

Internet Applications In Investment Banking: Implications And Significance

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ABSTRACT

In this paper I discuss how investment banks utilize the internet as well as the motivation and implications of these early internet applications for the conduct of investment banking activities. I focus, in particular, on the significance of e-commerce applications for the management of relationships with clients, the expansion into the retail investor market, and the re-engineering of the underwriting process. The paper offers some critical perspectives as to whether internet-based operations are likely to transform the intermediary services of underwriting firms in the securities issuance process.

INTRODUCTION

Internet and its e-commerce applications are already influencing the conduct of business of financial intermediaries, including the operations of investment banks. The application of internet-based technologies and strategies in investment banking can impact both the structure of that industry as well as specific activities. In this paper, I focus mainly on the second type of effects and show how the capabilities of the internet are utilized by investment banks, what the motivation and implications of these early applications are, and what the significance of these internet applications is expected to be. In particular, I discuss how internet-based applications help investment banks manage relationships with clients, expand into the retail investor market, and enhance or re-engineer the underwriting process.

While articles published in business professional publications predict fundamental changes in investment banking operations and the capital raising process, there is a need for a critical perspective about the impact of the internet on investment banking. In this connection, recent articles by Wilhelm (1999), Aggarwal and Dahiya (2000), and Black (1998) have challenged several early views regarding the impact of internet on investment banking activities, especially the issuance process. This paper provides additional information on internet-based applications on a wider range of investment banking operations and elaborates further on the likely impact of the internet on the issuance process.

MANAGING RELATIONSHIPS WITH CLIENTS

Investment banks need to cultivate and manage relationships with issuers and investors in order to promote and execute deals on the origination and the placement sides of their business. On the origination side, investment banks have relied traditionally on their record as exclusive deal makers for certain issuers as well as on reputation and strength in deal making to maintain and initiate relationships. Issuers, on their part, value these relationships because they enable them to stay current on new innovative ideas and capital market developments which help them manage their assets and liabilities. On the placement side, investment banks need to maintain relationships with the wholesale (mostly institutional) and the retail (mostly individual) investor segment of the market to enhance placement capabilities.

The internet enables investment banks to expand their capacity in managing client relationships by reaching a wider clientele base and offering research as well as transaction related services. In this way, investment banks can pitch deal-related ideas to existing and potential clients and offer them access to information and analysis, all at low cost of delivery and with time efficiency. This frees high-cost human resources for the necessary personal interaction with clients at higher value added levels.

The way leading banks are currently trying to offer internet capabilities to their clients is either through single provider or joint venture systems. With respect to content and type of capabilities, these systems may offer only research, data retrieval and processing, and information exchange capabilities or may also include deal execution capabilities by supporting systems for trading or placing new issues. Examples of single provider systems are the PrimeTrade of Credit Suisse First Boston (CSFB), the Autobahn of Deutsche Bank, the Web.Et of Goldman Sachs and Direct Markets of Merrill Lynch, which offer trading and/or new issues capabilities, and the Global Edge of Donaldson, Luffkin & Jenerette, which allows research on thousands of bonds as well as takeover deals. Joint ventures include The BondHub set up by Goldman Sachs, Morgan Stanley Dean Witter and Salomon Smith Barney, Market Access set up by JP Morgan, Chase, and Bear Stearns, and TradeWeb established by CSFB, Goldman Sachs, Lehman Brothers, and Solomon Brothers. These systems offer research as well transactional capabilities [Currie, 1999a, 1999b and 2000].

The most important aspect of these applications is that investment banks by offering value added services to their clients can maximize their brand exposure and promote deal-related skills and opportunities. Investment banks will also have the opportunity to develop profile-type data on existing and potential clients by mining information accumulated from web visits and utilization. This development has the potential to transform significantly the management of client relationships. Under traditional models, corporate issuers retain close transactional and conversational relationships with one or few investment banks [Eccles and Crane, 1988]. Traditionally, relationships have been cultivated and maintained through direct personal communications. This approach naturally restricted the number of investment bank-client contacts as well as the flow of information. As a result, corporate clients had access to the information supplied only from a few banks. Using the internet to deliver information and execute deals, investment banks can potentially establish conversational relationships with a wider pool of clients to whom they can promote their deal making strengths. Therefore, internet-based relationships will serve as an additional tool, beside innovativeness and reputation in product markets, in the competition for approaching and gaining new clients.

Although the internet will enable investment banks to expand and better manage their relationships with clients, banks will still need strengths in traditional resources like capital, risk-bearing capacity, research and human talent to preserve and improve reputation in the execution of deals. Indeed, the ease the internet affords investment banks to reach out to potential clients, and the eventual commoditization of some of their services, will reinforce the importance of specialized resources as a factor for survival at the top of the industry. Thus, although the internet is expected to accelerate further the trend toward price or transaction banking, and hence competition, it is much less likely that it will diminish the significance of the traditional core investment banking resources and hence the rather high concentration in this sector.

EXPANDING THE RETAIL INVESTOR BASE

Retail investors have held an ambivalent position in the development strategies of established investment banks. For most of the last fifty years, the investment banking industry has been dominated by five special or bulge bracket banks with very few changes in their ranks.¹ Of these banks, only Merrill Lynch was successful in leveraging its strong retail brokerage business to move into the apex of investment banking [Hayes, 1979].²

Several reasons are responsible for the benign neglect of the retail investor by top investment banks. First, bond placement has traditionally favored the institutional investors, whose large purchases have kept placement costs low. Second, the inefficient and uneven information flow (exemplified by the exclusion of individual investors from roadshows) had kept retail investors relatively uninformed and less useful to investment banks in comparison to institutional investors with respect to price discovery for new securities, especially IPOs. Third, most of today's investment banks have their roots in much earlier times when retail investor participation in new issues was far more limited than now. This condition gave prominence to the wholesale approach and, hence, catering to large, mostly institutional, investors.

The introduction of online trading has turned retail investors into important participants of the equities market with a similar prospect held for the bond market.³ It is forecasted, for example, that 50% of all U. S. equity trading volume will be done by retail investors by the year 2002 [Currie, 1999a]. The success of online trading and the growing importance of retail investors has prompted investment banks to adopt strategies and initiatives that will also involve retail investors in the underwriting and placement process.

To this end, several internet-based strategies have emerged. The quest of online brokers to make IPO stocks available to their customers is matched with the need of wholesale investment banks to tap the retail investor base. Thus, J.P. Morgan and Credit Suisse First Boston (CSFB) have entered into agreements with Charles Schwab to distribute research and allocate new issues to Schwab clients. Lehman Brothers has a similar deal with Fidelity. Fidelity also entered into a deal with internet underwriter W. R. Hambrecht that would allow the 2.7 million Fidelity clients to bid for W. R. Hambrecht issues through Fidelity's web site [Currie, 1999a].

Another way for established investment banks to tap the retail investor market is by buying ownership stakes in trading systems which are more open and geared to retail trading. There are several such examples in this area. Merrill Lynch has joined Goldman Sachs and J.P Morgan in holding stakes in Archipelago, an electronic communications network (ECN) that plans to apply for stock exchange status. In a different alliance, Citigroup, Morgan Stanley Dean Witter, Goldman Sachs, Merrill Lynch and Madoff Investment Securities have joined forces in an effort to set up Primex, an electronic auction system for stocks [Currie, 1999a].

Goldman Sachs represents one of the best examples of a top wholesale investment bank that has an extensive program of linking itself with online institutions and markets that facilitate retail market operations. Besides having taken stakes in a number of ECNs and other trading systems for stocks and bonds, Goldman is also part owner of the upstart internet investment bank Wit Capital which specializes in the retail placement of IPOs [Currie, 1999a].

The ultimate step established investment banks have taken to retain or capture the retail customer base is, of course, their move into online brokerage. Morgan Stanley Dean Witter introduced on-line trading on October 21, 1999 just pre-empting Merrill Lynch's entry on December 1, 1999. Although both firms had already allowed their large accounts to trade online, they had to finally yield this privilege to all accounts for fear of alienating their retail customers.

These developments suggest that competition for the retail market will intensify in the near future. Rising incomes and a growing culture in favor of direct participation in the equities and debt markets by individual investors compels investment banks to expand in the retail sector.⁴ What fuels the rise of competition is the low barriers to entry resulting from internet-based capabilities and cost efficiencies. Internet technology is making it possible for wholesalers to reach out to retail investors and offer them opportunities to participate in securities offerings and trading without having to set up the extensive brick and mortar brokerage operations of traditional integrated investment banks like Merrill Lynch. For wholesalers with an established

origination business, transacting with retail investors online can be both feasible and economical. This will blur further the distinction between wholesale and retail investment banks.

RE-ENGINEERING THE UNDERWRITING PROCESS

The traditional underwriting process has worked along the following model. The originating underwriter (the lead manager) forms a syndicate and markets the new issue through a long series of roadshows open almost exclusively to institutional investors; the lead manager builds a book of preliminary orders which help establish the offer price; finally, the issue is allocated and placed primarily with institutional investors, favoring those for their repeat business and assistance in setting a better issue price.

The internet and the resulting competitive pressures are changing this traditional model in at least three areas. First, roadshows are being moved online. Second, the bookbuilding process is conducted electronically in the cyberspace. Third, the efficiency of the internet allows the utilization of more direct price determination methods, like auctions, as a way to price new issues. These applications have a common underlying thread: expanding the investor base by enabling the retail segment of investors to participate more actively in the issuance process from the marketing to the price setting stage and ultimately the allocation of new issues.

The Virtual Roadshow

Putting the roadshow on the cyberspace is a good example of how an industry can use the novel capabilities of the internet technology to disseminate complex sets of information at much lower cost to larger numbers of investors. This development also demonstrates how new technologies are challenging regulatory conventions. The rules governing the pre-sale marketing of new issues require that all communications are based on the information printed in the preliminary prospectus. Roadshows have been allowed with the understanding that oral communications can clarify and amplify only what is in the prospectus. Naturally, since effective oral communication precludes opening up each roadshow session to large crowds, roadshows have served as the privileged channel of information to a select group of institutional investors.

This is now changing. In September 1999, Activate.net, a producer of virtual roadshows, received a no action letter from the Securities and Exchange Commission (SEC) which gave it permission to post live roadshows on the internet, but still for an audience dominated by institutional investors.⁵ The next important step was made in November 1999, when the SEC gave Charles Schwab clearance to enable its wealthier clients (with accounts of at least \$100,000, which at the time represented 20% of the 6.3 million Schwab customers) to log on to web sites that broadcast roadshows live.⁶

Reaching an increasingly broader population of investors (both institutional and retail) via virtual roadshows should enable underwriters to generate more demand for new issues. Combined with bookbuilding (the collection of indications of interest for a new issue), online roadshows could enable underwriters to aggregate a larger information set from the total demand schedule that links quantities demanded to prices. It will also allow investment banks to target certain groups of investors for online pre-sale presentations. Investor groups can be targeted, for example, with respect to familiarity with the business of the issuer, risk tolerance, or preference to act as short- or long-term investors for new securities. Marketing new issues within such specialized investor clienteles is expected to improve the price discovery process and result in better offer prices for issuers. This is consistent with the expectation that the internet can effect a more efficient matching of issuers and investors for public offerings as if conducting a placement in the private market.

The march toward the open-access virtual roadshow is not, however, without certain limitations in regards

to expected benefits. Although the virtual roadshow, accessible to many investors, has the potential to increase demand for new issues, this by itself cannot result necessarily in better issue prices. Amount and type of information released in roadshows as well as investor ability to correctly price new issues and willingness to share price information with the underwriter are important factors in improving price discovery.

Expanding the information set in order to enhance the pricing capabilities of the less sophisticated retail investors depends largely on the Securities and Exchange Commission (SEC), which has remained skeptical about allowing more, especially forward looking information, to be released in roadshows. Furthermore, underwriters and issuers may be reluctant to expand on the permissible information if exposure of unsophisticated retail investors raises the litigation risk from lawsuits. With the roadshow information delimited that way, the newcomers to roadshows (i.e., retail investors) must be sophisticated and informed enough to be able to translate a prescribed set of released information into efficient value estimates. Investor willingness to share price information with the underwriter is discussed in the next section.

Bookbuilding On The Internet

Bookbuilding allows underwriting syndicates to collect indications of interest for the purchase of quantities of a new issue at various prices. Therefore, bookbuilding enables underwriters to canvass the demand schedule for a new issue before they have to set the offer price. There are already several examples of internet-based bookbuilding. The most recent and largest by far was the \$3bn bond issue by the World Bank underwritten by Goldman Sachs and Lehman Brothers, which became the first bond issue to be marketed, sold and traded online [Catan and Chaffin, 2000]. Online bookbuilding, which originated in the equity issues market, is under development by traditional investment banks, online brokers, and the newly emerging internet investment banks.

Established investment banks, on their part, are using their online outfits to solicit preliminary orders from their investor clientele, as in the case of the World Bank issue.⁷ The expansion into online trading by such top underwriters like Merrill Lynch and Morgan Stanley Dean Witter will certainly accelerate this trend.

Internet brokers, like Charles Schwab, Fidelity, and E*Trade, which were initially excluded from IPO allotments, are now seeking to gain access to new issues by positioning themselves in the bookbuilding process. In an early and natural step, online brokers formed alliances with originating underwriters for a piece of the new issues by serving as selling dealers. The second step was to move up to the syndicate level and serve as co-managers or syndicate members in issues lead managed by traditional underwriters. In this capacity internet brokers can use their electronic facilities to conduct bookbuilding online.⁸

The third step for online brokers is to establish themselves, directly or through affiliates, as online investment banks with the purpose to originate and lead manage new issues. This upward vertical integration resembles the path of Merrill Lynch and Salomon Brothers in the late 1960's and early 1970's toward the origination business [Hayes, 1979]. It is also motivated by the fact that despite their role as co-managers, online brokers have been unable to get significant allotments. For example, Charles Schwab had been allotted a paltry 2.5% of all shares in 73 co-managed issues [Smith, 1999]. Thus, online securities firms are establishing internet investment banks mostly through alliances. Examples, in this connection, are the case Epoch Capital Partners backed by Charles Schwab, Ameritrade and TDWaterhouse, and E*Offering backed initially by E*Trade and recently acquired by Wit Capital. These undertakings follow on the heels of Wit Capital, an investment bank with online bookbuilding, established in September 1997.⁹ The mission of Wit Capital is to serve as co-manager in IPOs and thus enable retail investors to get access to research and allocation of IPO shares and to trade on-line. As co-manager, Wit collects preliminary orders from its retail customers and then

uses a lottery system to allocate shares to subscribing investors. As a substitute for active price stabilization, Wit requires that the IPO buyers do not flip their shares within 60 days of the offer date.¹⁰

In evaluating online bookbuilding undertakings, two questions seem to be relevant. First, will internet-based bookbuilding improve the pricing and the flotation costs of new issues, especially IPOs? Second, which types of new issues are more likely to benefit? These questions can be answered by considering how online bookbuilding will impact the distribution of information across investors as well as the speed and costs of the flotation process.

Under conditions of asymmetric information, bookbuilding is meaningful if investors have private positive information which they are willing to share with the underwriter so that the latter can adjust the price toward its higher fair level. Benveniste and Spindt (1989) propose that underwriters use bookbuilding along with discretionary control of new issues to entice informed investors to reveal their private positive information about the value of an IPO and thus improve on the issue price. Informed investors who reveal positive information are then rewarded by the underwriter with preferential allocations of new shares and capture a profit through the underpricing.¹¹

The above analysis suggests that the benefits of internet-based bookbuilding depend on how informational asymmetry will be distributed across the market, i.e., underwriters, institutional and retail investors, in internet-dominated financial markets. A totally level playing-field, in regards to information, would render bookbuilding redundant as a method of soliciting positive private information. This could also remove the cause for the underpricing of new issues (IPOs in particular). If institutional investors maintain, however, their informational advantage, then the role of retail investors will continue to have secondary importance and online bookbuilding will represent an expanded version of the traditional type without any significant qualitative difference. Nonetheless, as the production cost for private information continues to fall under the influence of the internet, underpricing of new issues as a reward to private information should also decline.

Even if online bookbuilding does not solve the asymmetric information problem, increased information dissemination through online roadshows and bookbuilding will have other beneficial effects for issuance costs and net proceeds to issuers. First, expansion of investor awareness will induce more investors to include new issues in their portfolios thus increasing their demand [Merton, 1987]. This should, at least, help reduce the marketing and placement costs for new issues and enable underwriters to offer higher bid prices to issuers. Second, online roadshows and bookbuilding also offer the possibility of a shorter pre-offering marketing effort for new issues which could reduce the waiting and pricing risk of the underwriting service. Third, the conduct of roadshows, bookbuilding and allocation through the internet should lower the overall flotation cost. Time and cost efficiencies achieved through online underwriting will enable underwriters to set higher offer and bid prices than under the traditional offering method.

The scope for reducing asymmetric information is greater for less visible and more uncertain firms. Hence their new issues should reap greater marginal benefits than the issues of well-established firms. Similarly, speeding up the marketing effort should prove to have greater value for more volatile issues which have greater waiting and pricing risk. Although asymmetric information will continue to be a negative pricing factor for new upstarts seeking capital, internet-derived efficiencies in the marketing of new issues should make capital formation for such entities less onerous.

Direct Online Issuance

The third major way the internet is changing the underwriting process is by facilitating the direct placement

of new securities with institutional and retail investors. Some examples include the direct sale of municipal bonds by the city of Pittsburgh, the sale of debt paper by General Motors Acceptance Corporation, and the direct sale of commercial paper by Ford Motor Credit Co. and American Express. Limitrade, an electronic order-matching system plans to enable treasurers to sell debt directly to institutional investors.

The best example of online direct sale of new issues is the internet investment bank W.R. Hambrecht which initiated an online Dutch auction system for IPOs at the start of 1999. Hambrecht's OpenIpo provides universal access to IPOs, and conducts a Dutch auction system that forces price discovery through a blind-auction process. The offer price is set at the lowest bid accepted by the company. This then could be the highest price at which demand clears the offered supply of shares.¹² According to Hambrecht, the benefits include a flotation cost which is lower than the customary 7% for IPOs, better valuation and less volatility in the aftermarket.¹³

Direct online sales of securities by the issuers themselves by-pass underwriters and dealers either entirely or to a great extent. What are the economic consequences of this approach, however, for issuers? The economic value of direct online issuance must be judged with respect to the issuance costs, pricing, and aftermarket marketability.

First, the cost of issuance is reduced significantly because of the potential to eliminate underwriting fees and selling concessions. Underwriter spreads for straight bonds, seasoned and initial public stock offerings have averaged, respectively, 1.62%, 5.44%, and 7.31% [Lee, Lochhead, Ritter, and Zhao, 1996]. Some reported fees for online auctions of bonds have ranged instead from 0.1% to 0.15% [Gutner, 1999].

The effect on pricing is likely to vary by type of issuer and issue, respectively. For well-known issuers and securities with standard features and less inherent price volatility, the adverse selection problem caused by asymmetric information is almost absent and thus the securities can be sold very close to their fair values. This is, for example, the case of seasoned equity offerings and debt securities of reputable and well-established issuers. In such cases, underwriters have little to contribute to price discovery, their advantage being their knowledge of and access to investors with interest in the securities for placement. The internet will enable issuers to appropriate this advantage for themselves. On the other hand, more complex and volatile securities as well as securities issued by less well known issuers (e.g., IPOs) will continue to benefit from the involvement of underwriters in the price discovery process as long as asymmetry of information persists. Direct online auction sales of securities vulnerable to the adverse selection problem are unlikely to produce better issue prices despite the expansion of the investor base. The reason for this prediction is that online offerings are deprived of the marketing, certification and monitoring services of underwriters. First, marketing new issues using the practice of bookbuilding with discriminatory allocation of new securities is more valuable in the presence of private information. Without a mechanism to reward informed investors for their positive private information, online auction sales will fail to produce offer prices as high as the traditional relationship-based method. A reward system for informed investors is also important to secure their consistent participation in the issuance process in good and bad times. Hanley-Weiss and Wilhelm (1995) show that underwriters do rely on groups of loyal institutional investors to place hot as well as cold issues. Second, certification of the offer price of risky securities or those of lesser known issuers by a reputable underwriter induces more uninformed investors to purchase the new issue [see Booth and Smith, 1986 and Chemmanur and Fulghieri, 1994]. Third, underwriters also provide monitoring services that can increase the value of an issuing firm thus generating a higher offering price [Hansen and Torregrossa, 1992]. Smaller and less-well known firms have greater need for the monitoring services of outside financial intermediaries like underwriters, and hence should have less demand for online offerings.

The third consequence of the direct online issuance method is the possibility that aftermarket marketability may be limited. When investment banks act as underwriters, they also stand ready to make a market for the security until its secondary trading attracts enough investors to produce reasonable liquidity. In addition, underwriters provide useful research services for issues they bring to the market, which help maintain and expand investor interest. The absence of underwriters in direct online issues or the intermediation of underwriters (like Hambrecht) that may lack aftermarket market making and research capabilities could result in thin post-issue trading with adverse effects on investors, especially in the case of lesser known firms. However, it is possible that the growth of on-line systems for the trading of debt and equity securities by both institutional and retail investors will mitigate this problem.

A preliminary, although not definitive, piece of evidence regarding the erratic pricing performance of auction-type online offerings is the case of Andover.net sold by W.R. Hambrecht through its online Dutch auction system. Andover.net had an initial return of 252% despite the intent of the system to produce prices that reflect the value estimates of the market.¹⁴ The weak receptivity of online IPO arrangements by issuers is highlighted by the fact that only 3 out of the 544 IPOs during 1999 were lead managed online [Lee, 2000]. The ultimate success of the online offering of securities will depend on the trade off of reduced flotation costs against the potential losses in price discovery and aftermarket liquidity.

CONCLUSION

This paper has discussed some of the important developments in the use of the internet in the investment banking industry. Investment banks are using internet-based services and strategies to manage and expand client relationships, to tap the capital resources of retail investors and to re-engineer the issuance process. The main conclusion drawn from the conceptual analysis applied in relation to these issues is that although the internet offers novel and dramatically enhanced methods for the delivery of information and the execution of deals, its real impact on the conduct of investment banking activities and the structure of the industry appears to be mixed at this point. The potential to reach an expanded pool of potential clients and to conduct business with greater time and cost efficiency seem to be the most potent effects of internet based activities. Valuation as an intermediation service in the issuance process depends, however, on whether the use of the internet will help reduce informational asymmetry and, thus, enable retail investors to process information efficiently for pricing purposes. This development will influence the extent to which securities issuers will need to rely on intermediaries, underwriters or institutional investors, for the valuation of new securities. Eventually, the impact of the internet on investment banking will have to be evaluated on the basis of empirical analysis and evidence.

FOOTNOTES

1. For example, the special bracket investment banks in 1978 were First Boston, Merrill Lynch, Morgan Stanley, Salomon Brothers and Goldman Sachs [Hayes, 1979]. These were still the special bracket investment banks in 1999.
2. Other retail investment banks like Dean Witter and Shearson climbed to the apex only through consolidation with wholesale banks.
3. Online trading in bonds open to retail investors is however coming into its own very fast [Gutner, 1999].
4. An example of the individual investors' capacity to absorb new issues is the case of a recent \$3bn World Bond issue of which \$100 million was placed with individual investors through Charles Schwab [Catan and Chaffin, 2000].
5. Before that, Bloomberg and Netroadshow of Yahoo had been broadcasting taped roadshows [Ewing, 1999a].
6. Schwab must be a member of the syndicate or the selling group in order to extend this privilege to its customers. The group of web sites included Yahoo's Netroadshow, Activate.net and Nextvenue, which were previously open only to institutional investors [Schroeder and Ewing, 1999].
7. At the time of the World Bank bond issue, besides bookrunner Goldman Sachs, other electronically-ready banks, also included in the syndicate, were ABN Amro, Barclays Capital, Charles Schwab, CSFB, Morgan Stanley Dean Witter, and Paine Webber [Peterson, 2000].
8. For example, on December 4, 1998, Charles Schwab served as a co-manager of Select Comfort that offered 4 million shares [Himmelstein and Nathans Spiro, 1999].
9. Wit Capital was set up by Andrew Klein after he successfully raised \$2million on the internet on behalf of a Soho brewery he co-owned. An agreement with AOL gives Wit a potential population of about 17million internet-connected accounts [Currie, 1999a]. Wit participates in syndicates as co-manager. It had co-managed about 93 IPOs until midyear of 1999. [Stone and Vickers, 1999].
10. Aggarwal and Dahiya (2000) doubt, however, that a policy against "flipping" by internet banks is enforceable as a way of providing effective price stabilization.
11. In this case underpricing is a economically motivated reward for private information. Rydqvist, Loughran and Ritter, 1994] show that the underpricing is lower, in general, in markets where both bookbuilding and discretionary allocation of issues are allowed.
12. This type of Dutch auction can be classified as a "uniform second-price" auction in which the item is allocated at the same price to all bidders who have submitted bids at this or higher prices. Thus, this auction type mitigates the winner's curse problem since high (presumably less informed) bidders are protected by the lower bids of more informed bidders. Therefore, this auction type has a better chance to maximize proceeds to the seller [Feldman and Mehra, 1993].
13. Wilhelm (1999) also discusses the issuance process followed by H. R. Hambrecht..

14. A plausible reason given was that the issue was auctioned only to Hambrecht clients thus limiting market participation in the valuation of this issue [Ewing, 1999b]. This is, however, an inherent problem of auctions if they fail to attract a large enough number of bidders either because the auctioneer or the auctioned item is not well-known.

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