

## The Google IPO

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### Recommended Citation

Matthias Hild, *The Google IPO*, 3 J. Bus. & Tech. L. 41 (2008)

Available at: <http://digitalcommons.law.umaryland.edu/jbtl/vol3/iss1/4>

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## The Google IPO

IN THE SPRING OF 2004, GOOGLE WAS ONE OF THE MOST TALKED-ABOUT initial public offerings (IPOs) since Netscape's public offering in 1995.<sup>1</sup> Bullish investors believed Google could set off a string of successful IPOs and put an end to a four-year lull in technology offerings.<sup>2</sup> Executives at Google faced several questions in the following months, beginning with whether or not to sell shares to the public market.<sup>3</sup> If they made the decision to take the company public, what options did Google have for selling those shares? Was the traditional form of book-building through an investment bank necessarily the best course of action? As large investment banks were courting Google's potentially enormous business, management had to evaluate the different options available for a company ready to move forward. Ultimately, Google chose to sell its stock through W.R. Hambrecht + Co.'s OpenIPO, which was modeled on auction-based offering formats in France, Japan and elsewhere. In 2004, Hambrecht's track record of success was mixed at best and even today the future of this IPO format in the United States is far from certain.

### I. HISTORY AND BUSINESS MODEL

In 1995, Larry Page, 24, and Sergey Brin, 23, first met as Stanford University computer science graduate students.<sup>4</sup> Their company Web site describes that first encounter as a clash of personalities that eventually led to their now-famous creative solution for retrieving relevant information from large sets of data.<sup>5</sup> At the time, search engines, for the most part, ranked search results by the number of hits for

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1. See generally Eugene Choo, Note, *Going Dutch: The Google IPO*, 20 BERKELEY TECH. L.J. 405 (2005).

2. See Christine Hurt, *Moral Hazard and the Initial Public Offering*, 26 CARDOZO L. REV. 711, 769 (2005) (contending that the uniqueness of the Google IPO was an encouraging breakthrough for investors and noting that Google refrained from entering the market during the recent technology boom and bust); see also Nayantara Hensel, *Efficiency in IPO Issuance Processes*, BUS. ECON., Oct. 2005, at 55.

3. See generally Choo, *supra* note 1 (discussing Google's decision to go public and the various public offering models to choose from).

4. Google Corporate Information: Google Milestones, <http://www.google.com/corporate/history.html> (last visited Sept. 6, 2007).

5. *Id.*

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keywords within a Web page.<sup>6</sup> To provide users with a more relevant selection of search results, Page and Brin developed a methodology that analyzed the “back links” pointing to a given Web site.<sup>7</sup> That idea evolved into the PageRank™ technology, which establishes the relevance or importance of a Web page by the number of other pages that link themselves to it.<sup>8</sup> Additional algorithms analyzed the HTML content of a page by the use of fonts and page layout.<sup>9</sup>

By 1998, Page and Brin were building the reputation of their search technology and began running Google’s first data center with self-built computers from Page’s dorm room.<sup>10</sup> In their search for potential partners, they contacted Stanford alumnus David Filo, the founder of Yahoo!<sup>11</sup> According to Page and Brin, Filo appreciated the benefits of their technology but told them: “When it’s fully developed and scalable, . . . let’s talk again.”<sup>12</sup> Undeterred, Page and Brin raised close to \$1 million from family, faculty, and friends and founded Google, Inc. in a rented office attached to a friend’s garage in Menlo Park, California.<sup>13</sup> In February 1999, Google moved to an office on University Avenue in Palo Alto and grew its staff from three to eight.<sup>14</sup> In June 1999, a group of venture capitalists, including the leading firms Sequoia Capital and Kleiner Perkins Caufield & Byers, funded Google with \$25 million.<sup>15</sup>

The company aimed to “deliver the best search experience on the Internet by making the world’s information universally accessible and useful.”<sup>16</sup> Google added new capabilities to its existing search engine, including Google Image Search for retrieving visual information and Google Catalog Search for facilitating online shopping from more than 1,100 mail-order catalogs.<sup>17</sup> Google actively pushed for the further development of its search technology: “Google’s charge will forever be to ensure that every search is a find.”<sup>18</sup> As the second pillar of its revenues, Google launched AdSense, a keyword-targeted advertising program, which delivered cus-

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6. See generally Tom Spring, *Which Search Engine is Best for You?*, PCWORLD.COM, Nov. 2, 1999, <http://www.cnn.com/TECH/computing/9911/02/search.idg/index.html?eref=sitesearch> (providing examples of dated search engine sites that base their results on quantity of hits and describing a trend in 1999 of prioritizing relevancy instead of utilizing only frequency of “hits” for keywords within a website).

7. Google Corporate Information: Google Milestones, *supra* note 4.

8. LAWRENCE PAGE, SERGEY BRIN, RAJEEV MOTWANI & TERRY WINOGRAD, *THE PAGERANK CITATION RANKING: BRINGING ORDER TO THE WEB 2* (1998), available at <http://dbpubs.stanford.edu:8090/pub/1999-66>.

9. *Cf. id.* at 15.

10. Google Corporate Information: Google Milestones, *supra* note 4.

11. *Id.*

12. *Id.*

13. *Id.*

14. *Id.*

15. *Id.*

16. Mitchell Levy, *Internet Information Provider Services Industry Analyzed via the Value Framework*, VMS3.INFO, Nov. 5, 2002, <http://valueframeworkinstitute.org/Nov2002/feature.article.htm>.

17. Google Corporate Information: Google Milestones, *supra* note 4.

18. See *id.* (detailing the development of Google’s search technology as Page and Brin continued to improve their search engine through 1998).

tomers' advertisements to Web users by "Googling" a particular profile of products or services.<sup>19</sup> Compared with traditional banner advertising, AdSense increased the average click-through rate by up to five times its previous rate.<sup>20</sup> AdSense customers paid for their advertisements per click-through, thus enabling even small businesses to use that form of service.<sup>21</sup> By 2004, Google boasted a worldwide network of more than 100,000 advertisers.<sup>22</sup>

Google reached profitability in 2001, and in 2003 it posted a net income of \$105 million from revenues of \$962 million.<sup>23</sup> Looking ahead, Google was aware of increasing competition from Yahoo!, eBay, and Microsoft. Although Google had captured nearly half of the search market, eBay and Yahoo! were showing strong increases in both revenues and profits.<sup>24</sup> A particular source of concern was the possibility that Microsoft might design a version of its text-processing software that could block the access of Google's search technology to text documents.<sup>25</sup> Moreover, the patent of Google's core search algorithm was held by Stanford University where Page and Brin first developed the technology as graduate students.<sup>26</sup> Google's exclusive licensing agreement with Stanford was set to expire in 2011.<sup>27</sup>

## II. THE IPO BOOK-BUILDING PROCESS

As Google contemplated a possible IPO in 2004, the company needed to find the most appropriate mechanism to attract investment from the capital markets.<sup>28</sup> "Book-building" played a dominant role in the IPO process in the United States.<sup>29</sup> In that approach, one or more investment banks act as "underwriters" who research the issuing firm, certify its quality, and price the new issue by "building a book" of nonbinding orders from interested investors.<sup>30</sup> A mixture of common practice and Securities and Exchange Commission (SEC) regulation structures the book-build-

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19. *Id.*

20. Press Release, Google, Google Builds World's Largest Advertising and Search Monetization Program (Mar. 4, 2003), available at <http://www.google.com/press/pressrel/advertising.html>.

21. Brant McLaughlin, Paying Per Click with AdWords and AdSense: Google's Revolutionary Win-win Concept of Advertising, [http://www.associatedcontent.com/pop\\_print.shtml?content\\_type=article&content\\_type\\_id=206815](http://www.associatedcontent.com/pop_print.shtml?content_type=article&content_type_id=206815) (last visited Sept. 6, 2007).

22. See, e.g., Press Release, *supra* note 20.

23. Google, Inc., Annual Report (Form 10-K), at 28 (Mar. 30, 2005).

24. eBay Inc., Annual Report (Form 10-K), at 20 (Feb. 28, 2005); Yahoo, Inc., Annual Report (Form 10-K), at 36 (Mar. 11, 2005).

25. See generally Elaine M. Chen, *Global Internet Freedom: Can Censorship and Freedom Coexist?*, 13 DEPAUL-LCA J. ART & ENT. L. & POL'Y 229, 239 (2003) (discussing generally China's efforts to use a firewall to block access to Google and divert users instead to local Chinese search engines).

26. Google, Inc., Annual Report, *supra* note 23, at 21.

27. *Id.*

28. Choo, *supra* note 1, at 418.

29. François Derrien & Kent L. Womack, *Auctions vs. Bookbuilding and the Control of Underpricing in Hot IPO Markets*, 16 REV. FIN. STUD. 31, 31 (2003).

30. *Id.* at 36-37; see also John L. Orcutt, *Improving the Efficiency of the Angel Finance Market: A Proposal to Expand the Intermediary Role of Finders in the Private Capital Raising Setting*, 37 ARIZ. ST. L.J. 861, 885-86 (2005) (noting that investment banks reduce the "lemons problem" by certifying the quality of the issuer).

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ing process into these steps: choosing underwriters,<sup>31</sup> registering with the SEC,<sup>32</sup> and marketing.<sup>33</sup>

### A. Choice of underwriters

Although not required, most issuing firms hire one or more investment banks as underwriters to manage their IPO.<sup>34</sup> The underwriter's prestige, expertise, and ability to provide high-profile analyst coverage have been cited as the most important drivers of that choice.<sup>35</sup> The issuer signs a letter of intent to cover the underwriters in case of withdrawal.<sup>36</sup> That legal document specifies the gross spread received by the underwriters (typically 7 percent) and almost always gives them the option of a 15 percent overallotment of shares.<sup>37</sup>

### B. SEC registration

After a due-diligence investigation of the issuing company, the underwriter files a registration statement with the SEC.<sup>38</sup> The underwriter then produces the preliminary prospectus ("red herring") to be used in marketing the issue.<sup>39</sup> With the signing of the letter of intent, the issuer and its underwriters enter the "quiet period" and are not permitted to release nonroutine or forward-looking statements not contained in the prospectus, which henceforth is the main source of information about the company.<sup>40</sup>

### C. Marketing

While the prospectus is sent to institutional and retail investors, the underwriters put on a "road show" for approximately three to four weeks, making presentations

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31. See *infra* Part II.A.

32. See *infra* Part II.B.

33. See *infra* Part II.C.

34. See Brianne M. Hess, *Google, Inc.: The Dutch Auction Approach as an Alternative to Firm Commitment Underwriting*, 7 DUQ. BUS. L.J. 89, 90–91 (2005) (stating that the IPO process consists of five parts, the first of which is the selection of an underwriter).

35. See generally Dennis E. Logue et al., *What is Special about the Roles of Underwriter Reputation and Market Activities in Initial Public Offerings?*, 75 J. BUS. 213, 214, 232–36 (2002) (noting that issuers rely on underwriter prestige to sell shares efficiently); Jay R. Ritter & Ivo Welch, *A Review of IPO Activity, Pricing, and Allocations*, 57 J. FIN. 1795, 1814 (2002).

36. See Denis Rice, *The Nanotech IPO*, 1 NANOTECH. L. & BUS. 315, 322 (2004) (stating that the letter of intent typically contains a binding clause requiring the company to reimburse the lead underwriter for out-of-pocket expenses).

37. *Id.* This is referred to as a "Green Shoe" option, named after the 1963 IPO of the first company to use this instrument. See Samuel N. Allen, *A Lawyer's Guide to the Operation of Underwriting Syndicates*, 26 NEW ENG. L. REV. 319, 350–51 n.94 (1991).

38. Hess, *supra* note 34, at 93–94.

39. See Rice, *supra* note 36, at 326–27 (explaining that the underwriter uses the preliminary prospectus to promote the IPO through the "road show").

40. See *id.* at 323.

about the company to investors.<sup>41</sup> During the process, the underwriter builds a book by collecting nonbinding indications of interest in the new stock.<sup>42</sup> Potential buyers state the price they are willing to pay and the quantity of shares required.<sup>43</sup> With oversubscribed IPOs, investors typically receive only a proportion of the number of shares in which they indicate an interest.<sup>44</sup> Amendments to the anticipated number of shares and their price range are filed with the SEC.<sup>45</sup>

#### D. Pricing and allocation

Upon SEC approval of the registration statement, the underwriters file a request with the SEC to accelerate the effective date of the registration statement.<sup>46</sup> The issuer and the lead underwriter set the offering price and the number of shares to be issued.<sup>47</sup> The offering price is set by the subscription rate.<sup>48</sup> Oversubscription gives the underwriter large discretion to allocate shares among handpicked bidders (including the underwriter's own retail branch).<sup>49</sup> Higher allocations typically go to those institutional investors who have established a long-term relationship with one of the underwriters.<sup>50</sup> According to industry estimates, about one-third of the shares go to retail banks (including the underwriter's own retail branch) even though the retail banks are widely believed to have less information about company and industry fundamentals than institutional investors.<sup>51</sup> About 10 percent to 20 percent of new shares are received by favored individual clients who had shares preallocated by the underwriting banks.<sup>52</sup> A particular aim is to allocate large proportions of shares to long-term investors ("strong hands") who will not quickly

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41. See *id.* at 328 (describing a "road show" as a multi-city tour in which the lead manager meets with institutional investors to stimulate interest in the IPO).

42. Derrien & Womack, *supra* note 29, at 36–37.

43. See Victor Fleischer, *Brand New Deal: The Branding Effect of Corporate Deal Structures*, 104 MICH. L. REV. 1581, 1594 (2006).

44. See Sean J. Griffith, *Spinning and Underpricing: A Legal and Economic Analysis of the Preferential Allocation of Shares in Initial Public Offerings*, 69 BROOK. L. REV. 583, 659 (2004) (describing oversubscription as individual investors' most common complaint).

45. See Rice, *supra* note 36, at 327–28.

46. *Id.* at 326–27.

47. Choo, *supra* note 1, at 412.

48. The average oversubscription ratio at the offering price exceeded 25—so for every 1,000,000 shares issued, 25,000,000 shares were demanded at or above the offering price. Ely R. Levy, *The Law and Economics of IPO Favoritism and Regulatory Spin*, 33 SW. U. L. REV. 185, 203 (2004) (affirming that legal loopholes encourage oversubscription of IPO stock).

49. See Hess, *supra* note 34, at 101 (stating that the Dutch Auction approach is a departure from the traditional process, where underwriters reserve "hot" IPOs for favored clients and business associates); Ritter & Welch, *supra* note 35, at 1812 (noting that institutions receive preferential allocation).

50. See Ann E. Sherman, *IPOs and Long-Term Relationships: An Advantage of Book Building*, 13 REV. FIN. STUD. 697, 697–98 (2000) (avowing that the book-building gives underwriters total discretion in the allocation of shares; by contrast, the auction mandates the distribution of shares without regard to any past relationships).

51. See Ritter & Welch, *supra* note 35, at 1812 (noting that institutions are more informed than retail clients).

52. See Reena Aggarwal, *Allocation of Initial Public Offerings and Flipping Activity*, 68 J. FIN. ECON. 111, 112 (2003).

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resell (“flip”) the new shares in the aftermarket.<sup>53</sup> In addition to selecting investors carefully, the underwriters also maintain a detailed account of initial allocations and each customer’s flipping activity.<sup>54</sup> Conventional wisdom is that underwriters prefer institutional investors to minimize flipping, although institutions have recently been found to flip a much larger percentage of the shares than retail banks.<sup>55</sup> In the period from 1980 to 2001, the offering price was set on average at 18.8 percent below the market-clearing price.<sup>56</sup>

### E. Aftermarket stabilization

If the issuer agrees to a 15 percent overallotment, the underwriters typically try to allocate 115 percent of the shares.<sup>57</sup> If the share price weakens in aftermarket trading, the underwriters can then buy back and retire the extra 15 percent of shares, as if they never existed. If shares go up, the underwriters leave the extra 15 percent of shares in the market.<sup>58</sup> If the underwriters anticipate weak demand in the aftermarket, they typically allocate up to 135 percent of the offering, taking a naked short position on 20 percent of the shares.<sup>59</sup> Because the underwriters know with whom shares are placed, they are able to contact potential sellers in the case of excess demand and deter flipping in the case of insufficient demand that threatens a price drop below the offering price. Underwriters discourage flipping by implicitly threatening to withhold future allocations on hot issues. In addition, underwriters impose a “penalty bid” and take back the commission from brokers who allocate shares that are subsequently flipped.<sup>60</sup> Penalty bids prompt brokers to sell shares to clients with long-term horizons and discourage clients from selling shares.<sup>61</sup> After 25 calendar days, the “quiet period” initiated by the signing of the letter of intent ends and the underwriters’ analysis includes the issuer in their research and buy/sell recommendations.<sup>62</sup>

### III. COMING TO AMERICA: W.R. HAMBRECHT + CO.’S OPEN IPO

In 1998, William Hambrecht started the firm of W.R. Hambrecht + Co. based on his belief that there was a better way than book-building for companies to access the public markets.<sup>63</sup> Book-building has long been the traditional means by which

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53. *Id.* at 113.

54. *Id.* at 115 (stating that investment banks keep track of flipping activity by investors).

55. *Id.* at 113.

56. Ritter & Welch, *supra* note 35, at 1795.

57. *Id.* at 1813.

58. *See id.*

59. *Id.*

60. *Id.* at 1814.

61. *Id.*

62. *Id.* at 1815.

63. WR Hambrecht + Co, About Us, <http://www.wrhambrecht.com/about/index.html> (last visited Sept. 11, 2007); see Joseph Nocera, *Two Cheers for the Google IPO*, FORTUNE, Sept. 6, 2004, at 42.

corporations have drawn capital from the U.S. public-equity markets.<sup>64</sup> As an alternative, several countries have, in the past, relied on sealed-bid auctions for public securities.<sup>65</sup> Investment bankers typically refer to sealed-bid auctions as “Dutch auctions”—a label also used to describe a different auction format, applied in the Dutch flower market, where the auctioneer incrementally lowers the announced price of an object until one of the bidders stops the process and pays the price announced at that time.<sup>66</sup> In sealed-bid auctions, the bidders submit their price and purchasing quantity (in sealed envelopes or by equivalent means) without any knowledge of competitors’ bids.<sup>67</sup> The issuer may specify a lowest-acceptable price for the transaction to take place (“reservation price”).<sup>68</sup> Such auctions assume one of two classic forms, depending on how the price paid by winning bidders is determined.<sup>69</sup>

#### A. *Sealed-bid price-discriminatory auction*

Until 1998, the U.S. Treasury used this auction format to sell part of its weekly bond offerings.<sup>70</sup> Applied to shares, bidders assign a value to the share and indicate the number of shares they wish to purchase at that price level.<sup>71</sup> The highest bidder wins and receives the number of shares indicated in the initial bid.<sup>72</sup> The second-highest bidder is then also awarded the number of shares demanded.<sup>73</sup> That process continues until all available shares have been distributed. Orders at the lowest accepted bid (“stop-out price”) are partially filled.<sup>74</sup> The label “discriminatory” refers to the fact that bidders may pay different prices for the same item so that the offering can be distributed across a range of successful bid prices.<sup>75</sup> There is no “overallotment option” that changes the number of shares to be sold, even if there

64. See generally Lawrence M. Benveniste & Walid Y. Busaba, *Bookbuilding vs. Fixed Price: An Analysis of Competing Strategies for Marketing IPOs*, 32 J. FIN. & QUANTITATIVE ANALYSIS 383 (1997); Takashi Kaneko & Richard H. Pettway, *Auctions Versus Book Building of Japanese IPOs*, 11 PAC.-BASIN FIN. J. 439, 439 (2003); Francesca Cornelli & David Goldreich, *Bookbuilding and Strategic Allocation* (IFA Working Paper No. 286, 1999), available at <http://ssrn.com/abstract=157352>; Mira Ganor, *A Proposal to Restrict Manipulative Strategy in Auction IPOs* (2004) (unpublished manuscript, available at <http://ssrn.com/abstract=572243>).

65. See R. Preston McAfee & John McMillan, *Auctions and Bidding*, 25 J. ECON. LIT. 699, 702 (1987).

66. *Id.*; see also Ganor, *supra* note 64, at 2.

67. See McAfee & McMillan, *supra* note 65, at 702.

68. *Id.*

69. See *id.*

70. See PAUL F. MALVEY & CHRISTINE M. ARCHIBALD, OFFICE OF MKT. FIN., U.S. TREASURY, *UNIFORM-PRICE AUCTIONS: UPDATE OF THE TREASURY EXPERIENCE 2* (1998), available at <http://www.treas.gov/offices/domestic-finance/debt-management/auctions-study/upas2.pdf>; Note, *Auctioning New Issues of Corporate Securities*, 71 VA. L. REV. 1381, 1386 (1985) (summarizing the history of Treasury auctions).

71. See MALVEY & ARCHIBALD, *supra* note 70, at 2; see also Note, *supra* note 70, at 1385.

72. See MALVEY & ARCHIBALD, *supra* note 70, at 2; Kaneko & Pettway, *supra* note 64, at 440; Note, *supra* note 70, at 1385.

73. See MALVEY & ARCHIBALD, *supra* note 70, at 2; Note, *supra* note 70, at 1385.

74. See MALVEY & ARCHIBALD, *supra* note 70, at 2.

75. Note, *supra* note 70, at 1385.

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are many unaccepted bids.<sup>76</sup> Bidders know what they will pay if they win and, therefore, face uncertainty only about whether or not their bid will be accepted.

From 1989 to 1997, all Japanese IPOs were conducted in this auction format.<sup>77</sup> In addition to allocation by auction, issuers had the option of allocating, at most, 50 percent of their new shares at an offering price that equaled the volume-weighted average of successful bids in the auction.<sup>78</sup> From January 1993, the underwriter was also allowed to discount the offering price if the reasons were submitted to the Ministry of Finance.<sup>79</sup> In addition, the Japanese format contained restrictions on the maximum number of shares available to every investor.<sup>80</sup> When U.S.-style book-building became available in 1997, shares offered in auction IPOs showed an average return of 11.4 percent on the first day of trading, compared with 48 percent for shares issued through the book-building process (with standard deviations of 15.5 percent and 102.7 percent, respectively).<sup>81</sup>

### B. Sealed-bid uniform-price auction

In a sealed-bid auction with uniform prices, bidders face uncertainty around both acceptance and price.<sup>82</sup> Similar to the process described above, bidders use sealed bids to indicate the highest price they are willing to pay for the security and the number of shares they wish to purchase.<sup>83</sup> The bids are aggregated to form a demand curve, and the entire offering is then distributed at the market-clearing price (hence the occasional label “competitive auction”).<sup>84</sup> Depending on the design, the clearing price is either the price at which all items can be sold (the lowest winning bid) or the highest nonwinning bid price (as in the sealed-bid second-price auction for a single object).<sup>85</sup> Since 1998, the U.S. Treasury used that auction format to sell all of its bonds, notes, and bills.<sup>86</sup>

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76. Raymond P.H. Fishe, *How Stock Flippers Affect IPO Pricing and Stabilization*, 37 J. FIN. & QUANTITATIVE ANALYSIS 319, 320 (2002); see also Robert E. Berney, *The Auction of Long-Term Government Securities*, 19 J. FIN. 470, 479 (1964); Kaneko & Pettway, *supra* note 64, at 440.

77. Kaneko & Pettway, *supra* note 64, at 440.

78. *Id.* at 440 nn.5–6.

79. *Id.* at 440 n.6.

80. *Id.* at 440.

81. *Id.* at 446.

82. John G. McDonald & Bertrand C. Jacquillat, *Pricing of Initial Equity Issues: The French Sealed-Bid Auction*, 47 J. Bus. 37, 39 (1974); Vernon L. Smith, *Experimental Studies of Discrimination Versus Competition in Sealed-Bid Auction Markets*, 40 J. Bus. 56, 60 (1967).

83. Smith, *supra* note 82, at 56.

84. See *id.* at 57.

85. See *id.* at 57, 71.

86. See Gary Gensler, Sec’y for Fin. Mkts., U.S. Dep’t of Treasury, Remarks at the November 1998 Treasury Quarterly Refunding (Oct. 28, 1998), available at <http://www.treas.gov/press/releases/tr2782.htm>. In a sealed-bid, uniform-price auction, the dominant strategy is to bid your estimate of the asset value. This bid guarantees that the bidder will not pay more than what she thinks the asset is worth, and a lower bid would only decrease her chance of winning without affecting her final price.

Since 1964, most IPOs in France have used sealed-bid auctions with uniform prices (*offres à prix ferme*).<sup>87</sup> The issuer and its underwriters at the Paris Bourse, however, typically adjust the clearing price downward, aiming at an offering price 2 percent to 5 percent below what they believe to be the intrinsic value of the issue.<sup>88</sup> That provides an immediate return to investors and encourages participation in the auction.<sup>89</sup> The greater the level of participation in the auction, the more information the pricing committee will have about how the market truly values the security that is offered for sale, making the initial pricing more accurate.<sup>90</sup> Historical data from the Paris Stock Exchange has shown that the first-day return of auction IPOs averages 6.6 percent, compared to 16.9 percent for book-building IPOs (with standard deviations of 9.4 percent and 24.5 percent, respectively).<sup>91</sup>

Following the practice at the Paris Bourse, W.R. Hambrecht + Co. was still underwriting offerings of public securities using a sealed-bid auction with uniform prices called the OpenIPO.<sup>92</sup> In this model, issuing companies set a minimum reservation price and solicit bids. Any qualified investor can open an account with the bank, access the prospectus online, and bid for shares. Once all bids have been received, they are put in order from highest to lowest.<sup>93</sup> The market-clearing price is the highest price at which total demand meets or exceeds the number of shares issued.<sup>94</sup> If total demand at the clearing price is higher than the supply of shares, allocations to the bids above the clearing price are prorated.<sup>95</sup> The issuer reserves the discretion to lower the offering price below the clearing price (in which case bids below the clearing price are only partially filled).<sup>96</sup>

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87. McDonald & Jacquillat, *supra* note 82, at 37.

88. *Id.* at 43.

89. *See id.* at 43, 47.

90. *See id.* at 42, 44, 46 (concluding that in a modified competitive auction the pricing committee is able to accomplish its pricing objectives).

91. Derrien & Womack, *supra* note 29, at 36.

92. *See* Choo, *supra* note 1, at 417 (discussing W.R. Hambrecht's OpenIPO); WR Hambrecht + Co, OpenIPO Auctions, <http://www.wrhambrecht.com/inst/openipo/index.html> (last visited Sept. 12, 2007).

93. *See* Choo, *supra* note 1, at 415 (discussing the mechanics of the Dutch auction IPOs); WR Hambrecht + Co, OpenIPO: Institutional Investor FAQ, <http://www.wrhambrecht.com/inst/openipo/faq.html> (last visited Sept. 12, 2007).

94. *See* Denis T. Rice, *When the Nanotech Company Goes Public: Using the Electronic Dutch Auction*, 3 NANOTECH. L. & BUS. 185, 188 (2006) (reviewing how a public offering price is determined in an auction); *see also* Saul Hansell, *Internet Auction System Set for Pricing Stock Offerings*, N.Y. TIMES, Feb. 8, 1999, at C7 (discussing how stock is priced and allocated in Hambrecht's Dutch auction).

95. *See* Rice, *supra* note 94, at 188 (describing how auction shares are allocated); WR Hambrecht + Co, OpenIPO: Pro-Rata Allocation, <http://www.wrhambrecht.com/inst/openipo/prorata.html> (last visited Sept. 12, 2007).

96. *See* Rice, *supra* note 94, at 188 (discussing how the public offering is priced and allocated in an auction); *see also* Christine Hurt, *What Google Can't Tell Us About Internet Auctions (And What It Can)*, 37 U. TORONTO L. REV. 403, 423-24 (2006) (discussing Google's retention of the right to set the offering price below the clearing price); WR Hambrecht + Co, OpenIPO: Institutional Investor FAQ, *supra* note 93.

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On its Web site, W.R. Hambrecht + Co describes what it sees as the benefits of OpenIPO to both investors and issuers.<sup>97</sup> For investors, the benefits are described as equal access to the IPO for institutions as well as individuals, an impartial allocation mechanism, a transparent pricing mechanism, and a uniform offering price.<sup>98</sup> For issuers, the benefits are described as placing stock with investors who want to hold the shares rather than flip them, pricing based on market demand, lower underwriting costs, and (therefore) the possibility of smaller deals and less dilution.<sup>99</sup>

A success story for the use of auctions is the IPO of Overstock.com, a company that purchases excess inventory from manufacturers and distributors and resells it on its Web site.<sup>100</sup> Overstock.com went public in May 2002, using Hambrecht's OpenIPO to raise \$32.5 million and subsequently issued several follow-on offerings by the same method.<sup>101</sup> The auction format led to an offering price remarkably close to its evaluation in the aftermarket.<sup>102</sup> Relative to changes in the NASDAQ index, Overstock.com's shares experienced a price adjustment of a mere -0.23 percent (+0.23 percent in absolute terms) during the first day of trading. After one week, that adjustment amounted to -3.44 percent (-5.23 percent absolute)<sup>103</sup> and, after 180 trading days, to 0.35 percent (-8.45 percent absolute).<sup>104</sup>

On the other hand, the case of Salon.com (a media group specializing in Internet content) reinforces the concerns of the critics of auction IPOs who argue that uninformed investors create an information problem when trying to set the opening price, bidding the price to unsustainable levels prior to opening.<sup>105</sup> Traditional IPOs, by contrast, benefit from expert bankers' informed assessments of the value

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97. WR Hambrecht + Co, *Why Companies Use the OpenIPO Auction*, <http://www.wrhambrecht.com/comp/equity/openipo/why.html> (last visited Sept. 12, 2007).

98. *Id.*

99. *Id.*

100. See Hess, *supra* note 34, at 107 (discussing the success of Overstock.com's Dutch auction IPO); David Gardner & Tom Gardner, *Why Can't a CEO Tell the Truth*, MOTLEY FOOL, Feb. 18, 2004, <http://www.fool.com/specials/2004/04021800ceo.htm>.

101. See Raymond Hennessey, *IPO Outlook: It's Not Google, But an 'Auction' Is on the Way*, WALL ST. J., May 17, 2004, at C6; see also *Overstock.com Latest 'Open-Auction' IPO*, L.A. TIMES, May 30, 2002, at 4.

102. See Raymond Hennessey, *Online Retailer Overstock.com Closes Unchanged in Market Debut*, DOW JONES BUS. NEWS, May 30, 2002; *What's News—Business and Finance for May 30*, DOW JONES BUS. NEWS, May 30, 2002.

103. See, e.g., Google Finance, *Historical Prices for OSTK (Overstock.com, Inc.) May 30, 2002, to June 10, 2002*, <http://finance.google.com/finance/historical?cid=672821&startdate=may+2%2C+2002&enddate=june+10%2C+2002> (last visited Sept. 6, 2007).

104. See, e.g., Google Finance, *Historical Prices for OSTK (Overstock.com, Inc.) Oct. 31, 2002, to Dec. 5, 2002*, <http://finance.google.com/finance/historical?cid=672821&startdate=oct.+31%2C+2002&enddate=dec.+5%2C+2002> (last visited Sept. 6, 2007).

105. See Alan J. Berkeley, *Some Background and Simple FAQs about Dutch Auctions and the Google IPO*, in *FUNDAMENTALS OF SECURITIES LAW* 275, 279 (Am. Law Inst.-Am. Bar Ass'n 2007) (discussing the risks of Dutch auction IPOs); *Salon IPO No Page-Turner*, CNNMONEY.COM, June 22, 1999, <http://money.cnn.com/1999/06/22/technology/salon/>.

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of the issuing company.<sup>106</sup> Salon.com went public in June 1999 through Hambrecht's OpenIPO, raising a \$26 million investment.<sup>107</sup> Relative to the NASDAQ benchmark, the value of its stock was eroded by -4.9 percent, -15.5 percent, and -89.6 percent at the one-day, one-week, and 180-day marks (-4.2 percent, -13.1 percent, and -44.1 percent in absolute terms).<sup>108</sup>

Overall, Hambrecht's record with OpenIPO was mixed. For the six OpenIPOs that had been trading for at least 180 days in March 2004, Exhibit 1 charts the difference between the percentage change in stock value and the percentage change in NASDAQ value at the one-day, one-week, and 180-day marks. Exhibit 2 shows the same information for IPOs through Hambrecht's book-building business, and Exhibit 3 contains aggregated information about U.S. IPOs. This data puts the first-day return of new stock in the U.S. at an average 18.8 percent over the period of 1980-2001, compared to an average daily market return of .05 percent in the same period. During the rally of Internet stocks in 1999-2000, first-day returns even rose to 65 percent.<sup>109</sup>

#### IV. MONEY LEFT ON THE TABLE

At the heart of the debate over auction IPOs lays the question of which IPO form best serves the interests of both companies and investors.<sup>110</sup> William Hambrecht, chairman and CEO of W.R. Hambrecht + Co., argued that "[i]n a traditional IPO, certain offers are oversubscribed, resulting in a 'hot' aftermarket."<sup>111</sup> The Dutch auction allows "a better price-discovery system."<sup>112</sup> Hambrecht also noted that "we created the OpenIPO auction to balance the interests of companies and investors."<sup>113</sup>

Despite those alleged benefits, U.S. issuers have been slow to use any auction format. Since 1999, W.R. Hambrecht + Co. has completed only nine public offerings under the OpenIPO format, raising a total of slightly more than \$300 million.<sup>114</sup> According to Hambrecht, "[i]t was very frustrating."<sup>115</sup> And of his efforts to sell his system in the Silicon Valley territory that he knows well, Hambrecht said, "I

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106. See Choo, *supra* note 1, at 416; see also Anita Indira Anand, *Is the Dutch Auction IPO a Good Idea?*, 11 STAN. J.L. BUS. & FIN. 233, 238 (2006).

107. *Salon IPO*, *supra* note 105.

108. See, e.g., Yahoo! Finance, Historical Prices for Salon Media Group, <http://finance.yahoo.com/q/hp?s=SLNM.OB&a=10&b=23&c=1999&d=11&e=20&f=1999&g=d> (last visited Sept. 6, 2007).

109. Ritter & Welch, *supra* note 35, at 1796.

110. See Berkeley, *supra* note 105, at 279-80.

111. Dan Ackman, *A Better, More Honest IPO*, FORBES, Oct. 17, 2002, <http://www.forbes.com/2002/10/17/1017ipo.html>.

112. *Id.*

113. WR Hambrecht + Co, OpenIPO: Potential Benefits, <http://www.wrhambrecht.com/ind/auctions/openipo/benefits.html> (last visited Sept. 12, 2007).

114. Lucas C. Townsend, Comment, *Can Wall Street's "Global Resolution" Prevent Spinning? A Critical Evaluation of Current Alternatives*, 34 SETON HALL L. REV. 1121, 1169 (2004).

115. Ackman, *supra* note 111.

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would say that nine times out of ten there was a philosophical meeting of the minds with management.’ But when the issue went to the board of directors and the venture capitalists, few could resist the lure of Morgan Stanley and Goldman Sachs.”<sup>116</sup>

Emotions ran high when Patrick Byrne, CEO of Overstock.com, was interviewed by David and Tom Gardner on NPR on January 30, 2004:

*A lot of the nefarious behavior that came to light from Wall Street in the last three or four years, was really, really driven by a pathological IPO process. What you have is a bunch of white-shoe Wall Street bankers, and you know I don’t like these guys, so I will talk about them that way. These bad men who are taking companies public at artificially low prices. Now anytime you take a company public at an artificially low price, there is guaranteed profit. Anytime there is guaranteed profit to be assigned by somebody, there are kickbacks. It doesn’t matter if you are talking about some Paraguay customs official or if you are talking about some white-shoe banker on Wall Street. So what they were doing was giving guaranteed profits to their friends and pension funds and other things and getting kickbacks . . . . But I know probably better than anyone the kinds of pressures that got brought to bear by Wall Street when we decided to go with Hambrecht. People said, “I had white-shoe Wall Street bankers tell me if you go with them, we will never pick up coverage.” Just threatening me. I don’t negotiate with terrorists. So they made my decision for me. I hope Google has a lot more clout than we did, and I hope they stand up to the pressures that I am sure are going to be brought to them.”<sup>117</sup>*

In 2003, Google banned investment bankers from its headquarters and shrouded the preparation of a possible IPO in secrecy.<sup>118</sup> Because it would result in potentially the largest technology IPO since the burst of the Internet bubble in March 2000, Google’s final decision was eagerly awaited.<sup>119</sup>

On July 30, 2004, Google opened its IPO website (ipo.google.com) for business, inviting bidders with an account at one of the participating banks to register for a sealed-bid uniform-price auction of its stock.<sup>120</sup> In its prospectus, Google advised potential bidders that they could register during a period of about one week, but

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116. *Id.*; see Noelle Knox & Matt Krantz, *Lawmakers Say IPOs Used to Attract Clients*, USA TODAY, Oct. 2, 2002, at 1B (discussing how investment banks are rigging the IPO system).

117. *The Motley Fool: Overstock.com CEO Patrick Byrne* (NPR radio broadcast Jan. 30, 2004), available at [www.npr.org/templates/story/story.php?storyId=1627276](http://www.npr.org/templates/story/story.php?storyId=1627276).

118. See Robin Sidel, Mylene Mangalindan & Kevin J. Delaney, *At Google, Mum’s the Word about Almost Everything*, WALL ST. J., Apr. 27, 2004, at B1 (discussing Google’s possible initial public offering of stock).

119. Jerry Knight, *Google Not the First to Go Dutch*, WASH. POST, Aug. 23, 2004, at E01; Robin Sidel & Mylene Mangalindan, *Web Search Firm Google Weighs IPO Next Year*, WALL ST. J., Oct. 24, 2003, at A2.

120. Hurt, *supra* note 96, at 422–23.

did not set a firm deadline.<sup>121</sup> Analysts conjectured that Google extended the duration of the registration process in the face of a response rate that was lower than expected.<sup>122</sup> Google suggested a price range of \$108 to \$135 for 25.7 million shares, a price many analysts deemed too high.<sup>123</sup>

On August 18, 2004, the auction process was completed at a selling price of \$85.00 per share and an emission of 19.6 million shares of class A common stock.<sup>124</sup> On the following day, Google stock started trading on the NASDAQ Stock Market.<sup>125</sup> The offering was made through an underwriting syndicate that was led by Morgan Stanley and Credit Suisse First Boston, and co-managed by some of the biggest names in underwriting.<sup>126</sup> These co-managers included, in addition to Hambrecht + Co., the firms of Goldman Sachs, Citigroup, Lehman Brothers, Allen & Company, J.P. Morgan Securities, and UBS.<sup>127</sup> Underwriting fees totaled \$46.7 million or 2.8 percent of the revenue raised.<sup>128</sup> By the end of the first trading day, Google stock rose by 18 percent to \$100.34—ironically close to the historical average of 18.8 percent.<sup>129</sup>

#### V. POSSIBLE EXPLANATIONS

There is still considerable academic disagreement about the causes of the persistent under-pricing phenomenon in the U.S. IPO market.<sup>130</sup> The dominant trend in the finance literature maintains the “efficiency hypothesis” that the observed pattern of behavior is, in fact, in the issuer’s rational self-interest.<sup>131</sup> There are three common explanations in this mold—all of which relate to inherent uncertainty about the issuing firm’s value and to information asymmetries between issuers and different types of investors.

First, underpricing is argued to reassure investors by offering some protection against overbidding (“the winner’s curse”).<sup>132</sup> Investors possess different amounts

121. Google Inc., Registration Statement (Form S-1) (Apr. 29, 2004).

122. See Susan Kuchinskas, *Google Slashes IPO Price, Plans Debut Thurs.*, INTERNETNEWS.COM, Aug. 18, 2004, <http://www.internetnews.com/bus-news/print.php/3396541>.

123. See Chris Taylor, *Google’s IPO: Buyer, Beware*, TIME, Aug. 9, 2004, at 22; David A. Vise, *Google Ends Auction for IPO Shares*, WASH. POST, Aug. 19, 2004, at A1.

124. Press Release, Google Inc., Google Inc. Prices Initial Public Offering of Class A Common Stock (Aug. 18, 2004), available at <http://www.google.com/press/pressrel/ipo.html>.

125. See William Glanz, *Google IPO Raises \$1.67 Billion; Shares Rise 18 Percent*, WASH. TIMES, Aug. 20, 2004, at 1.

126. See Press Release, *supra* note 124.

127. *Id.*

128. See *Google Shares Hit \$100.34 in Market Debut*, EWEEK, Aug. 19, 2004, [http://findarticles.com/p/articles/mi\\_zdewk/is\\_200408/ai\\_n7183854/pg\\_2](http://findarticles.com/p/articles/mi_zdewk/is_200408/ai_n7183854/pg_2).

129. See Ritter & Welch, *supra* note 35, at 1795; Glanz, *supra* note 125; see also *infra* Exhibit 4.

130. See Ritter & Welch, *supra* note 35, at 1822. Under-pricing is usually defined in terms of a return on new stock in large excess over some benchmark index on the first day of trading (“abnormal returns”).

131. See Lawrence M. Benveniste & Paul A. Spindt, *How Investment Bankers Determine the Offer Price and Allocation of New Issues*, 24 J. FIN. ECON. 343, 343 (1989).

132. See Kevin Rock, *Why New Issues Are Underpriced*, 15 J. FIN. ECON. 187 (1986).

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of information about the uncertain value of the stock issue.<sup>133</sup> In particular, retailers with less information than institutional investors are more strongly exposed to the risk of overbidding.<sup>134</sup> By this logic, underpricing is necessary to ensure participation by poorly informed investors, as suggested by Akerlof's "lemons model."<sup>135</sup> However, efficiency would then imply that the occasional over- and under-performance of stocks should average to near zero.<sup>136</sup>

A second explanation concerns the signal sent by the issuer's choice of offering price.<sup>137</sup> In a lemons model, only issuers of above-average performance are worth an average market price.<sup>138</sup> Investors therefore will be weary of high average prices in return for a stock of uncertain quality.<sup>139</sup> To signal their superior quality, issuers may then decide to offer their shares at a price *below* the market evaluation.<sup>140</sup> This signal becomes credible because issuers of lower quality cannot afford to "throw away money" in this manner.<sup>141</sup> This signaling may reap benefits in follow-on issues at higher prices.<sup>142</sup> This theory presupposes that firm quality persists from the time of the first offer to the time of a follow-on issue.<sup>143</sup>

The third explanation rationalizes underpricing as the cost of information gathering.<sup>144</sup> Underwriters allocate discounted shares to relatively well-informed investors who, in exchange, reveal their information prior to the pricing of the offering in the book-building process.<sup>145</sup> This practice could counteract the incentive of investors to inflate their demand in the face of oversubscription.

The evidence on all of these theories is open to several interpretations.<sup>146</sup> Welch and Ritter, who offer an excellent survey of the literature and whose data is summarized in Exhibit 3, argue that these theories may have been sufficient to explain

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133. See Ritter & Welch, *supra* note 35, at 1804; Ivo Welch, *Seasoned Offerings, Imitation Costs, and the Underpricing of Initial Public Offerings*, 44 J. FIN. 421, 421 (1989).

134. See Ritter & Welch, *supra* note 35, at 1804; Rock, *supra* note 132, at 191–92.

135. George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q. J. ECON. 488, 489 (1970) (using the automobile market as an example to observe that good cars must be priced equally with bad cars because a buyer cannot distinguish a good car from a lemon); Rock, *supra* note 132, at 193.

136. See Rock, *supra* note 132, at 205; see also Yakov Amihud et al., *Allocations, Adverse Selection, and Cascades in IPOs: Evidence from the Tel Aviv Stock Exchange*, 68 J. FIN. ECON. 137, 138 (2003).

137. See Kevin C.H. Chiang & T. Harikumar, *Offering Price Clusters and Underpricing in the US Primary Market*, 14 APPLIED FIN. ECON. 809, 811 (2004).

138. See Akerlof, *supra* note 135, at 489.

139. See *id.*

140. See Ritter & Welch, *supra* note 35, at 1803; Welch, *supra* note 133, at 432–33.

141. See Ritter & Welch, *supra* note 35, at 1803.

142. See Welch, *supra* note 133, at 444 ("The mean ratio of [stock offering] proceeds over IPO proceeds for reissuing firms over the entire period is in excess of 3.").

143. *Id.* at 423.

144. See Ritter & Welch, *supra* note 35, at 1804–05. See generally Benveniste & Spindt, *supra* note 131.

145. See Ritter & Welch, *supra* note 35, at 1804–05.

146. See *id.* at 1802–07 (analyzing evidence from the dominant theoretical explanations of IPO underpricing based on the assumption of asymmetrical information).

the average first-day returns of 7 percent in the 1980s, but are incapable of explaining the severe under-pricing of Internet IPOs observed from 1999 to 2000.<sup>147</sup>

An explanation that is less common in the academic literature, but popular among practitioners, views under-pricing as compensation paid to institutional investors for their support of the underwriters' efforts to stabilize prices in the aftermarket and to discourage flipping.<sup>148</sup> However, a recent study finds that institutional investors flip more stocks than retailers.<sup>149</sup>

The existence of alternative IPO mechanisms in France, Japan, Israel and elsewhere offers interesting possibilities for testing the efficiency hypothesis, either by comparing the relative performance of IPOs across countries with different systems<sup>150</sup> or by studying changes within a country.<sup>151</sup> A difficulty with such tests is the question of whether a study adequately measures all effects on the issuer of different allocation systems.

## VI. CONCLUSION

None of the available theories explains the striking difference in the performance of auction IPOs in the U.S. and elsewhere, whether these practices are efficient or not. This problem suggests an "equilibrium selection" hypothesis that also sheds light on the immediate business problem confronted by Google and Hambrecht + Co.<sup>152</sup>

We may view the situation as a multi-player game with multiple equilibria. One equilibrium prevails in the United States through the book-building process and its surrounding practices. A second equilibrium can be found, for instance, in France, where the parties' self-interested, strategic behavior within an auction system results in much lower first-day returns.

Hambrecht's introduction of the auction model to the U.S. market amounts to an attempt to shift an entire system of interests and strategies into a long-term stable, but entirely different state. Because each player's optimal strategy depends on the prevailing equilibrium, U.S. investors and underwriters are unlikely to choose the same strategy in an auction IPO as their counterparts within the French system.

In fact, U.S. institutional investors and underwriters have every incentive not to allow Hambrecht's innovation to succeed, as so vividly suggested by Patrick Byrne's polemics.<sup>153</sup> The theoretical advantages of auction IPOs, also established by game-

147. *Id.* at 1807.

148. *See generally* Aggarwal, *supra* note 52, at 113.

149. *See id.*

150. *See* Bruno Biais & Anne Marie Faugeron-Crouzet, *IPO Auctions: English, Dutch, . . . French, and Internet*, 11 J. FIN. INTERMEDIATION 9 (2002); Derrien & Womack, *supra* note 29; Alexander P. Ljungqvist & William J. Wilhelm Jr., *IPO Allocations: Discriminatory or Discretionary*, 65 J. FIN. ECON. 167 (2002); McDonald & Jacquillat, *supra* note 82.

151. *See, e.g.*, Kaneko & Pettway, *supra* note 64.

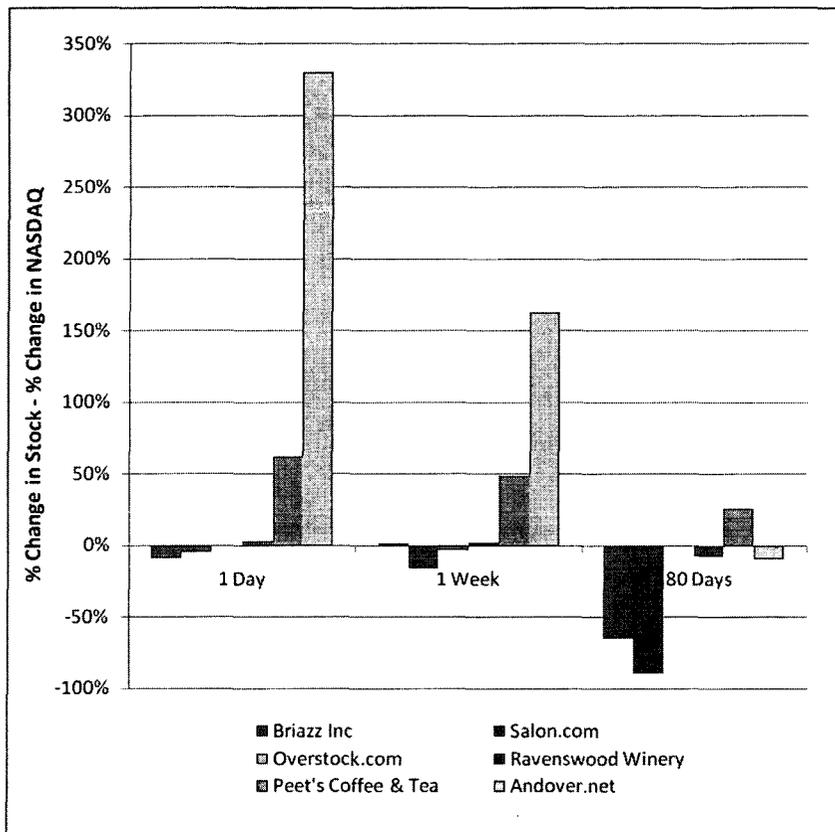
152. *See generally* Rock, *supra* note 132 (introducing and explaining an equilibrium selection hypothesis).

153. *See* Vise, *supra* note 123.

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theoretic reasoning, therefore become marginal compared to what is at stake in the larger long-term game within which these auctions are embedded.<sup>154</sup>

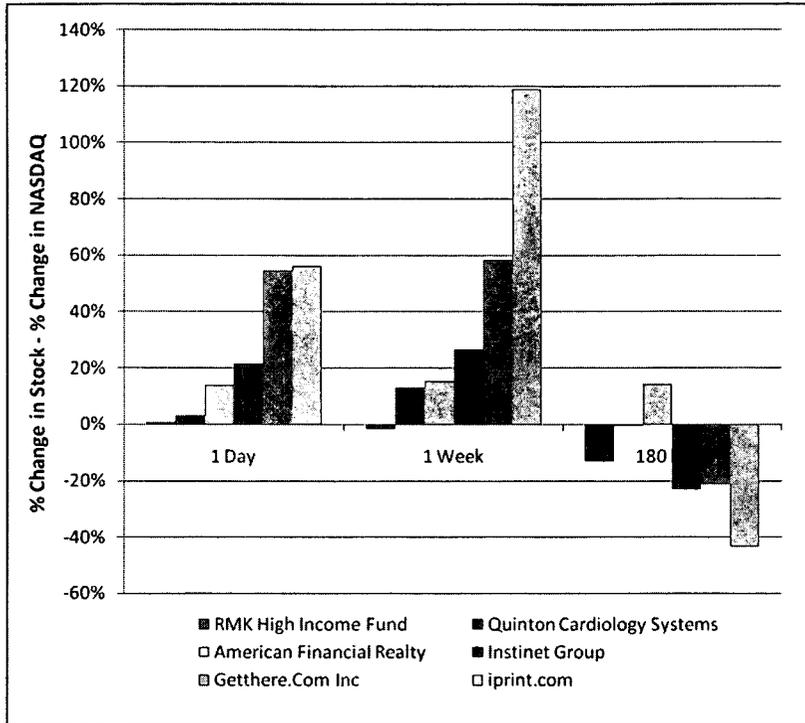
**Exhibit 1**  
**Stock Performance in WR Hambrecht + Co.'s Open IPO**



Source: Bloomberg LP (last visited Mar. 20, 2006).

154. For a similar situation, compare the experience of European governments in the 3G telecommunications auctions where long-term interests in a larger game also prevented competitive bidding behavior. See generally Ken Binmore & Paul Klemperer, *The Biggest Auction Ever: The Sale of the British 3G Telecom Licences*, 112 *Econ. J.* C74 (2002).

Exhibit 2  
Stock Performance in WR Hambrecht + Co.'s Book-Building IPOs



Source: Bloomberg LP (last visited Mar. 20, 2006).

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Exhibit 3  
Stock Performance in Average U.S. IPO

Year	Total Number of IPOs	No. of IPOs Doubling in Value	Average First-Day Return	Money Left on the Table (millions)	Gross Proceeds	Average Percentage of Firm Sold	Percentage of Tech Stocks	Percentage of IPOs with EPS<0	Average First-Day Return for EPS<0	Average First-Day Return for EPS≥0
1980-89	1,982	9	7.4 percent	\$5,409	\$82,476	30.5 percent	26 percent	19 percent	9.1 percent	6.8 percent
1990-94	1,632	6	11.2 percent	\$9,954	\$101,652	34.7 percent	23 percent	26 percent	10.8 percent	11.4 percent
1995-98	1,752	34	18.1 percent	\$22,436	\$140,613	32.0 percent	37 percent	37 percent	19.2 percent	17.4 percent
1999-2000	803	182	65.0 percent	\$65,625	\$129,363	22.4 percent	72 percent	79 percent	72.0 percent	43.5 percent
2001	80	0	14.0 percent	\$2,973	\$34,344	26.3 percent	29 percent	49 percent	13.3 percent	11.6 percent
1980-2001	6,249	231	18.8 percent	\$106,397	\$488,448	29.0 percent	34.5 percent	34 percent	31.4 percent	12.5 percent

Source: Ritter & Welch, *supra* note 35. IPOs with an offer price below \$5 per share, unit offers, REITs, closed-end funds, banks and S&Ls, ADRs, and IPOs not listed on CRSP within six months of issuing have been excluded. Data is from Thomson Financial Securities Data, with supplements from Dealogic and other sources, and corrections by authors. The first-day return is defined as the percentage change from the offer price to the closing price. IPOs doubling in price are those with a first-day return of 100 percent or more. Money on the table is defined as the first-day price change (offer price to close) times the number of shares issued (global offering amount, excluding over-allotment options). Money on the table and gross proceeds numbers are in dollars of 2001 purchasing power, using the CPI. The last column reports the mean issue size relative to the post-issue number of shares outstanding (including all classes of shares). When available, earnings per share (EPS) are for the most recent twelve months (commonly known as LTM for last twelve months) prior to going public. When a merger is involved, pro forma numbers are used (as if the merger had already occurred). When unavailable, the most recent fiscal year EPS numbers are used. Missing numbers were supplemented by direct inspection of prospectuses on EDGAR, and EPS information from Dealogic (also known as CommScan) for IPOs after 1991, and Howard & Co.'s *Going Public: The IPO Reporter* from 1980 to 1985. Tech stocks are defined as Internet-related stocks plus other technology stocks, not including biotech.

Exhibit 4  
Performance of Google Stock in First Week of Trading

