

Collusion and Stock Offerings: A Classroom Exercise for Economics and Finance Classes

Robert M. Hull, Sungkyu Kwak, Rosemary L. Walker ♦

ABSTRACT

Collusion-based lawsuits surrounding initial and seasoned offerings have been a reoccurring phenomenon. This paper offers a classroom exercise for economics and finance courses that allows students to experience the collusion phenomenon. This is achieved through simulating how underwriters and preferred clients participate in schemes of buying and selling shares of a new stock issue in order to make exorbitant profits. Students experience the consequences when excessive investor demand is not tempered with an understanding of how earning fundamentals determine security value. Most importantly, students gain insight into the ethical responsibilities of those involved in the security issuance process.

Introduction

The purpose of this paper is to present a classroom exercise so that students can experience how collusion impacts the stock price of a firm undergoing a new offering. The exercise is devised primarily for use in the following courses: Principles of Economics, Money and Banking, Investments, and Financial Management. We have conducted the exercise in a class time as short as fifty minutes and have adapted it to class sizes ranging from about twenty to forty students.

As applied to a new stock offering, collusion refers to the covert activities of underwriters and preferred clients who conspire to manipulate the price of the newly issued shares in order to gain exorbitant profits. The fear that underwriters will collude to influence stock prices is as old as the underwriting industry itself. Class-action lawsuits against underwriters' manipulation of stock prices have been a readily publicized phenomenon since the Initial Public Offering (IPO) bubble peaked during 1999-2000. Evidence found in the media (often based on inside leakages) suggests that this bubble period provides a laboratory to study how collusive behavior influences stock prices. The media-reported collusion occurred when underwriters and their preferred clients schemed to take advantage of excessive investor demand around the time of the offering. While the collusion resulted in windfall profits for underwriters and preferred clients, it also led to substantial losses for those investors who were not the initial recipients of the new shares.

Even though collusive behavior associated with IPOs has been given widespread attention by the media, this conspiratorial behavior is not confined to IPOs. For example, collusion has also been alleged to accompany seasoned offerings (SEOs). Vignette Corp., Sify Ltd., NPS Pharmaceuticals Inc., and Net Perceptions Inc. are just a few examples of SEOs for which lawsuits involving collusion were filed the last ten years. Besides these cases, there are also lawsuits dealing with other forms of price misrepresentation at the time of SEO offerings. Some examples include Atmel Corp., Xoma Ltd., Epiphany Inc., and Vitria Technology Inc.

This paper's classroom exercise allows students to experience collusion as it takes place between underwriters and preferred clients via a "laddering" scheme that drives up stock prices by creating excess demand. While some students achieve the excessive profits associated with being underwriters and preferred clients, others endure the frustration of being nonpreferred clients who are confined to the sidelines to watch the initial allocation of the "hot" IPO shares. Later after acquiring shares at inflated

♦ Rosemary L. Walker is Associate Professor of Economics, Robert M. Hull is Professor of Finance, and Sungkyu Kwak is Associate Professor of Economics. The address for all authors is: Washburn University, School of Business, 1700 SW College Avenue., Topeka, Kansas 66621, USA. Corresponding author: rosemary.walker@washburn.edu; (785)-670-2054.

prices, the nonpreferred clients suffer the further aggravation when the stock they purchased falls to a fraction of its purchase price. Students learn there can be negative consequences when unfounded optimism causes an investor to buy stocks of firms with inflated expectations and poor fundamentals, e.g., a history of meager or even negative earnings.¹ Most importantly, students are faced with the ethical question as to who is more responsible for the losses endured by the nonpreferred clients. Is it the underwriters? Is it the preferred clients? Is it the nonpreferred clients who failed to properly examine issuing firms' long-term earnings trends?

Learning Objectives

To achieve this paper's goal of presenting an experiential exercise on how collusion impacts the stock price of a firm undergoing a new offering, we pursue the following learning objectives.

- Students experience how buyers and sellers are matched by underwriters, and how these buyers and sellers react to shortages and surpluses resulting from collusion.
- Students discover the risk investors take on when they allow market fervor to influence their decision-making rather than trusting in a critical economic and financial analysis.
- Students gain knowledge of the role played by excess demand when stocks are priced.
- Students become skilled at computing the profits (losses) under collusion and thus learn how to account for the winners and losers when agents conspire.
- Students deal with the ethical question of who is responsible when over-optimistic investors succumb to prearranged schemes of buying and selling.

Other learning targets may be incorporated by instructors through the use of additional materials. For example, the internet provides a plethora of materials for integrating desirable learning aims. These include: security issuance methods used by underwriters in other countries; web sites by law firms that account for the actual details of collusion lawsuits; and prominent economic and financial web sites that provide fundamentals needed for sound investment decisions.

Collusion and Key Related Issues

For collusion in stock prices to occur, a number of central players must perform needed actions. These players include the underwriters and preferred clients who must agree to collude, and later investors who must be willing to buy the shares initially allocated to preferred clients. Experts have written on the allocation methods and the extent to which these methods support the collusion process. For example, Sherman (2006) writes that the book building method supports collusion because it allows underwriters to gather private information from potential investors. Privileged information about heavy demand for a new offering permits underwriters to successfully plan a buying and selling scheme whereby outlandish profits can be made.

In contrast to the book building method, the auction method uses a competitive bidding process that allows equal access to buying shares. However, auctions are not without problems as researchers argue that they cannot guarantee an efficient and equitable allocation of shares. For example, Biais and Faugeron-Crouzet (2002) write that a Dutch auction can be inefficient to the extent that it is conducive to tacit collusion by investors. They add that the book building method can lead to optimal information elicitation and price discovery. Sherman (2006) points out that book building, unlike auctions, reduces risk by controlling the number of investors involved. She suggests that multiple bidders found in auctions elevate the risks by leading to inaccurate pricing information, significant aftermarket volatility, and unpredictable bidder participation.

Book building advocates argue that the control provided by book building is important to prevent overpricing. This is crucial for an IPO firm because an overpriced issue that fails to attract buyers can lead to the demise of a firm trying to go public. Because the auction method cannot gather information prior to the offering, it has no way of preventing overpricing. Chowdhry, Bhagwan, and Sherman (1996) point out that no method is immune from breakdowns in pricing. This is because, despite the method used, price

¹ Ritter (2007) finds negative earnings for 82% of the 801 firms that had IPOs when the bubble peaked (1999-2000). Yet these same firms (many of which later went out of business) had a mean equal-weighted first day return of 71%.

leakage before the offer date can result in under-subscription if the price is set too high (or over-subscription if the price is set too low).

While the theoretical debate lingers over the best method of allocating new shares, Hull, Kerchner, Kwak, and Walker (2005) examine empirical data and show the potential profit of favoritism inherent in the book building method. They do this by examining quarterly data surrounding the bursting of the IPO bubble around the end of the year 2000. They discover for one quarter (July 1, 2000 through September 30, 2000) that it was possible for underwriters and preferred clients to have made, on average, over half as much money as that raised by the firms undergoing IPOs.² As the allegations about collusion started to become public, they found that the profit possibilities for underwriters disappeared with some underwriting resulting in losses.

Even without media reports of collusion that facilitated the bursting of the IPO bubble, Hiler (2002) argues that the collusive profits could not last much longer because they were based on internet advertising revenues that followed a pyramid scheme. Hiler, who experienced the bubble as a Wall Street analyst, contends that pyramids stimulate high returns by transferring funds from new investors to prior investors and by selling inventory (internet advertising) to each other. Hiler writes that the Federal Trade Commission's safeguards against pyramid schemes were not applied because no one recognized that the bubble was a pyramid. These safeguards were related to the amount of (i) advertising sales to non-internet customers, (ii) ads selling a real product, and (iii) buy-back of unused advertising inventory. Because these safeguards were never applied, the internet companies were able to create high short-term profit levels that were unsustainable over time. Consequently, the stock prices of these companies were doomed to eventually plummet.

The Classroom Exercise

To prepare for the classroom exercise, instructors assign readings to familiarize students with the dynamics of collusion and the issuance process. Our chosen readings (available on request) include data from the IPO bubble period and factual published numbers detailing the transactions of an investor accused of being part of a laddering scheme. We fit the subject matter of the exercise with a course topic that is similar to it. For example, we coordinate the exercise with the collusion topic in an economics class or with the issuance process topic in a finance class. The instructor's lecture should also review the influence of excess demand on price and why security valuation should consider a fundamental analysis that illustrates how economic conditions and firm earnings determine security value.

An instructor can introduce the exercise using the background information provided in Appendix 1. After students are assigned to a group, each group member is given a handout applicable to its group. These handouts are in Appendix 2. While group handouts can be redundant for the groups that are similar, each handout is also different in the precise task that it assigns. Instructors need to be knowledgeable of the different tasks in each handout so they can advise groups prior to and during the exercise. Each handout contains the same equations for computing profits (losses) from trading shares. Illustrations using these equations are given in the background information supplied for the instructors in Appendix 1. We recommend that instructors go over these illustrations with students before they are given their handouts.

Handouts 1–3 are for the three groups of preferred clients who are investing in the IPO, while handouts 4–9 are for the six groups of nonpreferred investors. Investors given handouts 4–6 can be categorized as market speculators driven by greed, while those given handouts 7–9 can be labeled as rational investors who “think before they act” by basing decisions on a fundamental economic and financial analysis of the issuing firm. While the number of students assigned to a group depends on the class size, more students should be put in groups 1–3 based on the greater role they play in the exercise. Fewer students should be assigned to groups 7–9 as their activity is limited. Besides these latter nine groups, there is the underwriter (or underwriting) group who (i) oversees the initial allocation of shares, (ii) serves as market maker in the aftermarket, announcing prices and matching bid and buy orders, and (iii) computes revenues for all sell orders and costs for all buy orders. This group should not only include the greatest number of students but also some of the better (if not the best) students. Because the underwriter group has the most difficult tasks, we appoint them a class period in advance so they can be properly instructed. All other groups can be given

² The numbers given by Hull, Kerchner, Kwak, and Walker (2005) are consistent with Ritter (2007) who reports, for the years 1999 and 2000, that the “aggregate amount left on the table” is over half of the aggregate proceeds.

their handout the day of the exercise with time allotted at the beginning of class so that the instructor can meet with any group that has questions about its tasks.

Our classroom exercise is designed to use dollar amounts and percentages that are consistent with the bubble period. For example, our exercise's gross amount of \$70 million raised on the offer day is like the \$63 million gross median amount found by Hull, Kerchner, Kwak, and Walker (2005) from April 1, 2000 to July 1, 2000. Similarly, the 20% fee charged to favored clients per trade (that our exercise uses) is consistent with reported kickback numbers. Copeland and Lucie (2001) write that kickback fees were from 10 to 50 times greater than the typical 1% fee.³ For trades not prearranged with preferred clients, our exercise uses a 1% fee.

When students do the exercise, the excess demand will dramatically increase the stock's price from its offer price of \$10. This outcome parallels what happened during the peak of the IPO bubble (1999-2000). For example, Ritter (2007) reports that there were 254 IPOs that at least doubled in price the first day of trading during 1999-2000. In contrast, there were no IPOs that doubled in price the following three years when conditions favoring collusion were removed due at least in part to the onslaught of lawsuits. Ritter further reports that the first day returns averaged over 65% for 1999-2000. This is greater than the historical average first day return of 15% reported by Jenkinson and Ljungqvist (2001) suggesting conditions were ripe for collusion to occur during 1999-2000.

Abnormally large first day returns followed by a continued price run-up are consistent with schemes of "laddering" (or "tie-in") that produce large profits. This paper's classroom exercise incorporates a laddering process through the tasks assigned to the underwriter and preferred client groups. The tasks help insure the price support needed to achieve a price run-up consistent with laddering. Our exercise's laddering scheme follows the process gleaned from reports in the financial press. For example, *The Wall Street Journal* gave insider accounts in late 2000 on how underwriters operated tie-ins with preferred clients to buy shares in the IPO aftermarket. Williams (2006) writes that the investment banking firm of Robertson Stephens has been alleged to have used laddering with their preferred clients. Williams describes the operation of the laddering process as follows:

"In order for certain Robertson Stephens customers to receive IPO share allocations, the customers were required to agree to buy more shares of that same issuer's common stock in the aftermarket," the lawsuits claim. Brokers "would often denote the price that the customers would have to pay in the aftermarket, and these prices would escalate upward in a plan known as laddering," the suits allege."

To insure that the exercise's collusion process will leave a "quantifiable trail," the underwriter group is the official keeper of records maintaining all buy and sell orders for each round. Thus, they can compute each group's profits (losses) adjusted for all fees paid. Their records can be used to reveal how excess demand influenced prices throughout the laddering process and how excess supply caused the steep decline after the price support ended. All other groups maintain their own records for their buy and sell transactions so they can compute their after-fee profits (losses), and if the instructor requests it, explain how their profits (losses) were attained.

After the prearranged buying and selling ends, prices begin to decline since the collusive market support supplied by preferred client terminates. The price should eventually settle at an equilibrium price below \$30 and even near the initial price of \$10. This equilibrium price is driven by those nonpreferred teams who are instructed to follow sound fundamental economic principles. If an equilibrium price below \$30 is not reached before class time runs out, the instructor can hasten the process by alerting students that the IPO bubble has burst. This is done by stating that enough time has elapsed to reveal that IPO high-tech companies are not producing the earnings that had been expected by greedy and irrational investors. This ends the exercise and so profits or losses earned by each group can be finalized. Those holding shares can compute their profits (losses) based on the designated equilibrium price. We suggest using an equilibrium price of \$10 to reflect the fact most IPO bubble company are only initially successful but later meet ruin.

With the exercise ended, the instructor leads a discussion of what happened during the exercise asking students to comment on their experiences and what they learned. The instructor can then assign take-home questions such as suggested in Appendix 3. Solutions to these questions are available on request. They include an Excel spreadsheet with computations from a recent exercise that also illustrate the direct impact of excess demand (supply) on the price increase (decrease).

³ For example, HKEx Corporate (2006) states that 1% is their fee.

Experiences and Results When Conducting the Exercise

This paper's exercise has been successfully conducted for three academic years in economics and finance classes. After each time the exercise has been conducted, the specific instructions found in the handouts have been fine-tuned to better insure student simulation of the collusion documented by insider reports given by the media. While some students may still have questions about some of their specific instructions before beginning the exercise, we have found that students generally have no trouble in carrying out their assignments and achieving the desired outcomes of the learning objectives. While we stress it is important for students to adhere strictly to their instructions, we have found that occasional deviations from the instructions serve a positive purpose in revealing how market participants themselves may have actually behaved during the internet bubble.

Learning outcomes we have frequently witnessed when conducting the exercise have revolved around (i) the winners and losers of collusion, (ii) the consequences of investing without proper economic and financial analysis, and (iii) the ethical dilemmas associated with collusion during a bubble period. Comments relating to these three learning outcomes are overviewed below.

First, student remarks indicate they are very much cognizant about who has gained and lost due to the collusion. One student wrote that the preferred clients have an edge over other investors: *"It made it easy for the preferred buyers to make a lot of profits in that situation and the common buyer just got the leftovers."* Another student agrees by writing: *"Collusion between two parties allows the two colluding entities to generate profits and people who jump on the bandwagon to lose."* One student remarked on the influence of collusion in creating a price run-up (causing huge winners and losers) by writing: *"Collusion definitely existed during the IPO bubble; or else the stock prices wouldn't have gotten so out of hand on worthless stock."*

Second, student comments indicate an important lesson of the classroom exercise was not to let market fervor keep you from examining facts that might reveal the stock's true value. For example, one student wrote that he learned to *"do your studying before you buy a stock, to see what its worth."* Continuing this theme, another student noted that the most important lesson was learning *"how easy it is to lose money investing when you behave without examining the facts."*

Third, students commented on the ethics of what occurred during the classroom exercise and during the IPO bubble in general. A student, who was a member of the underwriting group (FCWM), remarked on the ethics surrounding the issuance by the IPO firm (BanzerTech) by noting there were two sides to any argument that FCWM behaved unethically. She stated:

"We (FCWM) were expected to provide our services in the best interest of BanzerTech, but we also wanted our preferred clients to make money. Did we behave ethically? There are arguments both for and against this. First, some would say we did perform ethically because we are a business and are out to make a profit. We needed to not only provide services for BanzerTech but needed to make money for our preferred clients by giving them top priority during trades. Some would say we behaved unethically because there was no value added to the society from our transactions. We simply shifted money from pockets of others to our preferred clients."

A student who was a preferred client felt that the underwriters (FCWM) behaved unethically toward the IPO issuing company (BanzerTech). He wrote that there was *"a false interest in BanzerTech since FCWM required you to buy an extra amount after the initial purchase."* He added: *"For this reason, I think the FCWM performed somewhat unethically."*

Beyond the comments about the ethics experience by students in the exercise, there were comments concerning the ethics of what might have occurred during the actual IPO bubble from 1997-2001. For example, one student stated based on his/her experience of the class exercise:

"I would say collusion was present during the IPO bubble but at the same time irrational behavior by investors played a major role. By setting up situations where the price of worthless stock would be driven up in an attempt to make top clients major money, I would without a doubt say that FCWM acted unethically."

This paper's classroom exercise was informative not only to the students, but also to the instructors. For example, based on the information supplied in the handouts, we expected the stock price to increase to around \$60 and then start its descent to well below \$30 per share. However, whenever we have conducted the exercise, the price of the stock often increased to \$70 a share where buying and selling was sustained before it began its crash. Additionally, the stock price would not always decline linearly (as we expected)

but increase a second time before once again dropping. We learned that members of the preferred group (even when they know that price support is no longer in effect) will at times continue to buy beyond their required number of shares. Having made tons of money, they still believed other investors would keep bidding up prices. Because of their decision to continue to buy shares, their profits invariably dropped.

Concluding Remarks

In closing, this paper offers a classroom exercise that enables students to experience how collusion impacts the stock price of a firm undergoing a new offering. Our exercise personifies the pedagogical genre examined by studies that have found students show higher learning achievement when classes embody active learning through direct application of lecture material involving classroom interaction.⁴ The “learning-by-doing” approach embodied in this paper’s exercise should help students better understand concepts common to both economics and finance courses. Perhaps most importantly, our classroom exercise gives students insight into the ethical responsibility of those selling and buying shares when information advantages exist for those controlling the allocation of shares. This learning is essential in preparing students to become future leaders who will be entrusted to behave ethically when in positions of power and authority.

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⁴ For example, see Emerson and Taylor (2004).

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Appendix 1: Background Information for Instructors

There currently exists an IPO bubble for internet stocks. Due to high investor demand, prices for these bubble stocks often increase five-fold or more within days. A hot new IPO is being offered by BanzerTech Inc., which is a high-tech internet firm. BanzerTech is using First City Wealth Management Inc. (FCWM) to underwrite its IPO. During the book building process to promote BanzerTech's IPO, FCWM obtained information from investor groups concerning the number of shares they are willing to purchase and at what price. With this information, FCWM has insight into how supply and demand will influence BanzerTech's stock. Thus, if the offer price is set below what investors are willing to pay, then FCWM will have an idea as to what profits can be made in the IPO aftermarket. This information can also be used to help plan prearranged schemes of buying and selling in the IPO aftermarket to insure profits for preferred clients.

FCWM recommends that BanzerTech raise the amount of money it desires by offering 7,000,000 shares at \$10 per share with BanzerTech getting \$9.50 per share and FCWM receiving \$0.50. Thus, BanzerTech collects 95% of the offer value and FCWM gets 5%. With gross proceeds of \$70,000,000 and FCWM's fee at 5%, the net proceeds for BanzerTech are \$66,500,000 with FCWM pocketing \$3,500,000 for its efforts. Additionally, BanzerTech has given FCWM an over-allotment option to sell an additional 1,000,000 shares at \$10 per share. If these shares are considered, the gross proceeds will be \$80,000,000 representing net proceeds of \$76,000,000 and fees of \$4,000,000.

In their handout, the FCWM group is given instructions for determining the initial shares allocation with the three groups of preferred clients receiving all shares. To receive these shares, these clients promise to buy specified numbers of shares in the IPO aftermarket at prearranged prices. The exercise begins with the FCWM group asking for initial bids at the offer price of \$10 from all groups. After these bids are collected by students in the FCWM group, they allocate shares to the three groups of preferred clients. The next round begins when students in the FCWM group (who also act as market makers) ask for bids to buy and offers to sell at \$30. The stock price for each subsequent round will be based on the previous round as described in the handout for the underwriting group. For example, if there is a surplus of buyers, the market makers will announce that buy and sell order for the next round are being taken at a price that is greater (by \$10) than the prior round. When a shortage of buyers is eventually reached, the stock price will be decreased by \$10 for the next round. If there are no buy and sell matches for the announced price for a new round, the stock price will continue its trend of increasing or decreasing by \$10. To illustrate, if the stock price has fallen from \$50 to \$40 because of a shortage of buyers and there are no buyers at \$40, the stock price can be set at \$30 so sellers can have a chance to sell.

The handouts instruct groups on whether they are preferred or nonpreferred clients and how to compute their profits (losses). The handouts also give rules to follow. For example, investors are only allowed to buy or sell stock in 1,000,000 share multiples. FCWM charges a 20% fee for specified trades to preferred clients. The high fee is a kickback since all other trades charge only a 1% fee. Priority in trades is given to preferred investors (until they finish their promised trades); otherwise, those who want to buy or sell greater numbers of shares are given first priority when matching buy and sell order.

Below are two illustrations instructors can use to instruct students on how to compute a buy and sell order. They illustrate a profit for a preferred client and a loss for a nonpreferred client.

You buy 2,000,000 shares at \$10 and sell them at \$50. What is your net profit if the fee is 20%?

$$\text{Cost of Purchase} = (\text{Buy Price} \times \text{Number of Shares}) \times (1 + \text{Fee}) \rightarrow$$

$$\text{Cost of Purchase} = (\$10 \times 2,000,000) \times (1.2) = \mathbf{\$24,000,000.}$$

$$\text{Revenue from Sell} = (\text{Sell Price} \times \text{Number of Shares}) \times (1 - \text{Fee}) \rightarrow$$

$$\text{Revenue from Sell} = (\$50 \times 2,000,000) \times (0.8) = \mathbf{\$80,000,000.}$$

$$\text{Net Profit} = \text{Revenue from Sell} - \text{Cost of Purchase} \rightarrow$$

$$\text{Net Profit} = \$80,000,000 - \$24,000,000 = \mathbf{\$56,000,000.}$$

You buy 2,000,000 shares at \$60 and sell them at \$40. What is your net profit if the fee is 1%?

$$\text{Cost of Purchase} = (\$60 \times 2,000,000) \times (1.01) = \mathbf{\$121,200,000.}$$

$$\text{Revenue from Sell} = (\$40 \times 2,000,000) \times (0.99) = \mathbf{\$79,200,000.}$$

$$\text{Net Loss} = \$121,200,000 - \$79,200,000 = \mathbf{-\$42,000,000.}$$

Appendix 2: Student Handouts

Handout #1: You are part of the S. Smith Group (Group #1).

You are the #1 preferred client of the underwriting company, First City Wealth Management Inc. (FCWM). You are ranked #1 because you regularly buy large quantities of shares when FCWM underwrites security offerings even if the offering is not “hot.” As a preferred client, you are aware of your privileges and have profited handsomely from investing in past offerings. During the book building process, you were informed you would get 3,000,000 shares of the hot IPO for BanzerTech Inc. at an expected offering price of \$10 per share.

For the privilege of buying into the current hot IPO, you have promised that you would not sell your 3,000,000 allotted shares until you buy 1,000,000 additional shares in the aftermarket when the price reaches \$30. The 1,000,000 shares you bid for at \$30 will be sold to you out of FCWM’s inventory of shares that come from its over-allotment option. After you buy the 1,000,000 shares at \$30, you are free to buy or sell as many shares as you want at any time and at any price. However, it is understood that FCWM’s prearranged scheme of price support for BanzerTech’s stock will only continue until the stock price hits \$50. At that time, you suspect the excess demand will cease and it will be anyone’s guess as to what will happen. Given this information, you plan on unloading any shares you might still own if the price hits \$60.

You pledge to pay the brokerage fees FCWM charges, which is 20% of the dollar amount of any buy or sell trade involving the 3,000,000 shares you have been initially allocated. Because a 20% transaction fee is exorbitant, it is not public information. Any shares you buy and sell, beyond the first 3,000,000 shares, will incur the normal brokerage fee of 1%. Adjusting for the anticipated fee, your expected net profit (loss) per buy and sell is given by the below equations:

Cost of Purchase = (Buy Price × Number of Shares) × (1 + Fee) where Fee = 0.20 or 0.01

Revenue from Sell = (Sell Price × Number of Shares) × (1 – Fee) where Fee = 0.20 or 0.01

Net Profit (Loss) = Revenue from Sell – Cost of Purchase

Task Summary for the S. Smith Group (Group #1)

1. Buy 3,000,000 shares of the IPO when it is initially offered and pay a 20% fee.
2. Buy an additional 1,000,000 shares once the price reaches \$30 and pay a 1% fee.
3. After you buy 4,000,000 shares, sell your shares (or even buy more) as you wish; however, only pay a 20% fee for up to the first 3,000,000 shares you might sell; otherwise, pay a 1% fee.
4. If you still hold shares when the price hits \$60, you are highly advised to try to unload them.
5. Compute your profits (losses) using the above equations.

Handout #2: You are part of the J. Jones Group (Group #2).

You are the #2 preferred client of the underwriting company, First City Wealth Management Inc. (FCWM). You are ranked #2 because you regularly buy moderate to large amounts of shares when FCWM underwrites security offerings. As a preferred client, you are aware of your privileges and have profited sizably from investing in past offerings. During the book building process, you were informed you would get 2,000,000 shares of the hot IPO for BanzerTech Inc. at an expected offering price of \$10 per share.

For the privilege of buying into the current hot IPO, you have promised that you would not sell your 2,000,000 shares until you put in bids to buy at least 1,000,000 more shares in the aftermarket when the price reaches \$40. If you cannot buy at \$40 you must continue to put in a bid until you have bought the required 1,000,000 shares. Unless there is a free fall in price (which you do not expect), you cannot sell any of your shares until you have acquired 3,000,000 total shares. After acquiring 3,000,000 shares, you are free to buy and sell as many shares as you want at any time and at any price. However, it is understood that FCWM’s prearranged scheme of price support for BanzerTech’s stock will only continue until the stock price hits \$50. At that time, you suspect the excess demand will cease and it will be anyone’s guess as to what will happen.

You pledge to pay the brokerage fees FCWM charges, which is 20% of the dollar amount of any buy or sell trade involving the 2,000,000 shares you have been initially allocated. Because a 20% transaction fee is exorbitant, it is not public information. Any shares you buy and sell, beyond the first 2,000,000 shares, will

incur the normal brokerage fee of 1%. Adjusting for the anticipated fee, your expected net profit (loss) per buy and sell is given by the below equations:

Cost of Purchase = (Buy Price × Number of Shares) × (1 + Fee) where Fee = 0.20 or 0.01

Revenue from Sell = (Sell Price × Number of Shares) × (1 – Fee) where Fee = 0.20 or 0.01

Net Profit (Loss) = Revenue from Sell – Cost of Purchase

Task Summary for J. Jones Group (Group #2)

1. Buy 2,000,000 shares of the IPO when it is initially offered and pay a 20% fee.
2. Buy 1,000,000 additional shares and pay a 1% fee, but do not put in a bid to buy until the price reaches \$40. Keep bidding until you purchase the 1,000,000 additional shares.
3. After you buy 3,000,000 shares, sell your shares (or even buy more) as you wish; however, pay only a 20% fee for up to the first 2,000,000 shares you might sell; otherwise, pay a 1% fee.
4. Compute your profits (losses) using the above equations.

Handout #3: You are part of the B. Brown Group (Group #3).

You are the #3 preferred client of the underwriting company, First City Wealth Management Inc. (FCWM). You are ranked #3 because you regularly buy moderate amounts of shares when FCWM underwrites security offerings. As a preferred client, you are aware of your privileges and have profited from investing in past offerings. During the book building process, you were informed you would get 2,000,000 shares of the hot IPO for BanzerTech Inc. at an expected offer price of \$10 per share.

For the privilege of buying into the current hot IPO, you have promised that you would not sell your 2,000,000 shares until you put in a bid to buy at least 1,000,000 additional shares in the aftermarket when the price reaches \$50. If you cannot buy at \$50 you must continue to put in a bid until you have bought the required 1,000,000 shares. Unless there is a free fall in price (which you do not expect), you cannot sell any of your shares until you have acquired 3,000,000 total shares. After acquiring 3,000,000 shares, you are free to buy and sell as many shares as you want at any time and at any price. However, it is understood that FCWM's prearranged scheme of price support for BanzerTech's stock will only continue until the stock price hits \$50. At that time, you suspect the excess demand will cease and it will be anyone's guess as to what will happen.

You pledge to pay the brokerage fees FCWM charges, which is 20% of the dollar amount of any buy or sell trade involving the 2,000,000 shares you have been initially allocated. Because a 20% transaction fee is exorbitant, it is not public information. Any shares you buy and sell, beyond the first 2,000,000 shares, will incur the normal brokerage fee of 1%. Adjusting for the anticipated fee, your expected net profit (loss) per buy and sell is given by the below equations:

Cost of Purchase = (Buy Price × Number of Shares) × (1 + Fee) where Fee = 0.20 or 0.01

Revenue from Sell = (Sell Price × Number of Shares) × (1 – Fee) where Fee = 0.20 or 0.01

Net Profit (Loss) = Revenue from Sell – Cost of Purchase

Task Summary for the B. Brown Group (Group #3)

1. Buy 2,000,000 shares of the IPO when it is initially offered and pay a 20% fee.
2. Buy 1,000,000 additional shares and pay a 1% fee, but do not put in a bid to buy until the price reaches \$50. Keep bidding until you purchase the 1,000,000 additional shares.
3. After you buy 3,000,000 shares, sell your shares (or even buy more) as you wish; however, only pay a 20% fee for up to the first 2,000,000 shares you might sell; otherwise, pay a 1% fee.
4. Compute your profits (losses) using the above equations.

Handout #4: You are part of the R. Rush Group (Group #4).

First City Wealth Management Inc. (FCWM) will be underwriting the IPO for BanzerTech Inc. You would like to buy shares in this IPO but are not a preferred client of FCWM because you rarely buy shares from them. During the book building process you told FCWM that you would attempt to buy 3,000,000 shares in BanzerTech's IPO. If unsuccessful in buying initially, you will continue in your attempt to buy up to 3,000,000 shares at the market price until it reaches \$50. If the price rises past \$50 and you have not purchased shares, you are on your own in deciding whether you want to continue to put in a bid to buy.

Even if successful in buying, you will never hold more than 3,000,000 shares at any one time. If after buying shares, the price drops, you will try to unload all of your shares for fear of a free fall in price.

Any trade you make will incur a brokerage fee of 1%. If you are successful in buying and selling shares, your expected net profit (loss) per buy and sell after adjusting for brokerage fees is given by the below equations:

$$\text{Cost of Purchase} = (\text{Buy Price} \times \text{Number of Shares}) \times (1 + \text{Fee}) \text{ where Fee} = 0.01$$

$$\text{Revenue from Sell} = (\text{Sell Price} \times \text{Number of Shares}) \times (1 - \text{Fee}) \text{ where Fee} = 0.01$$

$$\text{Net Profit (Loss)} = \text{Revenue from Sell} - \text{Cost of Purchase}$$

Task Summary for the R. Rush Group (Group #4)

1. Attempt to purchase 3,000,000 shares until the price reaches \$50 per share.
2. Once the price goes pass \$50, you are free to buy and sell as you want except you will never own more than 3,000,000 shares at any one time.
3. Try to sell any shares you may have acquired if the stock price drops.
4. Compute your profits (losses) using the above equations.

Handout #5: You are part of the G. Green Group (Group #5).

First City Wealth Management Inc. (FCWM) will be underwriting the IPO for BanzerTech Inc. You would like to buy shares in this IPO but are not a preferred client of FCWM because you rarely buy shares from them. During the book building process you told FCWM that you would attempt to buy 2,000,000 shares in BanzerTech's IPO. If unsuccessful in buying initially, you will continue in your attempt to buy up to 2,000,000 shares at the market price until it reaches \$60. If the price rises past \$60 and you have not purchased shares, you are on your own in deciding whether you want to continue to put in a bid to buy. Even if successful in buying, you will never hold more than 2,000,000 shares at any one time. If after buying shares, the price drops, you will try to unload all of your shares for fear of a free fall in price.

Any trade you make will incur a brokerage fee of 1%. If you are successful in buying and selling shares, your expected net profit (loss) per buy and sell after adjusting for brokerage fees is given by the below equations:

$$\text{Cost of Purchase} = (\text{Buy Price} \times \text{Number of Shares}) \times (1 + \text{Fee}) \text{ where Fee} = 0.01$$

$$\text{Revenue from Sell} = (\text{Sell Price} \times \text{Number of Shares}) \times (1 - \text{Fee}) \text{ where Fee} = 0.01$$

$$\text{Net Profit (Loss)} = \text{Revenue from Sell} - \text{Cost of Purchase}$$

Task Summary for the G. Green Group (Group #5)

1. Attempt to purchase 2,000,000 shares until the price reaches \$60 per share.
2. Once the price goes pass \$60, you are free to buy and sell as you want except you will never hold more than 2,000,000 shares at any one time.
3. Try to sell any shares you may have acquired if the stock price drops.
4. Compute your profits (losses) using the above equations.

Handout #6: You are part of the L. Louis Group (Group #6).

First City Wealth Management Inc. (FCWM) will be underwriting the IPO for BanzerTech Inc. You would like to buy shares in this IPO but are not a preferred client of FCWM because you rarely buy shares from them. During the book building process you told FCWM that you would attempt to buy 1,000,000 shares in BanzerTech's IPO. If unsuccessful in buying initially, you will continue in your attempt to buy 1,000,000 shares at the market price until it reaches \$60. If the price rises past \$60 and you have not purchased shares, you are on your own in deciding whether you want to continue to put in a bid to buy. Even if successful in buying, you will never hold more than 1,000,000 shares at any one time. If after buying shares, the price drops by \$20, you will try to unload all of your shares for fear of a free fall in price.

Any trade you make will incur a brokerage fee of 1%. If you are successful in buying and selling shares, your expected net profit (loss) per buy and sell after adjusting for brokerage fees is given by the below equations:

$$\text{Cost of Purchase} = (\text{Buy Price} \times \text{Number of Shares}) \times (1 + \text{Fee}) \text{ where Fee} = 0.01$$

Revenue from Sell = (Sell Price \times Number of Shares) \times (1 – Fee) where Fee = 0.01

Net Profit (Loss) = Revenue from Sell – Cost of Purchase

Task Summary for the L. Louis Group (Group #6)

1. Attempt to purchase 1,000,000 shares until the price reaches \$60 per share.
2. Once the price goes pass \$60, you are free to buy and sell as you want except you will never hold more than 1,000,000 shares at any one time.
3. Try to sell any shares you may have acquired if the stock price drops by \$20.
4. Compute your profits (losses) using the above equations.

Handout #7: You are part of the M. Moss Group (Group #7).

First City Wealth Management Inc. (FCWM) will be underwriting the IPO for BanzerTech Inc. You would like to buy shares in this IPO but are not a preferred client of FCWM because you rarely buy shares from them. During the book building process you told FCWM that you would attempt to buy 3,000,000 shares in BanzerTech's IPO. If unsuccessful in buying initially, you will continue in your attempt to buy up to 3,000,000 shares until the price reaches \$40. You will not pay more than \$40 because your research indicates that there is no evidence to pay more than this. If the price goes pass \$40, you will not buy shares until it falls back to at least \$40. Even if you succeed in buying shares, you will never hold more than 3,000,000 total shares at any one time.

Any trade you make will incur a brokerage fee of 1%. If you are successful in buying and selling shares, your expected net profit (loss) per buy and sell after adjusting for brokerage fees is given by the below equations:

Cost of Purchase = (Buy Price \times Number of Shares) \times (1 + Fee) where Fee = 0.01

Revenue from Sell = (Sell Price \times Number of Shares) \times (1 – Fee) where Fee = 0.01

Net Profit (Loss) = Revenue from Sell – Cost of Purchase

Task Summary for the M. Moss Group (Group #7)

1. Attempt to purchase 3,000,000 shares until the price reaches \$40 per share but never hold more than 3,000,000 shares at any one time.
2. If the price goes above \$40 and you do not yet own 3,000,000 shares then do not attempt to buy more shares until the price falls back to at least \$40.
3. Sell any shares you purchase as you wish.
4. Compute your profits (losses) using the above equations.

Handout #8: You are part of the W. Wagner Group (Group #8).

First City Wealth Management Inc. (FCWM) will be underwriting the IPO for BanzerTech Inc. You would like to buy shares in this IPO but are not a preferred client of FCWM because you rarely buy shares from them. During the book building process you told FCWM that you would attempt to buy 2,000,000 shares in BanzerTech's IPO. If unsuccessful in buying initially, you will continue in your attempt to buy up to 2,000,000 shares until the price reaches \$30. You will not pay more than \$30 because your research indicates that there is no evidence to pay more than this. If the price goes pass \$30, you will not buy shares until it falls back to at least \$30. Even if you succeed in buying shares, you will never hold more than 2,000,000 total shares at any one time.

Any trade you make will incur a brokerage fee of 1%. If you are successful in buying and selling shares, your expected net profit (loss) per buy and sell after adjusting for brokerage fees is given by the below equations:

Cost of Purchase = (Buy Price \times Number of Shares) \times (1 + Fee) where Fee = 0.01

Revenue from Sell = (Sell Price \times Number of Shares) \times (1 – Fee) where Fee = 0.01

Net Profit (Loss) = Revenue from Sell – Cost of Purchase

Task Summary for the W. Wagner Group (Group #8)

1. Attempt to purchase 2,000,000 shares until the price reaches \$30 per share but never hold more than 2,000,000 shares at any one time.

2. If the price goes above \$30 and you do not yet own 2,000,000 shares then do not attempt to buy more shares until the price falls back to at least \$30.
3. Sell any shares you purchase as you wish.
4. Compute your profits (losses) using the above equations.

Handout #9: You are part of the C. Cannon Group (Group #9).

First City Wealth Management Inc. (FCWM) will be underwriting the IPO for BanzerTech Inc. You would like to buy shares in this IPO but are not a preferred client of FCWM because you rarely buy shares from them. During the book building process you told FCWM that you would attempt to buy 3,000,000 shares in the IPO at \$10. If unsuccessful in buying at \$10, you will continue in your attempt to buy up to 3,000,000 shares until the price reaches \$20. You will not pay more than \$20 because your research indicates that there is no evidence to pay more than this. If the price goes pass \$20, you will not buy shares until it falls back to at least \$20. Even if you succeed in buying shares, you will never hold more than 3,000,000 total shares at any one time.

Any trade you make will incur a brokerage fee of 1%. If you are successful in buying and selling shares, your expected net profit (loss) per buy and sell after adjusting for brokerage fees is given by the below equations:

Cost of Purchase = (Buy Price × Number of Shares) × (1 + Fee) where Fee = 0.01

Revenue from Sell = (Sell Price × Number of Shares) × (1 – Fee) where Fee = 0.01

Net Profit (Loss) = Revenue from Sell – Cost of Purchase

Task Summary for C. Cannon Group (Group #9)

1. Attempt to purchase 3,000,000 shares until the price reaches \$20 per share but never hold more than 3,000,000 shares at any one time.
2. If the price goes above \$20 and you do not yet own 3,000,000 shares then do not attempt to buy more shares until the price falls back to at least \$20.
3. Sell any shares you purchase as you wish.
4. Compute your profits (losses) using the above equations.

Handout #10: You are part of the Underwriting Group.

You work for First City Wealth Management Inc. (FCWM), which is an investment banking firm that underwrites security offerings. FCWM will be the underwriter for BanzerTech Inc.'s "hot" IPO. From the book building process, FCWM finds excessive demand for BanzerTech shares and discovers there are enough investors to pay at least \$40 per share for all of the new shares that will be offered. You recommend (and BanzerTech approves) that the shares will be priced initially at \$10 per share. The price is considered a fair price given that BanzerTech has not yet displayed a positive long-term earnings trend. BanzerTech will receive \$9.50 per share leaving FCWM with a profit of \$0.50 per share. BanzerTech will issue 7,000,000 shares to the "public" and an additional 1,000,000 if FCWM exercises its over-allotment option of buying 1,000,000 shares at \$10 per share (with BanzerTech once again getting \$9.50 per share). When the over-allotment option is exercised, there will be 8,000,000 shares outstanding and traded on NASDAQ.

FCWM's policy is to allocate shares in a hot market to preferred clients as a way of rewarding these clients for being long-standing, faithful customers. It has three preferred clients who will have the first chance to buy all of the shares. The preferred clients are ranked as follows: the S. Smith group is #1; the J. Jones group is #2; and, the B. Brown group is #3. These three groups have indicated they are willing to buy all of the 8,000,000 shares (the initial offering of 7,000,000 and the over-allotment of 1,000,000). The other six groups will not be given any of these initially allocated shares because these groups consist of nonpreferred clients.

Besides allocating the IPO shares for BanzerTech, FCWM is the sole market maker for all BanzerTech shares sold in the IPO aftermarket. Unlike most market makers that hold their own inventory of shares for speculation purposes, FCWM's sole task will be matching buyers and sellers. Thus, for each round of trading it will announce the price and ask for buy and sell bids. FCWM will give first priority to arranging deals among the three preferred clients before matching buy and sell orders with other nonpreferred investors. By dealing with its preferred clients, FCWM receives a kickback from these clients. The

kickback is received through charging preferred clients a fee of 20% for those 7,000,000 shares initially sold on the offer day at the offer price of \$10. The 20% fee is based on the total amount of the transaction. Thus, on the offer day FCWM will collect $\$10 \times 7,000,000 \times 0.20 = \$14,000,000$. The 20% fee is much more than the standard 1% that FCWM normally charges. FCWM will also collect another 20% fee if the preferred clients sell these shares later (which they are expected to do before the price collapses). Thus, for the first 3,000,000 shares sold by S. Smith, FCWM will charge a 20% fee. Similarly, for the first 2,000,000 shares sold by J. Jones and B. Brown, FCWM will charge a 20% fee. If these 7,000,000 shares are sold later before the price collapses, at say an average price of \$50, then FCWM would collect $\$50 \times 7,000,000 \times 0.20 = \$70,000,000$. Other than the buy and sell of the 7,000,000 shares initially allocated, all other transactions are at the standard 1% fee. Also, all bids to buy and sell must be in multiples of 1,000,000 shares.

Based on the book building process, FCWM is confident that BanzerTech's stock price will escalate and so has prearranged to sell its 1,000,000 over-allotted shares to its #1 preferred client, S. Smith, at \$30 per share. However, for this sale, S. Smith will only pay a transaction fee of 1% since there is greater risk and less profit to be made when buying shares at \$30 (as opposed to buying at \$10). Also, FCWM has arranged for J. Jones to begin bidding to buy 1,000,000 shares at \$40 per share and B. Brown to begin bidding to buy 1,000,000 shares at \$50 per share. These trades are also at the standard 1% rate. Furthermore, if these preferred clients decide to buy and sell more shares than required by FCWM, they are also charged a 1% fee. Finally, FCWM will also be a market maker in secondary trading for BanzerTech shares for nonpreferred clients. When doing this, FCWM will charge a 1% fee based on the total amount of the transaction for each completed buy and sell transaction.

When a group buys and sells shares, it will be asked to compute its costs and revenues so that it knows its profits (losses). As the official keeper of records, FCWM will also compute all sell and buy orders for each group so that profits (losses) for each group will be known. Adjusting for the anticipated fee (which can be either 20% or 1%), a group's expected net profit (loss) per buy and sell is given by the below equations:

$$\begin{aligned} \text{Cost of Purchase} &= (\text{Buy Price} \times \text{Number of Shares}) \times (1 + \text{Fee}) \text{ where Fee} = 0.20 \text{ or } 0.01 \\ \text{Revenue from Sell} &= (\text{Sell Price} \times \text{Number of Shares}) \times (1 - \text{Fee}) \text{ where Fee} = 0.20 \text{ or } 0.01 \\ \text{Net Profit (Loss)} &= \text{Revenue from Sell} - \text{Cost of Purchase} \end{aligned}$$

Task Summary for the Underwriter Group (Group #10)

1. On the offer date, the spokesperson for your group asks for bids to buy 7,000,000 shares of BanzerTech's IPO at an offer price of \$10 per share. Instruct each of the nine groups of investors to write down on a piece of paper the following: round one, their group number, and the number of shares they are willing to buy at \$10. You must tell them they are only allowed to bid in multiples of 1,000,000 shares. After receiving the bids allocate the shares at \$10 apiece as follows: 3,000,000 to group #1; 2,000,000 to group #2; and, 2,000,000 to group #3. Round one ends with excess demand to buy because there are six groups willing to buy who did not receive shares. Record the three transactions and compute your profits. [NOTE. When computing your profits for round one, keep in mind that you have received $\$10.00 - \$9.50 = \$0.50$ for underwriting the offering. This amounts to $\$0.50 \times 7,000,000 = \$3,500,000$. This profit, along with the \$14,000,000 profit described above for fees, gives you a total profit for round one of \$17,500,000.]
2. With round two, you now become the market maker bringing together both buyers and sellers. The spokesperson for your group announces that the market price is \$30 for any group wanting to buy or sell. Instruct each group to write down the following on a piece of paper: round two, their group number, and the number of shares they are willing to buy or sell at \$30. From all the bids to buy, you sell your 1,000,000 over-allotted shares to preferred client #1 at \$30 per share. Round two ends with excess demand to buy because all preferred clients were instructed not to sell. With round two ended, you can record all transactions and compute your profits. [NOTE. Your fee from Group #1 is $\$30 \times 1,000,000 \times 0.01 = \$300,000$. You also made $(\$30 - \$9.50) \times 1,000,000 = \$20,500,000$ from selling your over-allotted shares at \$30 when you only had to pay BanzerTech \$9.50 per share. Thus, your total profit for round two is \$20,800,000.]
3. For round three, you will announce a price of \$40 since round two ended with excess demand. Instruct each group to write down the following: round three, their group number, and the number of shares they are willing to buy or sell at \$40. Match buyers and sellers keeping in mind that the first priority is given to preferred clients #2 and #3 when they are attempting to finish their required purchases. Otherwise,

- priority goes to the bidders who want to buy or sell the greatest number of shares. There may be no one selling until the price rises to \$50 (or even higher) because all shares may be held until then by preferred clients some of whom are instructed not to sell until they have acquired their required number of shares. If there are any matches and fees, you record them as before and compute your profit. From your official record-keeping, you also compute profits (losses) for all other groups. This ends round three.
4. For all subsequent rounds, continue with the same general procedure described in the previous rounds remembering to record all transactions and profits for each round. To determine the price for any subsequent round follow the below procedure:
 - a. If there was a surplus of offers to buy, you increase the price by \$10 for the next round.
 - b. If there was a surplus of offers to sell, you decrease the price by \$10 for the next round.
 - c. If there are no buyers or sellers, then either increase or decrease the stock price by \$10 for the next round continuing your previous trend of increasing or decreasing.
 - d. If demand equals supply, then (after executing orders) keep announcing you are accepting orders at the same price until there is a surplus of offers to either buy or sell.
 5. Eventually, the rational investors in groups #7, #8, and #9 should determine an equilibrium price because those in groups #1, #2, and #3 will bail out and those in groups #4, #5, and #6 are expected to panic when the stock price falls. However, if class time runs out before this happens, you simply announce the IPO bubble has burst and all those holding shares can value their shares at \$10 per share and compute their profits (losses) accordingly.
 6. When the exercise is over, compute your underwriting fees, which are your profits, and also compute profits (losses) for each group using the three above equations. Keep in mind that all trades incur a 1% fee except the first 7,000,000 shares initially allocated on the offer date to the preferred clients where the fee is 20% for each buy and sell.

Appendix 3: Suggested Discussion Questions⁵

During the IPO bubble, underwriters and their preferred clients allegedly colluded to take advantage of excess demand created by irrational investors. This resulted in massive profits for the “colluding” groups and huge losses for those buying at inflated prices. Answer the following questions.

1. Calculate the profits (or losses) earned by your group.
2. Including the 1,000,000 over-allotted shares, all 8,000,000 shares sold by BanzerTech, Inc. were purchased by First City Wealth Management (FCWM) for \$10.00 per share. Calculate the amount of money raised by BanzerTech if they pay 50 cent per share to FCWM. Do you think BanzerTech would be happy if they knew that the amount of money that FCWM and the preferred groups made was larger than what they raised? Explain?
3. Was FCWM acting in an ethical manner? Explain and include in your explanation if there were any groups that appeared to collude with them.
4. Are zealous investors equally responsible for what happened? In your explanation, try to take a stand as to who is more responsible. Is it FCWM? Preferred clients? Zealous investors?

Use the internet (or other sources) to find answers to the following research questions.

5. What is the book building method of selling new shares? What countries use book building in order to allocate new shares?
6. What is the auction method of selling new shares? Name some countries that primarily use auctions to allocate new shares instead of the book building process.
7. IPOs in the U.S. are often considered a bust if the price does not increase dramatically within months after the stock is released. What allocation method would likely avoid being a “bust”? Explain.
8. Could the collusion activities that occur in countries using book building occur in countries using auctions? Explain.

⁵ Solutions to the suggested discussion questions are available from authors upon request.

Use academic and professional investor resources to answer the following research questions.

9. Try to find academic research publications that offer evidence to support collusion claims. Briefly summarize any evidence you find.
10. Google Inc. had its IPO during August 2004 using an auction method. Its offer price was \$85. Go to Yahoo Finance (<http://finance.yahoo.com/>) and type in the ticker symbol for Google Inc. (GOOG) where it states "Enter symbol(s)", which is towards the top of the left-hand side of the page. Click on "historical prices", which is also towards the top of the left-hand side of the page. You will see a "start date" and "end date" for stock price selection along with boxes to retrieve "daily," "weekly" or "monthly" stock prices for Google. Do not change the "start date" or "end date" but check the "monthly" box. Then click "Get Prices." In the far column you will see the monthly closing price (adjusted for any dividends or stock splits that might have occurred). After studying these monthly stock prices over time, can you tell if the price behavior is consistent with collusion? Explain why or why not?