs by submitting conservative bids during the bookbuilding effort can be credibly threatened with exclusion, thereby strengthening incentives for aggressive bidding. As the cost of contact with retail investors diminishes, this bargaining tool becomes more powerful and the expected indirect costs of issuance should decline (assuming the underwriter maintains strategic discretion over allocations).

On the other hand, broader participation risks undermining incentives for institutional investors to invest in the research that makes their participation in bookbuilding efforts meaningful in the first place. Briefly, broad participation enables uninformed (retail) investors to free ride on the research efforts of institutional investors. As this threat increases, institutions have weaker incentives to invest in research and markets are liable to be less efficient aggregators of information. As I said in my 1999 article,

If online investment opportunities diminish the relative private benefits of delegating asset management to institutional investors, they may also reduce the public benefits associated with the production of information by institutional investors. If so, primary equity market prices could become less useful

guides for capital allocation decisions in the economy at large. Unfortunately, it will be difficult to predict how technological innovation will influence the delicate balance between public and private interests that presumably contributes to the vibrancy of U.S. primary equity markets.

Although it is difficult to make a definitive statement on this point, it's probably no coincidence that the dot-com bubble occurred alongside a sharp increase in retail investor participation, especially via online brokerage accounts.

Why Securities Underwriting Practices Will Change

Thus far, this article has focused on what's right with bookbuilding. My intention is not to suggest that bookbuilding specifically or investment banking in general is flawless. Rather, as I stated in my earlier article, I believe traditional practice will at the very least be reshaped as a consequence of recent technological advances. If that is to be the case, we ought to give careful consideration to incorporating desirable features of existing practice into any future alternative.

My argument for why the time is ripe for change is simple: Advances in communications technology, and the Internet especially, have dramatically reduced the costs of producing and disseminating information related to securities on offer and of collecting real-time feedback from a broad cross-section of the investor community. Moreover, research in financial economics and auction theory has made "codifiable" at least part of what investment bankers do to lubricate this segment of the financial markets.³³ Although I am not prepared to argue that human judgment can be replicated in the realm of securities offerings, I do believe that we are rapidly approaching the point where, for many issuers, the marginal benefits from human judgment will be outweighed by the marginal cost savings from using a highly standardized electronic platform that admits little if any intermediary discretion.

I do not expect the transition to be painless. Banks have a vested financial interest in the status quo. The risk in entering the minefield of formal intellectual property rights surrounding business methods strikes me as another significant deterrent to innovation within the existing industry structure. Moreover, I do not foresee a day when a reputable intermediary will be completely absent from the process. Thus, potential entrants will have difficulty challenging the incumbents if for no other reason than that reputations are not built overnight. Commercial banks competing for securities underwriting mandates have struggled mightily with this problem and to date have had only modest success

33. For a formal development of this idea and its institutional and organizational consequences, see Alan Morrison and William Wilhelm, "Partnership Firms, Reputation, and Human Capital," *American Economic Review* (forthcoming) and "The Demise of Invest-

ment-Banking Partnerships: Theory and Evidence," Working paper, University of Oxford and University of Virginia (July 2004).

in the underwriting of equity IPOs, where certification by a credible intermediary is most valuable.

I expect that companies facing less challenging informational frictions will be early (successful) adopters of new technology. Reshaping current practices will also require considerable courage among senior managers of issuing firms. Any substantial change to existing practice will involve experimentation with little serious precedent and I have little doubt that many experiments will fail.³⁴ If ownership concentration within pre-IPO firms continues down the dot-com era path toward greater dispersion, management teams will “internalize” fewer of the consequences of their decisions about how their IPO is brought to market and will be subject to more criticism from their fellow shareholders if an experiment with a non-traditional marketing strategy fails.

From my perspective, Google’s IPO was noteworthy for several reasons that I have not seen widely discussed. First, by the standard set out in the previous paragraph, Google was not a likely candidate for early-stage experimentation with an alternative selling mechanism. The management team was without doubt courageous and in a position to stand firm against any criticism that might arise. The firm’s creation of a dual class voting structure with the IPO reinforced the management team’s power. On the other hand, Google operates in an industry that is not well defined and faces formidable competition. As such, it is subject to considerable risk and more severe informational friction than a firm going public from a mature industry. Working in Google’s favor was the fact that it had little immediate need for additional capital. The company was able to sell a relatively small fraction of the firm in an experiment aimed at establishing a market with the clear intention of placing many more shares into the public domain following the recently expired lockup period. Thus the burden of any misstep was unlikely to compromise the firm’s execution of its competitive strategy.

With regard to the auction mechanism, much discussion has revolved around its complexity and how this may have put off otherwise interested bidders. There is little

doubt about the merit of such arguments. But the same could be said about the early stages of adoption for any new technology. If traditional bookbuilding practices are modified to become more highly mechanized, it will not be the result of vast simplification of the rules, but rather of general acceptance of a set of relatively standardized rules embodying at least a comparable level of complexity to those set forth by Google. With confidence in the standard, a simple investor interface will be feasible. This will come through experimentation and, most likely, with the support of reputable intermediaries. I cannot imagine a world in which every IPO involves a unique, completely customized set of rules that will have to be outlined for investors in the prospectus.

Setting aside the fine points of auction design, there is one general respect in which I believe Google failed to “get the rules right.” Google reserved considerable discretion by not committing to a point at which the auction would close, or even to hard and fast pricing and allocation rules. One can make an argument in favor of any one of these decisions, and perhaps even all of them—and in effect I’ve done so throughout this article in my attempt to explain the remarkable durability of bookbuilding. But it is more difficult to defend Google’s decision to reserve discretion for the firm’s management rather than delegating responsibility for exercising discretion to its banks. Google’s customers hold the firm in high regard, but this reputation does not substitute for the capital market reputation maintained by a bank that must face the investor community repeatedly in the future. In general, companies going public will not succeed by asking investors to “trust them” when their participation in capital markets will be sporadic at best. A general capital market reputation, if not the deeper trust embedded in banking relationships, will continue to carry force for the foreseeable future.

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34. I am not persuaded that applications of auction theory to electricity markets or auction-based advertising systems, for example, shed a great deal of light on the optimal

implementation of theory in IPO markets.