

# IPO Bubble Collusion: A Classroom Exercise

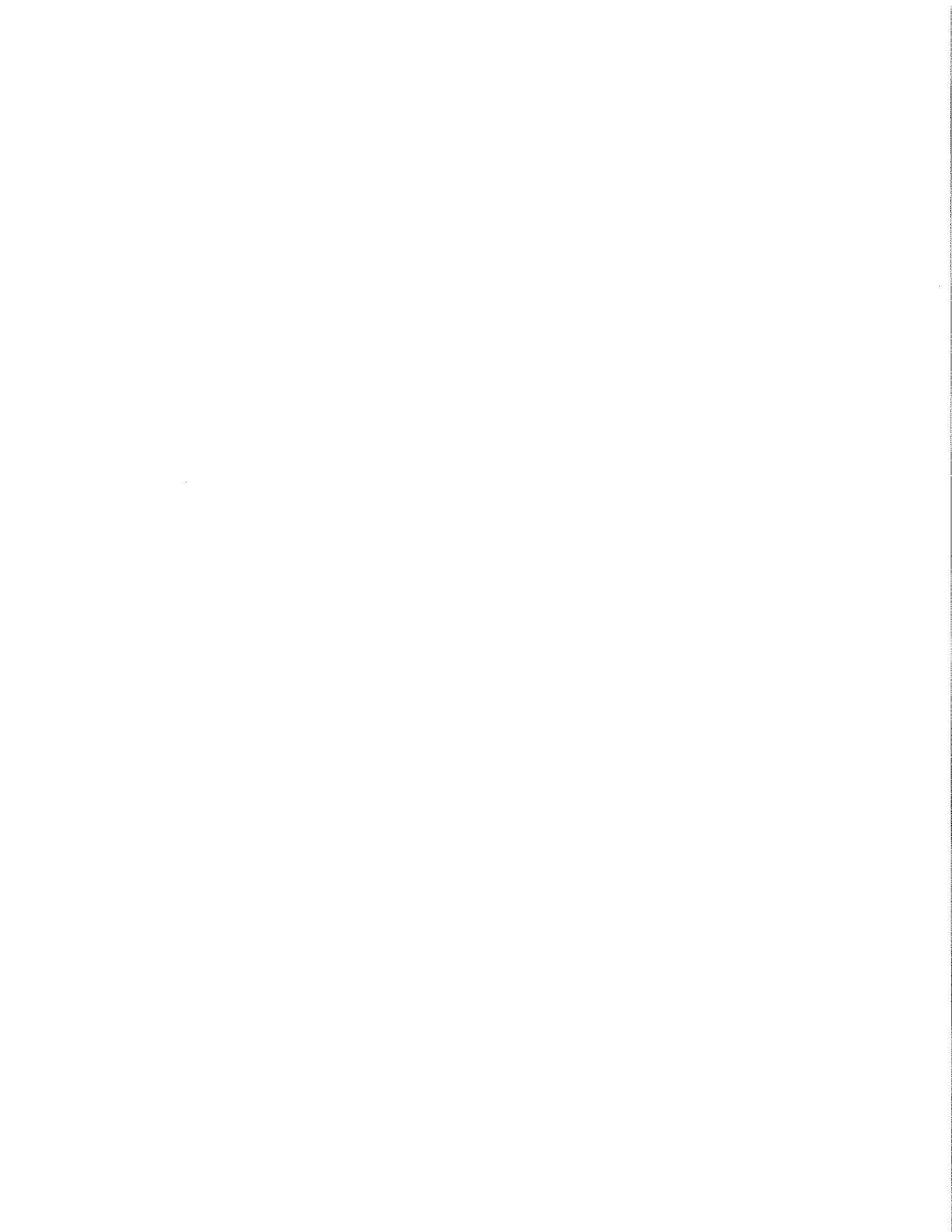
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# IPO Bubble Collusion: A Classroom Exercise

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## Abstract

During the internet IPO bubble at the turn of the century, underwriters and their preferred customers reaped record profits. It is alleged that collusion between these two groups of investors helped fuel these huge IPO profits. As IPO prices skyrocketed, other investors jumped on the bandwagon in an attempt to make their own profits. Their efforts met with disaster when stock prices nosedived after they acquired shares. Collusion has been blamed for their disastrous results. This paper offers a classroom exercise for economics and finance classes that allow students to experience the collusion that was reported as occurring during the IPO bubble. This is achieved through simulating how preferred customers purportedly received favored treatment in the distribution of shares in exchange for taking part in schemes of buying and selling shares in the aftermarket.

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# **IPO Bubble Collusion: A Classroom Demonstration**

*Abstract:* During the internet IPO bubble at the turn of the century, underwriters and their preferred customers reaped record profits. It is alleged that collusion between these two groups of investors helped fuel these huge IPO profits. As IPO prices skyrocketed, other investors jumped on the bandwagon in an attempt to make their own profits. Their efforts met with disaster when stock prices nosedived after they acquired shares. Collusion has been blamed for their disastrous results. This paper offers a classroom exercise for economics and finance classes that allow students to experience the collusion that was reported as occurring during the IPO bubble. This is achieved through simulating how preferred customers purportedly received favored treatment in the distribution of shares in exchange for taking part in schemes of buying and selling shares in the aftermarket.

## **INTRODUCTION**

The Dotcom Initial Public Offering (IPO) bubble from 1997 to 2001 was a time when market fervor caused irrational speculation by investors. It was widely reported that collusion between investment bankers and their preferred customers took advantage of the irrational behavior. The collusion resulted in windfall profits for these preferred customers and substantial losses for those overoptimistic investors who were not the initial recipients of the IPO shares.

In this paper, we present a classroom exercise that allows students to experience being investors during this highly volatile time. While some students experience the profits associated with being preferred customers, others endure the frustration of unsuccessfully attempting to purchase the “hot” IPO during the early stages of the offering. The frustration begins with watching preferred customers get the initial allocation of IPO shares. Finally, after acquiring shares at inflated prices, they suffer the realization that the stock they purchased is worth only a fraction of its purchase price. These students are like those investors who were shut out from profiting during the IPO “gold rush” of the late 20<sup>th</sup> century. They were shut out because there is no reward when investing in firms with small (or negative) profit levels, little cash, only modest revenues and inflated expectations about future performance.

The classroom exercise can be conducted in standard class period times of either 50 minutes or 75 minutes and is designed primarily for economics and finance courses including Principles of Economics, Money and Banking, Business Finance, Investments and Financial Management. The exercise can be tailored to incorporate the following learning objectives:

- Students will understand how buyers and sellers are matched and how these investors react to shortages and surpluses when buying and selling shares.
- Students will calculate the profits or losses of investors under collusion and thus learn how to account for the winners and losers when agents conspire.
- Students will realize the risks they take when allowing market fervor to influence their decision making as opposed to trusting in a critical economic and financial analysis.
- Students will comprehend the role played by investor's expectations when stocks are priced.
- Students will face the ethical question of who is responsible when overoptimistic (and greedy) investors succumb to prearranged schemes of buying and selling.

Additionally, the following learning objectives may be incorporated into the exercise through the use of additional materials, including the internet.

- Students will learn that there are different practices among countries concerning the issuance of shares for the first time.
- Students will examine different IPO methods and why one might be more universally popular.

## **THE CLASSROOM DEMONSTRATION**

### **Design and Implementation**

The experiment on the IPO bubble can be introduced after an appropriate lecture (such as a lecture on collusion in an economics class or a lecture on the issuance process in a finance class) and after students have read two handouts available from the authors. The handouts are based on relevant sections from Hull, Kerchner, Kwak, Walker (2005) and Williams (2006). To aid the introduction of the exercise, instructors are provided with background information (see Appendix 1). After the introduction, students are placed in groups with each group given its handout (see

Appendix 2). Each handout has general information but differs in the precise task assigned. Groups whose main task is to buy IPO shares will be either preferred or nonpreferred customers. Besides the groups composed of these customers, there is one other team: the underwriter (charged with selling the IPO shares) who is also the market maker. It is recommended that you give the market maker handout to your largest group and/or the group with better students.

The classroom exercise is designed to be as realistic as possible without making the numbers overly complicated. To achieve this purpose, we use values (rounded off for simplicity) from the IPO bubble period. For example, the gross amount initially raised of \$60 million 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 customers per trade (that our exercise uses) is consistent with the reported kickback numbers. For example, Copeland and Lucie (2001) write that kickback fees were from 10 to 50 times greater than the typical 1% fee. For trades not prearranged with preferred customers, our exercise uses this typical fee of 1%, which HKEx Corporate (2006) states as their fee.

When students perform the exercise, it is likely the price of the stock will increase from \$10 to \$30 for the first round of bidding in our exercise. This outcome parallels what actually happened during the height of IPO bubble period (1999-2000). For example, there was 117 IPOs that doubled in price before the end of the first day of trading during 1999. While records amount of money was raised during 2000, soon afterward no IPOs were doubling in price. Ritter (2004) reports that the average first day returns was 39.5% from 1997 to 2001 compared to 6% in the 1970s and 1980s.

These large first day returns are conjectured to stem (at least partially if not largely) from collusion between the investment bankers and their preferred customers by way of “laddering”

schemes. The classroom exercise incorporates a “laddering” process through the tasks assigned to the investment banking and preferred customer groups. Williams (2000) notes that Robertson Stephens, an investment banking firm, 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.”

In order to best simulate the laddering process, we typically conduct the exercise using the ten group handouts provided in Appendix 2. However, we have also used a shortened form of the exercise with success. This can be done by combining (at the instructor’s discretion) the eleven groups. For example, handouts 1–3 for the three groups of preferred customers could be reduced into fewer groups. Similarly, handouts 4–6 for the three groups of market speculators and handouts 7–9 for the three groups of informed investors could be combined into fewer groups. These more informed investors (who are interviewed during the road shows) serve to keep the price from free-falling after its peak. Finally, handout 10 (for the investment bankers offering the stock and the market makers) could be eliminated if the instructor prefers to do the job of the investment banker and simply have several students help record the transactions and keep track of the number of shares held by each of the different groups.

Besides condensing the number of groups, there are other variations that an individual instructor might choose. For example, for smaller classes, an instructor may simply designate some students (before the exercise) as preferred customers who will receive favored treatment in the distribution of stock. Other students will be free to buy and sell as instructed in a manner similar to that given in handouts 4–9. Instructors can also have the stock allocated using sealed or open bids through an auction or random drawing. For this situation, the preferred customers

(while more informed) would not be at more of an advantage when the initial stock is distributed. The outcome for this adaptation should not yield outlandish profits for preferred customers.

The classroom demonstration requires that students record their bids (buy or sell and number of shares at the current market price). Our questions are available in Appendix 3 and the solutions key (that we supply upon request) contains a sample handout that students can use to record their transactions and calculate their profits (losses). To aid the recording process, we have found it helpful to have an overhead to show the number of shares owned by groups after each round (or to at least tally the results of each round of trades on a chalkboard). The market makers will need paper to record the transactions so that after the exercise the profits (losses) for each of the groups can be computed. These official results can be compared to profits kept by individual groups who are required to compute their profits along with writing about their experience when participating in the exercise.

After the prearranged buying and selling ends and preferred customers start bailing out, prices should begin to decline. With the collusive market support supplied by preferred customer over, the price is free to eventually settle at an equilibrium price driven by those students who are in the groups of informed investors. If equilibrium is not reached before class time runs out, the instructor can hasten the process by alerting students that the IPO bubble has burst and their shares are only worth \$10 per share based on earnings reports. 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 overzealous investors. This ends the exercise and now the profits or losses earned by each group can be finalized. Those holding shares can compute their profits (losses) based on the current price (we suggest using \$10). With the exercise finished, the instructor leads a discussion of what has happened and also assigns questions.

## Experiences

The exercise has been successfully conducted for two academic years in economics and finance classes. Learning outcomes we have witnessed when conducting the exercise have frequently revolved around (i) the winners and losers of collusion, (ii) the risks taken when investing without proper analysis, and (iii) the ethical dilemmas associated with an IPO bubble. For example, when the students were asked to reflect on their experience with the classroom exercise, comments received often related to these three learning outcomes. These comments are overviewed below.

First, student comments indicate they are very cognizant as to who has gained and lost due to collusion. One student wrote: "... the preferred customers have an edge on your regular stock buyers. 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 indicated that the most important lesson of the classroom exercise was not to let market fervor make you take on unnecessary risks as they wrote "... do your studying before you buy a stock, to see what its worth." Continuing this theme, a student noted that the most important lesson was to "...show how it is easy to lose money investing." Another student commented on the influence of the preferred customers on the market's perception of the stock's value by stating: "Collusion definitely existed during the IPO bubble; or else the stock prices wouldn't have gotten so out of hand on worthless stock."

Finally, 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 investment banker group (FCWM), commented on the ethics of the situation revolving around the IPO firm

(BanzerTech) issuance by noting there were two sides to any argument that FCWM behaved unethical:

“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 clients to our preferred clients.”

Another student who was a preferred customer felt that the investment bankers (FCWM) behaved unethically toward the IPO issuing company (BanzerTech). She wrote that “... there was sort of a false interest in BanzerTech since FCWM required you to buy an extra amount after the initial purchase. For this reason, I think the FCWM performed somewhat unethically.” Beyond the comments about the ethics experience by students in the classroom 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:

“...it is harder to tell if during the actual IPO bubble collusion occurred. I would say to some degree it was present 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.”

The classroom exercise was not only informative to the students, but also to the instructors. Based on the information supplied in the handouts, we expected the stock market price to increase to around \$55-\$60 and then start its descent to around \$10 per share. However, every time that we have attempted the exercise, the price of the stock has increased to around \$70 a share before falling. Additionally, the stock price would not decline linearly (as we expected) but at times begin to increase before once again dropping. We learned that students, even when they know the price is not expected to remain high, will continue to invest apparently believing they

are still on a “roll.” During the exercise, a member of group #1, a preferred customer, was asked why their group was bidding when the price was falling and they knew that the price support was no longer in effect. He replied that they had already made over \$100 million in profits and they could afford to lose a little money. Because of their decision to re-invest, their profits dropped.

### **RELATED LITERATURE**

During the internet bubble the underwriters, their preferred customers, and later investors each played a role in the creation of abnormally high profits tied to collusion. Academic researchers and practitioners (who experienced the IPO internet bubble) have both written on the ethical implications of the profits and the methods used to efficiently allocate IPO shares. Some of these writings are now discussed.

Sherman (2006) states that book building allows issuers and underwriters to maintain greater control over the availability of information than they can in an auction. She suggests that book building produces a conflict of interest allowing underwriters to favor their regular customers in their allocation of IPO shares. Hull, Kerchner, Kwak and Walker (2005) show the potential profit of such favoritism by examining quarterly data surrounding the bursting of the IPO bubble. They discover for one quarter (July 1, 2000 through September 30, 2000) toward the end of the IPO bubble period that it was possible for investment bankers and preferred clients to have made, on average, over half as much money as that raised by the firms undergoing IPOs. Once the allegations about collusion started to become public, they found that the profit possibilities for investment bankers disappeared and some losses resulted.

Even without public reports of collusion that led to the bursting of the IPO bubble, Hiler (2002) argues that internet bubble profits could not last long because they were based on internet advertising revenues that followed a pyramid scheme. In his analysis of the internet advertising

revenues, Hiler (2002) contends that pyramids stimulate high returns, transfer income from new investors to prior investors, and sell inventory (internet advertising) to each other. The Federal Trade Commission's safeguards against pyramid schemes did not hold during the internet bubble. These safeguards include: the "10 customer rule" (advertising sales to non-internet customers), the "70% rule" (internet ads actually sold a real product for a company), and the "buyback rule" (must buy-back unused advertising inventory). Since these rules did not hold, the internet companies were showing high profit levels that actually were not there and, as investors soon learned, stock prices of these companies were doomed to plummet.

One might believe that an auction method of allocation would reduce the chance of collusion and thus increase efficiency. However, Biais and Faugeron-Crouzet (2002) argue that the auction method can also allow for collusion by investors. They state: "Dutch auctions can also lead to inefficiencies, to the extent that they are conducive to tacit collusion by investors. The Book Building ... can lead to optimal information elicitation and price discovery." This book building claim is supported by Sherman (2006) when she describes the benefit of the book building process over auctions in reducing the risk by controlling the number of investors involved. She suggests that multiple bidders elevate the risks by leading to inaccurate pricing information, significant aftermarket volatility, and unpredictable bidder participation.

Book building proponents argue that future efficiency for the IPO pricing process can be reduced when offerings fail due to the auction method's inability to gather information prior to the offering. Regardless of the method used, Chowdhry, Bhagwan and Sherman (1996) point out that price leaks before the issue of an IPO will result in either an oversubscription (if the price is set too low) or the issue will fail (if the stock is set too high). Because failure of the issue is

costly to the firm, the book building process is better equipped to underprice an issue so as to limit the chance of failure.

## **CONCLUSION**

The purpose of this paper's classroom demonstration is to enable students to experience first hand the economic and finance concepts found in reading assignments and lectures. Thus, the experiential learning possibilities offered by our exercise reinforce the materials taught in more common manners. Additionally, our classroom demonstration should give students first hand experience with the ethics of IPO offerings and some basic knowledge of how IPOs were allocated during the IPO bubble. Our classroom demonstration offers an invaluable aid to the learning process as students will more likely maintain the lessons learned during the demonstration as opposed to simply being told what allegedly happened.

No doubt, instructors can think of ways of extending our exercise. Our six-page solutions key (available on request along with Excel spreadsheet computations) offers some extensions. For example, it mentions that one interesting extension of this demonstration would be to create a classroom demonstration for an IPO offering using auctions. This adaptation would allow students to compare the differences between auctions and the book-building process in terms of their strengths and weaknesses. Instructors who are interested in applying our exercise will hopefully think of other creative ways of modifying and adapting what has been stated here.

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## **Appendix 1: Background Information for Instructors**

In this appendix, we attempt to summarize the salient information found in the ten handouts in Appendix 2. This information serves to guide instructors when introducing the exercise and helps instructors prepare students for the task associated with the group they will be placed in.

There currently exists an IPO bubble for internet and technology stocks. Due to high investor demand, these bubble stock prices are increasing five-fold within months of being issued (and in some cases even within days of being issued). A hot new IPO is being offered for the BanzerTech Inc., which is a high-tech internet firm. BanzerTech is using First City Wealth Management Inc. (FCWM) to underwrite its initial public offering. During the book building process to promote BanzerTech's IPO, FCWM obtained information from investment 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 \$20 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 any prearranged schemes of buying and selling in the aftermarket.

FCWM recommends that BanzerTech raise the amount of money it desires by offering 6,000,000 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 \$60,000,000 and FCWM's fee at 5%, the net proceeds for BanzerTech are \$57,000,000 with FCWM pocketing \$3,000,000 for its efforts. Additionally, BanzerTech has given FCWM an overallotment option to sell an additional 1,000,000 shares at \$10 per share. If these shares are considered, the gross proceeds will be \$70,000,000 representing net proceeds of \$66,500,000 and fees of \$3,500,000.

As outlined in the handouts, instructions are given for determining the initial shares allocation with preferred customers receiving all of the shares while promising to buy specified number of shares in the IPO aftermarket at prearranged prices. The exercise begins by asking for initial bids at the offer price of \$10. After the FCWM group allocates shares to the three groups of preferred customers, the next round begins by asking for bids at \$25. The stock price for each round will be based on the previous round as provided in the handout for the market maker group. If there is a surplus of buyers of BanzerTech's stock, the market makers will announce that buy and sell order for the next round are being taken at a price that is \$5 greater than the prior round. If there is a shortage of buyers, the stock price will be decreased by \$5 for the next round. If there are no buyers or sellers for the announced price for a new round, the stock price will continue its trend of increasing or decreasing by \$5. For example, if the stock price has fallen from \$45 to \$40 because of a shortage of buyers and there are no buyers at \$40, the stock price will be set at \$35 so sellers can have a chance to sell. If no buyers at \$35, the price is then set at \$30 and so forth.

The group handouts have simplifying rules. For example, investors are only allowed to buy or sell stock in 1,000,000 share increments and the market maker charges a 1% transaction fee for trades not prearranged; prearranged trades made through FCWM charge a 20% fee as a form of kickback for letting preferred customers make money in the IPO aftermarket. 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. You are given the option of telling students that there are preferred customers.

## Appendix 2: Student Handouts

### Handout #1

#### **You are part of the S. Smith group.**

You are the #1 preferred client of the investment banking company, First City Wealth Management Inc. (FCWM). You are ranked #1 because you regularly buy large quantity 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 IPOs the past half year. During the book building process, you were discretely told you would be able to obtain 3,000,000 shares of the new hot IPO for BanzerTech Inc. with the expected offering price being \$10 per share. BanzerTech is a high-tech internet firm.

For the privilege of buying into the current hot IPO, you have promised FCWM to not sell your 3,000,000 shares until you buy 1,000,000 additional shares in the aftermarket when the price reaches \$30. You suspect that the 1,000,000 shares you bid for at \$30 will be sold to you out of FCWM inventory of shares that come from its overallotment option. After you buy the 1,000,000 shares at \$30, you are free to buy or sell as many shares as you want.

FCWM tells you that it expects excess demand from buyers to persist at least until the stock reaches \$50. It is also understood that FCWM’s prearranged scheme of price support for BanzerTech will continue until the stock price reaches \$50. After that it is anyone’s guess as to what will happen. You suspect that if you do not start selling after the price reaches \$50 you are in danger of losing some of your profits.

You have promised FCWM that you will use the brokerage services they provide as market maker when you buy and sell the 4,000,000 shares allocated to you. You also pledge to pay the brokerage fees they charge. Based on previous experience, you expect to be charged 20% of the dollar amount of any trade involving the 4,000,000 shares you have been given to buy and sell. Because a 20% transaction fee is exorbitant, it is not public information. Any other trades (beyond those 4,000,000 you have been allocated) will incur a more normal brokerage fee of 1%. Thus, your brokerage cost per trade is  $\text{Fee} \times (\text{Buy or Sell Price}) \times \text{Number of Shares}$  where Fee will be either 0.2 or .01.

Adjusting for the anticipated fee, your expected net profit per sell can be given by the below equations:

$$\begin{aligned}\text{Cost of Purchase} &= (\text{Buy Price} \times \text{Number of Shares}) \times (1 + \text{Fee}) \text{ where Fee} = 0.2 \text{ or } 0.01 \\ \text{Revenue from Sell} &= (\text{Sell Price} \times \text{Number of Shares}) \times (1 - \text{Fee}) \text{ where Fee} = 0.2 \text{ or } 0.01 \\ \text{Net Profit (Loss)} &= \text{Revenue from Sell} - \text{Cost of Purchase}\end{aligned}$$

#### **Task Summary**

1. Buy 3,000,000 shares of the IPO when it is initially offered.
2. Buy an additional 1,000,000 shares after the price reaches \$30 per share.
3. Sell your shares (or even buy more) as you wish; however, keep in mind that the price support will only continue until the price reaches \$50 per share.

## Handout #2

### You are part of the J. Jones group.

You are the #2 preferred client of the investment banking company, First City Wealth Management Inc. (FCWM). You are ranked #2 because you regularly buy large quantity of shares when FCWM underwrites security offerings.

As a preferred client, you are aware of your privileges and have profited sizably from investing in IPOs the past half year. During the book building process, you were discretely told you would be able obtain 2,000,000 shares of the new hot IPO for BanzerTech Inc. with the expected offering price being \$10 per share. BanzerTech is a high-tech internet firm.

For the privilege of buying into the current hot IPO, you have promised FCWM to not sell your 2,000,000 shares until you put in bids to buy at least 1,000,000 additional 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 feel is possible), you are not to start selling until you have acquired 3,000,000 total shares. After acquiring these shares, you are free to buy and sell as many shares as you want.

FCWM tells you that it expects excess demand from buyers to persist at least until the stock reaches \$50. It is understood that FCWM's prearranged scheme of price support for BanzerTech will continue until the stock price reaches \$50. After that it is anyone's guess as to what will happen. You suspect that if you do not start selling after the price reaches \$50 you are in danger of losing some of your profit.

You have promised FCWM that you will use the brokerage services they provide as market maker when you buy and sell the 2,000,000 shares allocated to you. You also pledge to pay the brokerage fees they charge. Based on previous experience, you expect to be charged 20% of the dollar amount of any trade involving the 2,000,000 shares you have been given to buy and sell. Because a 20% transaction fee is exorbitant, it is not public information. Any other trades (beyond those 2,000,000 you have been allocated) will incur a more normal brokerage fee of 1%. Thus, your brokerage cost per trade is  $\text{Fee} \times (\text{Buy or Sell Price}) \times \text{Number of Shares}$  where Fee will be either 0.2 or .01.

Adjusting for the anticipated fee, your expected net profit (when buying and selling) can be given by the below equations:

$$\begin{aligned}\text{Cost of Purchase} &= (\text{Buy Price} \times \text{Number of Shares}) \times (1 + \text{Fee}) \text{ where Fee} = 0.2 \text{ or } 0.01 \\ \text{Revenue from Sell} &= (\text{Sell Price} \times \text{Number of Shares}) \times (1 - \text{Fee}) \text{ where Fee} = 0.2 \text{ or } 0.01 \\ \text{Net Profit (Loss)} &= \text{Revenue from Sell} - \text{Cost of Purchase}\end{aligned}$$

### Task Summary

1. Buy 2,000,000 shares of the IPO when it is initially offered.
2. Buy an additional 1,000,000 shares after the price reaches \$40 per share.
3. Sell your shares (or even buy more) as you wish; however, keep in mind that the price support will only continue until the price reaches \$50 per share.

### Handout #3

#### You are part of the B. Brown group.

You are the #3 preferred client of the investment banking company, First City Wealth Management Inc. (FCWM). You are ranked #3 because at times you buy large quantity of shares when FCWM underwrites security offerings.

As a preferred client, you are aware of your privileges and have profited from investing in IPOs the past half year. During the book building process, you were discretely told you would be able obtain 2,000,000 shares of the new hot IPO for BanzerTech Inc. with the expected offering price being \$10 per share. BanzerTech is a high-tech internet firm.

For the privilege of buying into the current hot IPO, you have promised FCWM to 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 are not to start selling until you have acquired 3,000,000 total shares. After acquiring these shares, you are free to buy and sell as many shares as you want.

FCWM tells you that it expects excess demand from buyers to persist at least until the stock reaches \$50. It is understood that FCWM's prearranged scheme of price support for BanzerTech will continue until the stock price reaches \$50. After that it is anyone's guess as to what will happen. You suspect that if you do not start selling after the price reaches \$50 you are in danger of losing some of your profit.

You have promised FCWM that you will use the brokerage services they provide as market maker when you buy and sell the 2,000,000 shares allocated to you. You also pledge to pay the brokerage fees they charge. Based on previous experience, you expect to be charged 20% of the dollar amount of any trade involving the 2,000,000 shares you have been given to buy and sell. Because a 20% transaction fee is exorbitant, it is not public information. Any other trades (beyond those 2,000,000 you have been allocated) will incur a more normal brokerage fee of 1%. Thus, your brokerage cost per trade is  $\text{Fee} \times (\text{Buy or Sell Price}) \times \text{Number of Shares}$  where Fee will be either 0.2 or .01.

Adjusting for the anticipated fee, your expected net profit (when buying and selling) can be given by the below equations:

$\text{Cost of Purchase} = (\text{Buy Price} \times \text{Number of Shares}) \times (1 + \text{Fee})$  where Fee = 0.2 or 0.01

$\text{Revenue from Sell} = (\text{Sell Price} \times \text{Number of Shares}) \times (1 - \text{Fee})$  where Fee = 0.2 or 0.01

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

#### Task Summary

1. Buy 2,000,000 shares of the IPO when it is initially offered.
2. Buy an additional 1,000,000 shares after the price reaches \$50 per share.
3. Sell your shares (or even buy more) as you wish; however, keep in mind that the price support will only continue until the price reaches \$50 per share.

## Handout #4

### You are part of the R. Rush group.

You would like to buy BanzerTech Inc. shares but are not a preferred client because you rarely buy shares when First City Wealth Management Inc. (FCWM) underwrites security offerings. During the book building process you told FCWM that you would attempt to buy shares in BanzerTech's IPO by putting in a bid to buy up to 3,000,000 shares at \$10.

If unsuccessful at buying at \$10, you will continue in your attempt to buy the shares at the market price until it reaches \$55. After the price reaches \$55 you are free to buy and sell as many shares as you want even if the price falls but you will never buy more than 3,000,000 total shares for all purchases. If after purchasing shares, the price enters a free fall dropping at least \$10, you will try to unload all of your shares.

Any trade will incur a brokerage fee of 1% of the gross amount of the trade causing the brokerage costs per trade to equal  $0.01 \times (\text{Buy or Sell Price}) \times \text{Number of Shares}$ . If you are successful in buying and selling shares, your expected net profit per purchase after adjusting for brokerage fees can be 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

1. Attempt to purchase 3,000,000 shares until the price reaches \$55 per share but never hold more than 3,000,000 shares at any one time and be cautious before paying more than \$55 per share.
2. Sell your shares as you wish; however, sell all your shares if the stock price drops at least \$10.

## Handout #5

### You are part of the G. Green group.

You would like to buy BanzerTech Inc. shares but are not a preferred client because you rarely buy shares when First City Wealth Management Inc. (FCWM) underwrites security offerings. During the book building process you told FCWM that you would attempt to buy shares in BanzerTech's IPO by putting in a bid to buy up to 2,000,000 shares at \$10.

If unsuccessful at buying at \$10, you will continue in your attempt to buy the shares at the market price until it reaches \$55. After the price reaches \$55 you are free to buy and sell as many shares as you want even if the price falls but you will never buy more than 2,000,000 total shares for all purchases. If after purchasing shares, the price enters a free fall dropping at least \$10, then you will try to unload all of your shares.

Any trade will incur a brokerage fee of 1% of the gross amount of the trade causing the brokerage costs per trade to equal  $0.01 \times (\text{Buy or Sell Price}) \times \text{Number of Shares}$ . If you are successful in buying and selling shares, your expected net profit per purchase after adjusting for brokerage fees can be given by the below equations:

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

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

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

### Task Summary

1. Attempt to purchase 2,000,000 shares until the price reaches \$55 per share but never hold more than 2,000,000 shares at any one time and be cautious before paying more than \$55 per share.
2. Sell your shares as you wish; however, sell all your shares if the stock price drops at least \$10.

## Handout #6

### You are part of the L. Louis group.

You would like to buy BanzerTech Inc. shares but are not a preferred client because you rarely buy shares when First City Wealth Management Inc. (FCWM) underwrites security offerings. During the book building process you told FCWM that you would attempt to buy shares in BanzerTech's IPO by putting in a bid to buy up to 1,000,000 shares at \$10.

If unsuccessful at buying at \$10, you will continue in your attempt to buy the shares at the market price until it reaches \$55. After the price reaches \$55 you are free to buy and sell as many shares as you want even if the price falls but you will never buy more than 1,000,000 total shares for all purchases. If after purchasing shares, the price enters a free fall dropping at least \$10, then you will try to unload all of your shares.

Any trade will incur a brokerage fee of 1% of the gross amount of the trade causing the brokerage costs per trade to equal  $0.01 \times (\text{Buy or Sell Price}) \times \text{Number of Shares}$ . If you are successful in buying and selling shares, your expected net profit per purchase after adjusting for brokerage fees can be 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

1. Attempt to purchase 1,000,000 shares until the price reaches \$55 per share but never hold more than 1,000,000 shares at any one time and be cautious before paying more than \$55 per share.
2. Sell your shares as you wish; however, sell all your shares if the stock price drops at least \$10.

## Handout #7

### You are part of the M. Moss group.

You would like to buy BanzerTech Inc. shares but are not a preferred client because you rarely buy shares when First City Wealth Management Inc. (FCWM) underwrites security offerings. During the book building process you told FCWM that you would attempt to buy shares in BanzerTech's IPO by putting in a bid to buy up to 3,000,000 shares at \$10.

If unsuccessful at buying at \$10, you will continue in your attempt to buy the shares at the market price until it reaches \$45. If the price passes \$45, you will not purchase any more shares until it falls back to \$40. If the price falls back to \$40 you are free to buy and sell as many shares as you want even if the price falls below \$40, but you will never hold more than 3,000,000 total shares at 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 per purchase after adjusting for brokerage fees can be given by the below equations:

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

### Task Summary

1. Attempt to purchase 3,000,000 shares until the price reaches \$45 per share but never hold more than 3,000,000 shares at any one time.
2. If the price goes above \$45 and you do not yet own 3,000,000 shares then do not attempt to buy more shares until the price falls to at least \$40.
3. Sell any shares you purchase as you wish.

## Handout #8

### You are part of the W. Wagner group.

You would like to buy BanzerTech Inc. shares but are not a preferred client because you rarely buy shares when First City Wealth Management Inc. (FCWM) underwrites security offerings. Nevertheless, during the book building process you told FCWM that you would attempt to buy shares in BanzerTech's IPO by putting in a bid to buy up to 2,000,000 shares at \$10.

If unsuccessful at buying at \$10, you will continue in your attempt to buy the shares at the market price until it reaches \$35. If the price passes \$35, you will not purchase any more shares until it falls back to \$30. If the price falls back to \$30 you are free to buy and sell shares as you want even if the price falls below \$30, but you will never hold more than 2,000,000 total shares at 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 per purchase after adjusting for brokerage fees can be 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

1. Attempt to purchase 2,000,000 shares until the price reaches \$35 per share but never hold more than 2,000,000 shares at any one time.
2. If the price goes above \$35 and you do not yet own 2,000,000 shares then do not attempt to buy more shares until the price falls to at least \$30.
3. Sell any shares you purchase as you wish.

## Handout #9

### You are part of the C. Cannon group.

You would like to buy BanzerTech Inc. shares but are not a preferred client because you rarely buy shares when First City Wealth Management Inc. (FCWM) underwrites security offerings. Nevertheless, during the book building process you told FCWM that you would attempt to buy shares in BanzerTech's IPO by putting in a bid to buy up to 3,000,000 shares at \$10.

If unsuccessful at buying at \$10, you will continue in your attempt to buy the shares at the market price until it reaches \$25. If the price passes \$25, you will not purchase any more shares until it falls back to \$20. If the price falls back to \$20 you are free to buy and sell as many shares as you want even if the price falls below \$20, but you will never hold more than 3,000,000 total shares at 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 per purchase after adjusting for brokerage fees can be 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

1. Attempt to purchase 3,000,000 shares until the price reaches \$25 per share but never hold more than 3,000,000 shares at any one time.
2. If the price goes above \$25 and you do not yet own 3,000,000 shares then do not attempt to buy more shares until the price falls to at least \$20.
3. Sell any shares you purchase as you wish.

## Handout #10

### You are part of the investment banking group.

You work for First City Wealth Management Inc. (FCWM), which is an investment banking firm underwriting security offerings (including hot IPOs). FCWM will be the sole underwriter for BanzerTech Inc.'s IPO. From the road show, you find excessive demand for BanzerTech shares and suspect that some investors will pay as much as (or even more than) \$55 per share. You recommend (and BanzerTech approves) that the shares will be priced initially at \$10 per share. The price is not considered too low given that BanzerTech has not yet really displayed much by way of earnings. 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 overallotment option of buying 1,000,000 shares at \$10 per share (with BanzerTech once again getting \$9.50 per share). When the overallotment option is exercised, there will be 8,000,000 shares outstanding and ready to be traded on the secondary market.

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 and 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.

Besides allocating the IPO shares for BanzerTech, FCWM is also a market maker who can hold its own inventory of BanzerTech shares. As a market maker, FCWM will give first priority to arranging deals among the three preferred clients before buying and selling with other investors. By dealing with its preferred clients, it can receive a kickback for allocating shares to them. The kickback is received through charging preferred clients a fee of 20% per trade for those 8,000,000 shares initially sold. This 20% is much more than the standard 1%.

FCWM will exercise its overallotment option and buy 1,000,000 additional new shares from BanzerTech once the initial 7,000,000 are sold. FCWM will then hold these 1,000,000 overallocated shares in its inventory for future sell. Based on the road show, FCWM knows the price will escalate and so has prearranged to sell its 1,000,000 overallocated shares to its #1 preferred client, S. Smith, at \$30 per share. The same rules that hold for the 7,000,000 initial shares hold for the 1,000,000 overallocated shares, e.g., the preferred customer will use the brokerage services of FCWM and pay a fee of 20% to FCWM when buying and selling.

Additionally, you have arranged for J. Jones to buy 1,000,000 shares at \$40 per share and B. Brown to buy 1,000,000 shares at \$50 per share. These trades are at the standard 1% rate. FCWM will be a market maker in secondary trading for BanzerTech shares on NASDAQ. Your group will match up buyers and sellers to transfer ownership of BanzerTech between investors. When you do this, you charge a 1% fee based on the total amount of the transaction from each buyer and seller. Thus, you receive total earnings of 2% times the amount of the trade. Although you do not plan on keeping your own inventory to generate an income, there is nothing to keep you from speculating by buying and selling shares for yourself in the hope of making profits.

The stock price for each round will be based on the previous round as provided in the handout for the market maker group. If there is a surplus of buyers of BanzerTech's stock, the market makers will announce that buy and sell order for the next round are being taken at a price that is \$5 greater than the prior round. If there is a shortage of buyers, the stock price will be decreased

by \$5 for the next round. If there are no buyers or sellers for the announced price for a new round, the stock price will continue its trend of increasing or decreasing by \$5. For example, if the stock price has fallen from \$45 to \$40 because of a shortage of buyers and there are no buyers at \$40, the stock price will be set at \$35 so sellers can have a chance to sell. If no buyers at \$35, the price is then set at \$30 and so forth.

### **Task Summary**

1. On the offer date, ask for bids to buy 7,000,000 shares of BanzerTech's IPO at an offer price of \$10 per share. All investors who want shares will make bids.
2. After receiving the bids allocate the shares at \$10 apiece as follows: 3,000,000 to preferred customer #1; 2,000,000 to preferred customer #2; and, 2,000,000 to preferred customer #1.
3. After the IPO is completed, the spokesman for your group announces that the market price is \$25 for any trader wanting to buy or sell at \$25.
4. When the price reaches \$30, sell your overallocation option of 1,000,000 shares to preferred customer #1 at \$30 per share.
5. After you make your transactions as promised with the preferred clients, you will now match buyers and sellers and in the process make 2% times the amount of the trade. Priority is given to preferred customer #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.
6. You will keep track of all submitted buy and supply orders as well as the fees you receive.
7. After you make your transactions as promised with preferred clients, you may attempt to buy and sell shares as you see fit but will exercise caution since you know from your road show that most investors are not likely to pay over \$55 per share.

### **Bid Process Summary**

1. Announce the price for the current round and ask for buy and sell orders.
2. If there are no buyers or sellers for the announced price, then either increase or decrease the stock price for the next round (continuing your previous trend).
3. If demand ever equals supply at an announced price, then (after executing orders) keep announcing you are accepting orders at the same price until there is a surplus of bids to buy or offers to sell at which point you can increase or decrease the price for the next round.
4. If there is a surplus of bids to buy so that all orders to buy cannot be executed, then (after executing all possible orders) you increase the price by \$5 for the next round.
5. If there is a surplus of offers to sell so that all orders to sell cannot be executed, then (after executing all possible orders) you decrease the price by \$5 for the next round.
6. Repeat the above procedure.

### **Appendix 3: Suggested Discussion Questions**

During the IPO bubble, consumers were irrational concerning price expectations of stock prices. This allowed the investment bankers and their preferred customers to collude. This resulted in massive profits for the colluding groups and losses to others. Answer the below questions based on your records kept during the IPO bubble exercise and those given to you by the market makers.

1. Calculate the gain (or loss) earned by your group.
2. Calculate the amount of money raised by BanzerTech if they pay 50 cent per share for the first 7,000,000 shares and 50 cents for the 1,000,000 overallocated shares. Do you think BanzerTech would be happy if BanzerTech knew the large amounts of money that FCWM and the preferred groups made? 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 overzealous 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? Overzealous investors?

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

5. IPOs in the U.S. are considered a bust if the price does not increase dramatically within months after the stock is released. What issuance process would likely not lead to a "bust"?
6. What is book building?
7. What countries use book building in order to allocate IPOs?
8. Name some countries that primarily use auctions to allocate IPOs instead of the book building process. What is an auction?
9. Could the collusion activities that occur in countries using book building occur in countries using auctions? Explain.
10. Try to find internet articles or academic research articles that offer evidence to support collusion claims. Briefly summarize any evidence you find.

## Appendix 4: Discussion Questions Possible Solutions

### 1. Calculate the gain (or loss) earned by your group.

The formulas supplied in the handout can be used to find the net profit (loss) for each group. We take these formulas and break them down to supply more detail. We have:

**Cost of Purchase = Buy Value + Buy Cost** where

**Buy Value** = Buy Price × Number of Shares and **Buy Cost** = Buy Value × Fee with Fee = 0.2 or 0.01

**Revenue from Sell = Sell Value – Sell Cost** where

**Sell Value** = Sell Price × Number of Shares and **Sell Cost** = Sell Value × Fee with Fee = 0.2 or 0.01

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

To illustrate the above formulas we will use data for Group #1 from our most recent exercise where Group #1 purchased six million shares and sold five million. Its four purchases of six million shares include: one purchase for three million shares @ \$10 followed respectively by three purchases for one million shares @ \$30, \$45, and \$40. Group #1 had three sells including two respective sells for two million shares @ \$50 and \$70 followed by one sell for one million shares @ \$55. Group #1 was left holding one million shares. Based on the typical IPO during the bubble period, the price of the one million shares held by Group #1 would be expected to continue its free fall over time as the firm's poor earnings reports came out and the market caught on to the over-inflated IPO prices. This free fall notion is consistent with our last round of bids in our class exercise that indicated buy bids would settle at \$10 per share. In Table 1 below, we summarize the computations for the purchase of stock in Panel A and the sell of stock computations in Panel B.

**Table 1. Purchase and Sell Computations for Group #1 from recent exercise.**

<i>Panel A:</i>				
Buy Price	Number of Shares	Buy Value = (Buy Price × Shares)	Buy Cost = Buy Value × Fee*	Cost of Purchase = Buy Value + Buy Cost
\$10.00	3,000,000	\$ 30,000,000	\$ 6,000,000	\$ 36,000,000
\$30.00	1,000,000	\$ 30,000,000	\$ 6,000,000	\$ 36,000,000
\$45.00	1,000,000	\$ 45,000,000	\$ 450,000	\$ 45,450,000
\$40.00	1,000,000	\$ 40,000,000	\$ 400,000	\$ 40,400,000
Totals:			\$12,850,000	\$157,850,000

<i>Panel B:</i>				
Sell Price	Number of Shares	Sell Value = (Sell Price × Shares)	Sell Cost = Sell Value × Fee*	Revenue from Sell = Sell Value – Sell Cost
\$50.00	2,000,000	\$100,000,000	\$20,000,000	\$ 80,000,000
\$70.00	2,000,000	\$140,000,000	\$28,000,000	\$112,000,000
\$55.00	1,000,000	\$ 55,000,000	\$ 550,000	\$ 54,450,000
\$10.00	1,000,000	\$ 10,000,000	\$ 100,000	\$ 9,900,000
Totals:			\$48,650,000	\$256,350,000

\* Fee is 20% for the initial allotment and required secondary purchases and 1% for other trades.

**Net Profits = \$256,350,000 – \$157,850,000 = \$98,500,000**

**Brokerage Costs = \$12,850,000 + \$48,650,000 = \$61,500,000**

The above computations as well as profits (losses) for the other ten groups are available in Excel Spreadsheet upon request. The following net profits (losses) for the other ten groups for our most recent exercise were: Group #2: **\$60,100,000**; Group #3: **\$11,850,000**; Group #4: **-\$42,600,000**; Group #5: **-\$72,600,000**; Group #6: **-\$51,700,000**; Group #7: **-\$50,900,000**; Group #8: **-\$20,400,000**; Group #9: **\$0** (no purchases); Group #10 (FCWM): **\$125,700,000**. Group #11 (Other Market Makers): **\$5,550,000**. Concerning the latter, the Other Market Makers actually made \$10,550,000 on their brokerage transactions but went against the advice of the instructions by trying to buy and sell and lost \$5,000,000 speculating.

**2. Calculate the amount of money raised by BanzerTech if they pay 50 cent per share for the first 7,000,000 shares and 50 cents for the 1,000,000 overallocated shares. Do you think BanzerTech would be happy if BanzerTech knew the large amounts of money that FCWM and the preferred groups made? Explain.**

To compute the money raised by BanzerTech, we note that they received \$9.50 for 7,000,000 new shares issued. Thus, their net proceeds are:  $9.50 \times 7,000,000 = \$66,500,000$ . It is interesting to point out that for our most recent exercise that both FCWM and Group #1 (as found in our solution for Question 1) both made more money than BanzerTech. One might think that BanzerTech would be unhappy if it knew that FCWM made \$125,700,000 and Group #1 made \$98,500,000. However, IPO companies during the bubble period were very happy initially that the market found their offering underpriced. It was only later when IPO prices crashed that great dissatisfaction from many stakeholders resulted. The skyrocketing prices did not serve the interests for the IPO firm's long-term investors and employees. As can be seen from the losses sustained by the non-preferred customers, it is little wonder that lawsuits were filed by those IPO bubble investors who arrived late on the scene and could not bail out before prices crashed. One can note (as seen from the behavior of Group #9 and Group #11 (the Other Market Makers) that not all investors were taken in by the euphoria over internet firms going public. Such investors were fortunate to be wise and prudent enough to consider a company's financial fundamentals.

**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.**

While most students (and investors who lost money in the IPO bubble) will argue things were unethical, there is actually much written in the IPO literature to argue that investment bankers (like FCWM) must reward preferred clients to protect their own interest and business. Below are both arguments.

First, let us briefly argue that FCWM acted unethically. In ancient Greece, the Stoics held that ethical behavior (virtue) is the only "real good" and is needed to achieve "happiness". Thus, we can raise this question: "Did FCWM actions lead to real good and happiness?" The only real outcome was NOT a "real good" because no apparent value was added to society or its citizens as whole. All we saw was the rearrangement of money from the pockets of nonpreferred clients to preferred clients and market makers (in particular the investment banking firm of FCWM). Obvious, those who were taken advantage of are NOT happy. They might argue that the price was driven up through prearranged behavior so that some were able to profit totally at the expense of others. The outcome of our exercise seems to indicate that this was the case. After the price support and collusion ended, the price headed back to where it started at \$10 per share.

Now, let us briefly argue that FCWM acted ethically. FCWM exists to make a profit. To do this, they must provide services to clients such as BanzerTech and those investors who want to buy shares. In providing these services, FCWM are obligated to recognize clients that are more faithful in buying not only hot issues but also those that are not so hot. Consequently, FCWM wants to make happy those faithful clients with whom they have a regular business. Thus, the mere allocation of hot issues to these clients may be necessary for their business to provide a real service (i.e., something that clients will value as a real good). The question is: "Did they cross the line by requiring preferred clients to buy shares at prearranged prices in the aftermarket?" A further question is: "Did they really charge exorbitant fees in order to regain some of the profits received by preferred clients?" Other than those who have access to inside information and "blow the whistle," it is hard to find evidence to prove to what extent that investment bankers (like FCWM) behaved unethically in regards to prearranging trades and charging ungodly fees. In fact one might argue that investors behaved absurdly and ultimately FCWM is not responsible for this behavior albeit they did profit from it. Thus, if the investors are not happy and no real good results, then they must shoulder some of the blame.

**4. Are overzealous 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? Overzealous investors?**

There is no "right" or "wrong" answer to this question and we have found that opinions and preferences among students will vary. Before we blame one party, we should consider the definition of collusion. By definition, collusion involves more than one party implying that both share at least some responsibility for any wrongdoing. Thus, FCWM and preferred clients can both be held accountable.

Now why were they able to collude and get away with it (as alleged)? The answer lies with overzealous investors who were willing to ignore the fundamental financial facts. Had these facts been gathered and studied these investors would have known that the IPO offerings were being overvalued. Now assume they could not get the facts and just assumed that things must be great. If so, then this just points out that we should never act without knowledge.

**5. IPOs in the U.S. are considered a bust if the price does not increase dramatically within months after the stock is released. What issuance process would likely not lead to a "bust"?**

This question relates primarily to the IPO auction process because the auction process is competitive and less likely to underprice such that subsequent market actions could cause dramatic increases. Also, if collusion is a factor in the meteoric price rise, then the auction process would tend to eliminate the capacity to collude. In terms of researching this question on the internet, you can type in key phrases, like "IPO auction," and you will likely come across articles that discuss why investors and companies undergoing IPOs are disappointed when the offer price does not skyrocket.

Basically, you will find that investors (and even the large owners of IPO companies) feel good about the stock taking off. Thus, if it does not, then they are disappointed and will label it a "bust."

## **6. What is book building?**

When doing a search on the internet, one can type in the key phrase “book building IPO” and find a number of web sites including <http://www.rediff.com/getahead/2005/apr/04ipo.htm>. This web site states:

“Book building is the process of price discovery. That means there is no fixed price for the shares. Instead, the company issuing the shares comes up with a price band. The lowest price is referred to as the floor and the highest, the cap. Bids are then invited for the shares. Each investor states how many shares s/he wants and what s/he is willing to pay for those shares (depending on the price band).”

The link goes on to describe the classes of investors and how shares are allocated.

To find information on the role of preferred clients in the book building process, try typing in the key phrase “IPO preferred client.” One web site that addresses the role of preferred clients can be found at <http://www.pbs.org/wgbh/pages/frontline/shows/dotcon/crying/coffeeipos.html>.

## **7. What countries use book building in order to allocate IPOs?**

In your internet search, you are likely to find that many countries (U.S., Germany, and Canada, and so forth) use the book building process as their most common method to allocate IPOs.

You will also likely find that when a country allows more than one method from the various choices (e.g., fixed price, auction, book building), the dominant method is book building or a hybrid involving book building.

## **8. Name some countries that primarily use auctions to allocate IPOs instead of the book building process. What is an auction?**

In your internet search, you can find a number of countries that use the auction process or a hybrid that includes an auction.

Countries in which the auction method is dominant are few. These countries include Israel and Japan.

Your internet research can also find a number of definitions for auction or Dutch auction. The latter name is often used for IPOs. This is because IPOs using the auction method are often referred to as a Dutch auction.

The link [http://en.wikipedia.org/wiki/Dutch\\_auction](http://en.wikipedia.org/wiki/Dutch_auction) describes a Dutch auction as:

“... a type of an auction where the auctioneer begins with a high asking price which is lowered until some participant is willing to accept the auctioneer's price, or a predetermined reserve price (the seller's minimum acceptable price) is reached. The winning participant pays the last announced price. This type of auction is convenient when it is important to auction goods quickly, since a sell never requires more than one bid. Theoretically, the bidding strategy and results of this auction are equivalent to those in a sealed first-price auction; however, experiment indicates that a Dutch auction typically results in lower sell prices.”

**9. Could the collusion activities that occur in countries using book building occur in countries using auctions? Explain.**

If a country allows a strict auction, each potential buyer has equal chance of buying shares through the bidding process. Thus, one would not typically expect the type of collusion found in an IPO bubble to exist if the auction method was used. This is because the auction process does not permit the investment banker to single out those customers who would get the shares. The offer price for an IPO auction should be set at a competitive price representing all potential buyers and not just preferred clients.

To further examine if collusion is possible, we can look at more recent IPO auctions such as those involving the Bank of Internet, Morningstar or Google. The Bank of Internet auction IPO had an offer price of \$11.50. The closing prices for the next few days were \$11.50, \$11.52, and \$11.50. The Morningstar IPO auction had a respectable increase from an opening of \$18.50 to \$20.05, which is an increase of about 14%. However, due to the underpricing that exists for when investment bankers determine the offer price (based on information gotten during the book building process), the offer price for Morningstar would have likely been set below \$18.50. Google's increase of 18% was similar to Morningstar's 14% giving some evidence that the auction process does not completely prevent underpricing since a 14% to 18% range is frequently found for IPOs using book building during non-bubble periods. However, this is still far below the underpricing associated with collusion during the IPO bubble.

Some countries allow a hybrid of auctions and book building. For these hybrids, we might still expect to find collusion. There is one striking piece of evidence against an auction system being the best system. In virtually all countries where it is allowed, the auction option is rarely chosen.

**10. Try to find internet articles or academic research articles that offer evidence to support collusion claims. Briefly summarize any evidence you find.**

If one wants to consult scholarly journals a number of related articles can be found. Biais and Faugeron-Crouzet (in their paper "IPO Auctions: English, Dutch, French and Internet," *Journal of Financial Intermediation*, Vol. 11, No. 1, pp. 9-36, 2002) argue that the auction method can allow for collusion by investors. They state in their abstract:

"Dutch auctions can also lead to inefficiencies, to the extent that they are conducive to tacit collusion by investors. The Book Building . . . can lead to optimal information elicitation and price discovery."

Hull, Kerchner, Kwak, and Walker (in their paper "Underpricing, Tie-Ins, and the IPO Bubble: Some Empirical Evidence," *Investment Management and Financial Innovations*, Vol. 1, pp. 57-69, 2005) offer empirical evidence consistent with collusion. For example, for the last quarter of the IPO bubble, they show that investment bankers and preferred clients could have made, on average, over half as much money as raised by firms undergoing IPOs. This amount does not take into account profits made from overallotment. They also show that once the allegations about collusion became public that the profit possibilities for investment bankers disappeared and some losses resulted. Furthermore, investment bankers appeared to have avoided heavy losses by judiciously setting the actual offer price below its pre-offering filing range (i.e., below its expected offer price).

One sign that collusion might be present involves the situation where the IPO price skyrockets and then falls quickly. One can go to <http://finance.yahoo.com/> to examine stock prices following IPOs with an auction. In the case of the IPO auction by Google, Table 2 below shows that Google's stock price has increased for two years since it began trading publicly. While one might argue that the price did skyrocket, there has been no downfall. If collusion had been present, one would expect to find a significant fall in prices after preferred customers dumped their shares. Google's monthly prices and returns from August 4, 2004 to October 6, 2006 are given below.

**Table 2. Monthly Stock Prices for Google Inc. (Ticker Symbol: GOOG)**

Date	Adj Close*	Percent Change
4-Aug-04	\$102.37	n.a.
4-Sep-04	\$129.60	26.60%
4-Oct-04	\$190.64	47.10%
4-Nov-04	\$181.98	-4.54%
4-Dec-04	\$192.79	5.94%
5-Jan-05	\$195.62	1.47%
5-Feb-05	\$187.99	-3.90%
5-Mar-05	\$180.51	-3.98%
5-Apr-05	\$220.00	21.88%
5-May-05	\$277.27	26.03%
5-Jun-05	\$294.15	6.09%
5-Jul-05	\$287.76	-2.17%
5-Aug-05	\$286.00	-0.61%
5-Sep-05	\$316.46	10.65%
5-Oct-05	\$372.14	17.59%
5-Nov-05	\$404.91	8.81%
5-Dec-05	\$414.86	2.46%
6-Jan-06	\$432.66	4.29%
6-Feb-06	\$362.62	-16.19%
6-Mar-06	\$390.00	7.55%
6-Apr-06	\$417.94	7.16%
6-May-06	\$371.82	-11.04%
6-Jun-06	\$419.33	12.78%
6-Jul-06	\$386.60	-7.81%
6-Aug-06	\$378.53	-2.09%
6-Sep-06	\$401.90	6.17%
6-Oct-06	\$459.67	14.37%