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## THE LAW AND FINANCE OF BROKER-DEALER MARK-UPS

ALLEN FERRELL\*

### Abstract

The prices charged retail customers by broker-dealers for less-liquid, lower-priced securities have been of long-standing regulatory concern. In particular, the National Association of Securities Dealers (succeeded now by the Financial Industry Regulatory Authority) has long had regulations prohibiting broker-dealers from charging excessive “mark-ups” and “mark-downs.” This paper, using a unique dataset generously provided by the National Association of Securities Dealers tracking some 161,635 equity transactions involving fourteen broker-dealers and retail customers in largely less liquid, lower-priced securities over the course of the 2003-2005 period, provides the first comprehensive analysis of the determinants of the mark-ups and mark-downs charged by broker-dealers. In particular, the effect of broker-dealer solicitation, broker-dealer participation in the trade as a principal, stock price volatility, stock price level, trade volume and the bid-ask spread are examined on the size of mark-ups and mark-downs charged. This analysis is placed in the context of the law on mark-ups and mark-downs.

JEL Classification: G18, K22, K41

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## I. INTRODUCTION

For many years, the National Association of Securities Dealers (NASD) (now the Financial Industry Regulatory Authority) as well as other regulators have long been concerned with excessive mark-ups and mark-downs being charged retail customers by broker-dealers. Indeed, the concern with excessive mark-ups and mark-downs has been a concern and a focus of regulatory attention since almost the very beginning of the NASD's existence as an organization. Particularly over the course of the last fifteen years, the NASD has placed a great deal of emphasis on broker-dealer sales practices and investor protection issues both in its examinations and investigations. Indeed, the NASD in recent years has levied substantial fines on leading investment banks for excessive mark-ups. The NASD, for example, fined in 2004 Goldman, Sachs & Co., Deutsche Bank Securities, Miller Tabak Roberts Securities, LLC, and Citigroup Global Markets Inc. each \$5 million for, among other violations, charging excessive mark-ups and mark-downs to its customers.<sup>1</sup> In 2007, the Financial Industry Regulatory Authority (FINRA), which succeeded the NASD, announced that it fined Morgan Stanley & Co. \$1.5 million and had ordered the firm to pay more than \$4.6 million in restitution for rule violations relating to the sale of securities to retail customers at excessive prices.<sup>2</sup>

Despite the prominence of excessive mark-ups and mark-downs in broker-dealer regulation virtually no academic work has been done on the topic. The most comprehensive analysis of mark-ups and mark-downs was done by the REPORT OF SPECIAL STUDY OF SECURITIES MARKETS (hereinafter SPECIAL STUDY) back in 1964. Based on an analysis of a comprehensive sample of broker-dealer equity transactions (some 161,635 transactions in all) that includes information on mark-ups, mark-downs and commissions, generously provided to the author by the NASD while he was an academic fellow at the NASD, this paper will investigate the determinants of the size of equity mark-ups and mark-downs including the effects of broker-dealer solicitation and the price level of a security. It will also explore which price breakpoints best capture the

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<sup>1</sup> See NASD Letters of Acceptance, Waiver, and Consent with Deutsche Bank Securities, Inc., Miller Tabak Roberts Securities LLC, Citigroup Global Markets Inc., and Goldman Sachs & Co. (July 28, 2004). Other violations included inadequate supervision and inadequate recordkeeping.

<sup>2</sup> FINRA, News Release (August 2, 2007).

effect of a security's price level on mark-ups and mark-downs and which factors are correlated with unusually large mark-ups and mark-downs. This analysis is important as which factors drive mark-ups and mark-downs, and to what extent, is a frequent subject of litigation and regulatory attention. This analysis was originally completed and presented to the NASD in 2007.

But before presenting the empirical results, the paper will first define what constitutes a "mark-up" and "mark-down" in Part II and then briefly summarize the law of mark-ups, focusing on NASD (now FINRA) regulations, in Part III. Part IV will then describe the unique dataset that will be utilized with descriptive statistics being presented in Part V. Finally Part VI will present the empirical analysis on the determinants of mark-ups and mark-downs with some concluding thoughts in Part VII.

## II. THE DEFINITION OF "MARK-UP" AND "MARK-DOWN"

A "mark-up" is the difference between the price charged to a customer for a security by a broker-dealer acting as a principal (including riskless principal transactions) and that security's "prevailing market price."<sup>3</sup> Conversely, a "mark-down" is the difference between the price paid to a customer for a security by a broker-dealer, again acting as a principal, and the "prevailing market price" of the security. In contrast, a commission is the fee a broker-dealer charges for acting as an agent in ensuring execution of a customer's buy or sell order. As is obvious from these definitions, the concept of the "prevailing market price" plays a critical role in defining a "mark-up" or "mark-down," and, hence, the size of the mark-up or mark-down.

The "prevailing market price" typically means, as the SEC explained in the *Alstead, Dempsey* decision, the "price at which dealers' trade with one another, i.e., the current inter-dealer market."<sup>4</sup> In turn, the "best evidence" for the current inter-dealer market price is a "dealer's contemporaneous cost."<sup>5</sup> The most important caveat to this general statement concerning when to use a "dealer's contemporaneous cost" as the

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<sup>3</sup> See *Press Chemical Investment Services Corporation*, 166 F.3d 529 (2d Cir. 1999)

<sup>4</sup> *Alstead, Dempsey & Co.*, Exchange Act Release No. 34-20825, 47 S.E.C. 1034, 1035 (April 5, 1984). If a market in a security is dominated and controlled by a broker-dealer the "prevailing market price" inquiry becomes more complicated. For a discussion, see NASD Notice to Members 92-16. Mark-ups/Mark-downs in Equity Securities.

<sup>5</sup> *Id.*

baseline is when a broker-dealer engaged in the sale or purchase of security is acting as a “market-maker.”

A “market-maker,” in turn, is defined in section 3(a)(38) of the Exchange Act of 1934 as “any dealer acting in the capacity of block positioner, and any dealer who with respect to a security, holds himself out (by entering quotations in an inter-dealer communications system or otherwise) as being willing to buy and sell such security for his own account on a regular or continuous basis.” Much of the controversy over the scope of the definition of “market-maker” has revolved around the application of section 3(a)(38)’s language to broker-dealer activities in the bond market.<sup>6</sup> The source of much of this controversy is the fact that even broker-dealers that place capital at risk by maintaining an inventory of bonds to sell to customers do not necessarily disseminate firm bid and ask prices, whether through an inter-dealer communications system or otherwise, to market participants generally.

For “market-makers,” so defined, the “prevailing market price,” and hence the price off of which the size of the mark-up or mark-down will be computed, is the contemporaneous prices charged by market-makers in actual sales to (or purchases from) other dealers or, in the absence of such prices, validated quotations.<sup>7</sup> The need to validate quotations prior to their use as the “prevailing market price” was made clear at the very start of mark-up regulation back in the 1944 case of *Sherman Gleason & Co.*<sup>8</sup> Quotations can be validated by comparing the quotations for the period in question with actual inter-dealer transactions. If such inter-dealer transactions occur at “prices at or around the quoted offers” during a certain time period then the quotations will be considered validated for that time period.<sup>9</sup> So, for example, if the validated offer for a security was \$10 then the “prevailing market price” for purposes of computing the prevailing market price for contemporaneous transactions would also be \$10.

The rationale for not using a “dealer’s contemporaneous cost” for market-makers as the “prevailing market price” was originally, and perhaps most clearly, laid out in 1964

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<sup>6</sup> The SEC explained in greater detail the factors that are relevant to determining whether a broker-dealer is acting as a market-maker in *LSCO Securities Inc.*, SEC Exchange Act Release No. 26779 (May 3, 1989).

<sup>7</sup> The use of unvalidated quotations is “widely recognized as problematic.” *Orkin*, 31 F.3d 1056, 1064.

<sup>8</sup> 15 S.E.C. 639 (rejecting the broker-dealer’s argument that the prevailing market price can be determined by reference to unvalidated quotations reported in the newspaper).

<sup>9</sup> See *Peter Kisch*, 47 S.E.C. 802 (1982).

in the SPECIAL STUDY. The SPECIAL STUDY explained that if “the fairness of the mark-up is based on the [broker-dealer’s] contemporaneous cost, the mark-up would be computed on the basis of its bid price. In the case of many low priced securities, where the spread between the inside bid and offer may be considerably more than 5 percent, the [broker-dealer] might then have to sell to its customers at a price less than its inside offer . . .”<sup>10</sup> This is due to the fact that in inter-dealer trades a broker-dealer will often purchase a security at its bid price (not its offer price), the price at which it advertises to other market participants the price at which it is willing to buy a security at, and the bid price will therefore constitute that broker-dealer’s “contemporaneous cost.” The use of the broker-dealer’s bid price as the “prevailing market price” might result in inadequate compensation, so the reasoning goes, to broker-dealers for making a market in a security, and the liquidity this activity provides the market, particularly for less liquid securities where the spread (the difference between the bid and offer price) is likely to be substantial.<sup>11</sup>

### **III. BROKER-DEALER MARK-UP REGULATION**

There are several different sources of regulation affecting broker-dealer equity mark-ups and mark-downs. Most importantly, for purposes of this paper, are the NASD regulations prohibiting excessive mark-ups and mark-downs. The disclosure requirements of Rule 10b-10 and the antifraud rule of Rule 10b-5 which also affect the size of mark-ups and mark-downs will also be briefly reviewed.

#### *A. NASD Regulation*

The SEC originally proposed (although ultimately withdrew the proposal) in 1942 that broker-dealers disclose to customers, at or before the completion of each transaction, the best possible price obtainable in the exercise of reasonable diligence. Interestingly, this disclosure obligation would have attached whether or not the transaction had been solicited by the broker-dealer. The NASD took a somewhat different approach electing to

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<sup>10</sup> SPECIAL STUDY at 649.

<sup>11</sup> *Id.* at 611 (“The market maker . . . in addition to executing the transaction, provides marketability by assuming the risk of taking positions.”).

directly prohibit the charging of excessive mark-ups and mark-downs.<sup>12</sup> To this end, the NASD in 1943 stated that it “shall be deemed conduct inconsistent with just and equitable principles of trade for a member to enter into any transaction with a customer at a price not reasonably related to the current market price of the security.”<sup>13</sup> The NASD justified the imposition of this requirement based on the NASD’s Rule of Fair Price Conduct Rule 2110 which states that NASD members shall “observe high standards of commercial honor and just and equitable principles of trade”<sup>14</sup> and NASD Conduct Rule 2440 which provides, in part, that “broker-dealers must buy or sell at prices that are fair . . . .” Importantly, the NASD requirement that the prices broker-dealers charge customers be “reasonably related” to the security’s market price applies not only to principal transactions, but also to trades in which the broker-dealer is merely acting as agent.<sup>15</sup> In other words, the prohibition against charging excessive prices includes commissions as well as what has been traditionally defined as “mark-ups” and “mark-downs.” The prohibition on excessive prices is not automatically lifted even if the mark-up, mark-down or commission is disclosed to the customer.

But how does one determine whether a mark-up or mark-down (or commission) is excessive and therefore in violation of the NASD’s rules? In 1943 the NASD conducted a membership-wide questionnaire examination relating to mark-ups in retail transactions. Approximately 82% of the NASD membership filled out the questionnaire. It found that 71% of transactions were made at mark-ups of 5% or less. Forty-seven percent of the transactions were made at mark-ups of 3% or less. Shortly after this survey, the NASD explained in a letter to its membership dated October 25, 1943 that the “District Business Conduct Committees have been instructed to enforce [the prohibition on excessive mark-ups] having in mind the percentage of profit on which 71% of the transactions [in the

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<sup>12</sup> As will be discussed, there has been since 1977 SEC disclosure requirements relating to mark-ups and mark-downs with respect to equity transactions.

<sup>13</sup> Interpretation of the Board of Governors, NASD Mark-Up Policy, NASD Interpretation IM-2440. See also Exchange Act Release No. 24368, 52 Fed. Reg. 15575 at 15576 (April 21, 1987) (excessiveness turns on whether the price charged bears a “reasonable relationship to the prevailing market price.”)

<sup>14</sup> Article III, Sec. 1.

<sup>15</sup> See, e.g., N.A.S.D. 7-15-50, E-132 (“the commission in an agency transaction must be fair”); *id.* at E-134 (“[T]he commission charged the customer must not be unfair . . . .”); SPECIAL STUDY at 647 (“The policy applies both to sales from inventory and to riskless principal, and to agency as well as principal transactions”)

survey] were effected.”<sup>16</sup> In other words, mark-ups above 5% were more likely to run afoul of the mark-up rule, or at least require a greater justificatory basis, than mark-ups below this threshold. The NASD’s position in its October 25, 1943 letter was approved by the SEC, including the so-called 5% guideline.<sup>17</sup>

However, the 5% guideline, rather than being the end of the analysis of whether a particular mark-up or mark-down is excessive, is just the start. As the NASD and courts have repeatedly emphasized, the 5% guideline is just that, a guideline rather than a hard and fast rule.<sup>18</sup> A determination of excessiveness turns on a “range of factors.”<sup>19</sup> Consistent with the fact-specific nature of the inquiry, there have been a number of enforcement proceedings in which the mark-up and mark-down are less than 5% but have nevertheless been found to violate NASD rules. These factors, and the actual effect they have on mark-ups and mark-downs, will be explored in Part VI.

Excessive mark-ups and mark-downs trigger not only the NASD prohibition first outlined in its October 25, 1943 letter but may also constitute a violation of a broker-dealer’s supervisory responsibilities. A broker-dealer has a statutory obligation pursuant to section 15(b)(4)(E) of the Exchange Act of 1934 to provide reasonable supervision with a view to avoiding violations of rules and regulations of their employees. This statutory obligation of supervision extends to ensuring that mark-ups being charged customers are not excessive.<sup>20</sup> Moreover, NASD Rule 3010 specifically requires member broker-dealers to supervise employees to ensure compliance with NASD rules. Of course, among these rules is the prohibition on excessive mark-ups and mark-downs.<sup>21</sup>

The NASD prohibition on excessive mark-ups is a useful complement to a Rule 10b-5 action and NASD Conduct Rule 2120, which contains the NASD’s prohibition on fraud, as one can run afoul of the NASD prohibition on excessive mark-ups without having to establish that the wrongdoer acted with scienter. Establishing scienter for

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<sup>16</sup> N.A.S.D. 7-15-50, E-126.

<sup>17</sup> See Exchange Act Release No. 3623.

<sup>18</sup> See, e.g., *Samuel B. Franklin & Co. v. SEC*, 290 F.2d 718, 725 (9th Cir. 1961) (“There is no hard and fast ‘5 percent rule’”); NASD Conduct Rule 2440 (“broker-dealers must buy or sell at prices that are fair, taking into account all relevant circumstances . . . .”); Securities Exchange Act Release No. 3935 (rejecting argument that all mark-ups above 5% are necessarily excessive). Indeed, the NASD is prohibited by section 15A(b)(6) of the Exchange Act from setting schedules of prices or charges.

<sup>19</sup> *Press v. Chemical Inv. Servs. Corp.*, 988 F.Supp. 375, 385 (S.D.N.Y. 1997).

<sup>20</sup> See *In re W.J. Nolan & Co.*; Exchange Act Release No. 44,833, 75 S.E.C. Docket 1972 (Sept. 24, 2001).

<sup>21</sup> NASD Notice to Members 92-16, Mark-ups/Mark-downs in Equity Securities.

purposes of Rule 10b-5 and NASD Conduct Rule 2120 can be time-consuming and expensive.

### *B. Rule 10B-10 Disclosure Obligation*

The SEC adopted in 1977 Rule 10b-10 which requires broker-dealers to provide certain disclosures on trade confirmations. Broker-dealers must disclose on the trade confirmation any “mark-up, mark-down or similar remuneration it receives” in riskless principal transactions involving equity securities when not acting as a market-maker. Importantly, there is no similar disclose requirement with respect to mark-ups and mark-downs in debt transactions. The SEC and courts have consistently taken the view that compliance with Rule 10b-10 is not a safe-harbor from Rule 10b-5 liability.<sup>22</sup>

### *C. Rule 10B-5 Liability*

Since almost the beginning of the SEC’s existence, the SEC has consistently taken the position that fraud occurs when the price being charged for a security by a broker-dealer bears no “reasonable relation” to the “prevailing price” in the absence of disclosure that would enable a customer to make an informed decision as to whether to enter a transaction with a broker-dealer charging a certain mark-up or mark-down.<sup>23</sup> The SEC’s definition of fraud in the context of mark-ups was judicially endorsed several years later by the Second Circuit in *Charles Hughes & Co. v. SEC*, 139 F.2d 434 (1943) in which the court concluded that undisclosed mark-ups ranging from 16% to 41% “operated as a fraud and deceit upon the purchasers.”<sup>24</sup> While the *Hughes* court noted that the broker-dealer in that case had a “special duty” to customers in light of, in part, the advice it had given customers that they should buy the stock, the SEC has long deemed undisclosed excessive mark-ups to be fraudulent even in the absence of any

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<sup>22</sup> See *Grandon*, 147 F.3d 184.

<sup>23</sup> See *In re Duker v. Duker*, 8 S.E.C. 386, 388-89 (1939).

<sup>24</sup> *Id.* at 436.

solicitation.<sup>25</sup> Later courts, including the Second Circuit, have not limited the *Hughes* treatment of undisclosed excessive mark-ups as fraud to solicited transactions.<sup>26</sup>

In modern Rule 10b-5 jurisprudence, nondisclosure, even of a material fact, does not constitute fraud absent a duty to disclose.<sup>27</sup> Accordingly, courts have sometimes found that there exists an implied broker-dealer duty to disclose mark-ups when those mark-ups are excessive thereby ensuring nondisclosure will potentially result in Rule 10b-5 liability.<sup>28</sup> How this line of cases is impacted by the Supreme Court's decision in *Dura Pharmaceuticals v. Broudo*, 544 U.S. 336 (2005), and its emphasis on loss causation as an element of a Rule 10b-5 cause of action, is unclear.

#### IV. THE DATA

The NASD conducted a “sweep examination” of fourteen member broker-dealer firms. In these sweeps, the NASD collected from these firms a wide range information on all equity transactions handled by these broker-dealers over the course of a three month period. Specifically, the targeted broker-dealers were instructed to provide mark-up and mark-down information on every equity transaction they handled (whether as agent or principal) during this time period. In addition, the broker-dealers provided the NASD information concerning: (1) the number of shares being bought or sold; (2) the total value of the securities being bought or sold; (3) the price charged per share; (4) whether the broker-dealer was acting as a principal or agent; (5) any commissions charged; (6) the commission that should have been charged for the transaction according to the firm's own internal standard commission schedule; (7) whether the transaction was solicited by the broker-dealer; (8) the date of the transaction; (9) whether the transaction was a sale or a purchase; (10) whether the transaction occurred on the New York Stock Exchange or the American Stock Exchange; and (11) the name of the security being bought or sold.

The resulting dataset is unique in that it is the first time such comprehensive mark-up and mark-down data has ever been comprehensively gathered, by the NASD or

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<sup>25</sup> See *United Sec. Corp.*, 15 S.E.C. 719, 727 (1944).

<sup>26</sup> See, e.g., *Grandon v. Merrill Lynch & Co.*, 147 F.3d 184, 189 (2nd Cir. 1998) (stating the holding of the *Hughes* opinion as “[t]here exists an implied representation that broker-dealers charge their customers securities prices that are reasonably related to the prices charged in an open and competitive market.”)

<sup>27</sup> “Silence, absent a duty to disclose, is not misleading under Rule 10b-5.” *Basic Inc. v. Levinson*, 485 U.S. 224, 239 n. 17 (1988).

<sup>28</sup> See *Grandon*, 147 F.3d at 193.

any other party, for a large set of transactions. In total, information on 161,635 equity transactions – 86,286 of which were transactions involving mark-ups and the other 75,349 of which were transactions involving mark-downs – was gathered from the fourteen broker-dealers.

It is important in interpreting this data to bear in mind that the fourteen broker-dealers were not randomly selected from the universe of NASD broker-dealer members. All fourteen firms share some important characteristics in common. The selected broker-dealers tended to be small- to medium-sized firms; had had some regulatory compliance issues of some sort in the past; and tended to deal primarily with retail investors selling or buying less liquid securities. As a result, the results presented in this paper cannot be generalized to broker-dealers across the board given the selected nature of the sample. The selected nature of the data can be seen in the fact that the median stock price of securities purchased by customers was only \$5.50 (suggestive of these securities being less liquid), which is substantially lower than the median stock price for many securities, such as those traded on the NYSE or on NASDAQ's National Market System. Indeed, only 2% of the customer purchases in the sample were NYSE or AMEX transactions while only 1.5% of the customer sales were NYSE or AMEX transactions. At the same time, the data does cover a large number of transactions where mark-up regulation is likely to be most relevant: firms focusing on less liquid securities involving retail customers where the firms have faced regulatory compliance issues in the past.

The transactional information gathered by the NASD from the fourteen broker-dealer firms was merged with stock price information from the Center for Research in Securities Prices (CRSP). The transactions were merged with the CRSP database based on the security's CUSIP identifier and trade date. The information obtained from CRSP was (1) the security's trade volume for the day on which the transaction occurred; (2) the total number of shares outstanding of the security; (3) the bid-ask spread (in percentage terms) of the security; (4) the daily closing stock prices (both bid and ask) of the security for each trading day in the month in which the transaction in the security occurred.

The daily stock prices for the month in which the transaction occurred (item 4) was used to calculate a commonly used measure of stock price volatility. The volatility of the stock was measured as:

$$\text{Volatility} = \Sigma (p(i) - A)^2 / n$$

where  $A$  is the mean stock price for the month,  $p$  is the price of the stock (bid or ask) for a day  $i$ , and  $n$  is the number of trading days in the month. The volatility was measured using, alternatively, the ask and bid closing stock price. The results presented in Part VI were not qualitatively affected by the choice of whether to use the closing ask or bid price in calculating the stock's volatility.

After the data gathered by the NASD was merged with CRSP, the final database consisted of approximately 6 million observations.

## V. DESCRIPTIVE STATISTICS

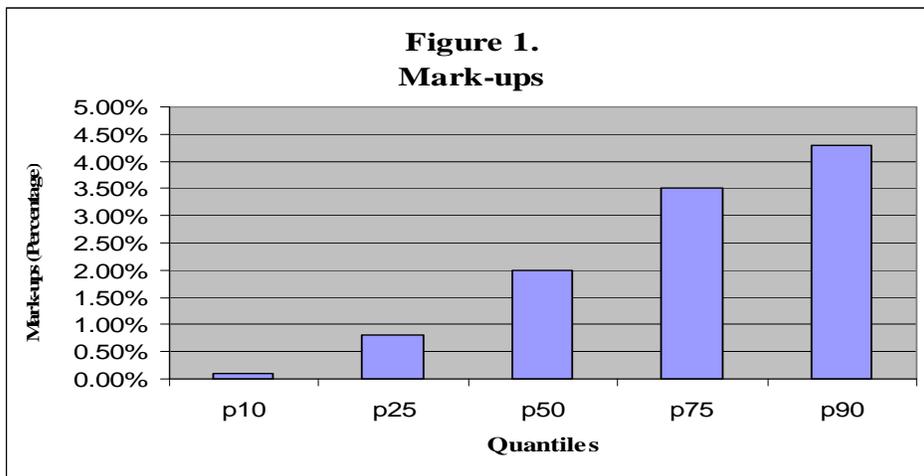
A natural starting point is to redo the NASD's 1943 analysis by asking what the size of mark-ups are in the sample at the seventy-one percentile and the size of mark-ups at the forty-seven percentile. It was, after all, the seventy-one percentile value that formed the original basis for the NASD's 5% guideline on mark-ups. The size of the mark-up at the seventy-one percentile in the sample is 2.95%, while the size of the mark-up at the forty-seven percentile is 1.8%. In other words, even for a sample heavily focused on less-liquid, lower-priced securities, the average mark-up is approximately 40% less than it was in 1943 at the same percentile cut-off points.

This is not at all surprising as the securities markets, from the less liquid to the heavily traded, are far more competitive and efficient, by any measure, than was the case some sixty-five years ago. Charles Jones, for instance, computed various measures of stock market liquidity and trading costs for NYSE securities over the course of the twentieth century.<sup>29</sup> The average annual turnover (defined as annual share value traded divided by total shares listed on the NYSE) rose from an average of 16% in the 1940s and 1950s to an average of 88% in 2000. The average one-way transaction costs (half the spread plus commission costs) of a trade fell from the 0.8% to 1.1% range to approximately 0.2 - 0.3% by the late 1990s.

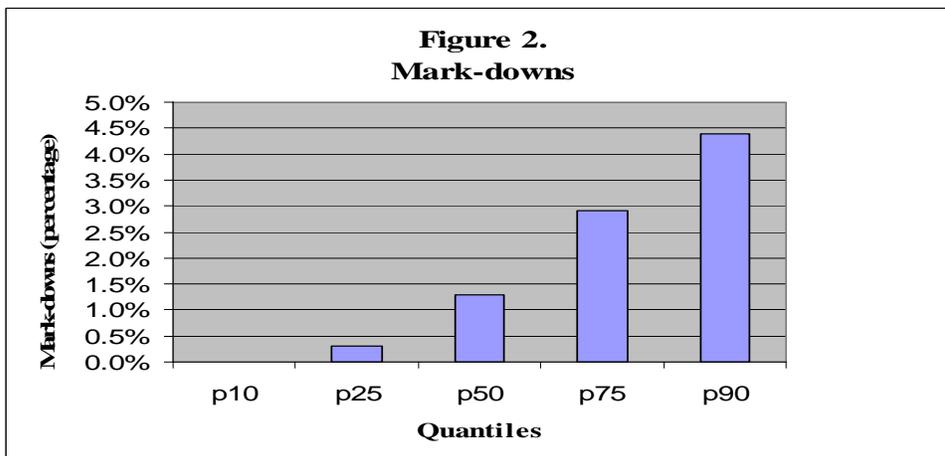
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<sup>29</sup> Charles Jones, *A Century of Stock Market Liquidity and Trading Costs* (2002).

Mark-ups at the ten percentile (P10), twenty-five percentile (P25), median (P50), seventy-five percentile (P75) and the ninety percentile (P90) for the sample are summarized in Figure 1 below.



The same exercise was undertaken for the size of the mark-downs in the sample, which is summarized in Figure 2 below.



Interestingly, the mean mark-up (2.2%) and mark-down (1.9%) are higher than the median mark-up (2%) and mark-down (1.3%). The median mark-up of 2% compares favorably to the median mark-up of 4.1% documented by the SPECIAL STUDY in 1964, which, like this study, focused on the pricing practices of retail, over-the-counter, small-to medium-sized broker-dealers. The difference between the mean and median mark-up

and mark-down in the sample suggests that there are some particularly large mark-ups and mark-downs that are driving the mean away from the median value. The average mark-up, weighted by the size of the trade, is somewhat lower than the mean mark-up of 2% at 1.6%.<sup>30</sup> The weighted average mark-down at 1.2% is likewise lower than the mean mark-down of 1.9%. This divergence suggests that larger trades occur at lower mark-ups and mark-downs. This is consistent with the SPECIAL STUDY's 1964 study of mark-ups which found that "higher mark-ups appear to have occurred in the smaller dollar transactions."<sup>31</sup> Also apparent from these numbers is the fact that mark-ups tend to be larger than mark-downs, again consistent with findings documented by the SPECIAL STUDY.<sup>32</sup>

The range of mark-ups in the sample is wider than that of mark-downs with mark-ups ranging from -1.5% to 225% compared to a range of -3.4% to 99% for mark-downs. The increased presence of extreme outliers in the mark-up distribution compared to that of the mark-down distribution can be seen in their respective kurtosis. The kurtosis of the mark-up distribution exhibits far more kurtosis (at 1,505) than the kurtosis of the mark-down distribution (at 340). This pattern, however, did not carry over to mark-ups and mark-downs greater than 5% (a cut-off that was chosen given the NASD's 5% guideline). Of all the mark-ups in the sample, only 1.2% of mark-ups are greater than 5%, while 1.7% of mark-downs exceed the 5% level.

## **VI. MARK-UPS, MARK-DOWNS AND THEIR DETERMINANTS**

Besides looking at means and medians, it is possible, given the data, to examine more closely the determinants of the mark-ups and mark-downs one observes. Specifically, this section will examine the determinants of mark-ups and mark-downs over the entire range of observed mark-ups and mark-downs and, more narrowly, the determinants of mark-ups and mark-downs that exceed the 5% level. The entire distribution, including mark-ups and mark-downs less than 5%, is of regulatory interest

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<sup>30</sup> The Booz-Allen Study conducted in 1965 documented a weighted mark-up of 1.4% for over-the-counter stocks for a sample that included a large number of liquid securities. See SEC Report on Public Policy Implications of Investment Company Growth, Chapter 5, H. R. Rep. No. 2337, 89th Cong., 2d Sess. (1966)

<sup>31</sup> SPECIAL STUDY at 625; Table VII-20.

<sup>32</sup> Id. at 626 ("In sales on a principal basis the service charge or mark-down is usually lower than in the case of mark-ups on the purchase side.")

as it can help identify the factors that drive mark-ups and mark-downs. Examining the determinants of mark-ups and mark-downs that exceed 5% is of special interest as these constitute outliers in the sense of exceeding the NASD's guideline. The determinants of mark-ups and mark-downs will be examined separately as the impact of various factors can depend on whether one is dealing with a customer purchase or customer sale.

#### *A. Determinants of Mark-Ups*

Turning first to the determinants of mark-ups, the dependent variable will be the mark-up in percentage terms. The independent variables are the trade volume in the security on the day of the transaction; shares outstanding; the number of shares being bought or sold; the price of the security; the total value of the transaction (number of shares being bought or sold \* price); stock price volatility; whether the transaction was a principal transaction or not; and the bid-ask spread of the security in percentage terms.

These variables have the benefit of including ones identified by the SPECIAL STUDY as factors affecting mark-ups and mark-downs.<sup>33</sup> On a similar note, the NASD likewise explained that "factors which are to be considered . . . in connection with the application of the [mark-up] policy" include "whether it is a low price stock or bond or high priced"; "the amount of funds involved in the transaction;" and "whether the market is active or inactive."<sup>34</sup>

Interestingly, four of these variables had no statistically significant positive or negative correlation with the size of the mark-up charged: the trade volume in the security on the day of the transaction; shares outstanding; the number of shares being bought or sold; and the total value of the transaction. The other four variables all had a statistically significant association (at the 1% level) with the size of the mark-up. The values of the coefficients on these variables, and their associated standard errors, are summarized below in Table I. While the four non-significant variables were included as independent variables in the regression, their coefficient values are not reported in Table I given their lack of significance.

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<sup>33</sup> Id. at 624-625 (identifying principal or agency status, whether the purchase is a sale or purchase, the size of the transaction and stock price as explanatory factors).

<sup>34</sup> The identification of these factors can be traced to the NASD's May 16, 1949 statement. N.A.S.D. 11-15-55, E-135.

<b>Table I. Regression result for Mark-ups (Percentage) as Dependent Variable</b>		
<b>Independent Variable</b>	<b><u>Co-efficient</u></b>	<b><u>Standard Error</u></b>
-		
<b>Price</b>	-0.02	0.00
<b>Volatility</b>	0.01	0.01
<b>Principal</b>	1.31	0.01
<b>Bid-ask Spread</b>	-0.01	0.00

As is evident from Table I, by far the most economically significant coefficient value is whether the broker-dealer was acting as a principal or not in the trade. Principal transactions, not surprisingly, are associated with a substantially larger mark-up of some 131 basis points. This is not surprising as one would expect principal transaction to involve greater risk for the broker-dealer.

The signs of the coefficient values for price and stock price volatility also have the sign one would expect: an increase in stock price reduces the mark-up charged while an increase in stock price volatility increases the mark-up. One interpretation of these results is that stock price is a proxy for liquidity (lower-priced securities tend to be less liquid, especially in the context of a sample, as here, with a median price of \$5.50), while stock price volatility acts as a proxy for risk. Not too much should be made, however, of the importance of the stock price volatility measure as it has marginal economic importance, at least within the sample. A move from the tenth percentile (P10) in terms of stock price volatility, i.e. a security with comparatively low levels of volatility, to a stock at the ninety percentile (P90) in terms of stock price volatility increases the mark-up charged by a mere basis point. The bid-ask spread is of even less importance affecting mark-ups by a mere 1/100 of one basis points when one moves from P10 to P90 in terms of the size of the bid-ask spread. In contrast, the stock price variable is of substantially greater economic importance than either the bid-ask spread or the stock price volatility variable: an increase in the stock price from P10 to P90 results in a 32 basis point reduction in the mark-up.

As a follow-up to the regression analysis, a probit regression was run with the dependent variable being whether the mark-up exceeded 5%. The same overall results appeared, with the coefficient values for trade volume, shares outstanding, the number of

shares being bought or sold; and the total value of the transaction being insignificant. A higher stock price was associated with a lower probability of being charged more than a 5% mark-up. Interestingly, while a principal transaction is associated with a significantly higher mark-up, the probability of being charged more than 5% is slightly reduced (although the economic importance is marginal). In other words, agency transactions are associated with a somewhat increased likelihood of being charged a mark-up greater than 5% even though the average mark-up for agency transactions is lower than for principal transactions.

### *B. Determinants of Mark-downs*

Roughly half the sample consisted of customer sales. Accordingly, a similar analysis was conducted on the determinants of mark-downs (as always in percentage terms) using the same independent variables. Once again, trade volume; shares outstanding; the number of shares being bought or sold; and the total value of the transaction had no statistically significant association (at the 10% level) with the mark-down charged customers. In addition, the bid-ask spread was statistically insignificant. The other three variables, as was the case with mark-ups, all had a statistically significant association, at the 1% level, with the size of the mark-down. The values of the coefficients on these three variables, and their associated standard errors, are summarized below in Table II. While the five non-significant variables were included as independent variables in the regression, their coefficient values are not reported in Table II given their lack of significance.

<b>Independent Variable</b>	<b><u>Co-efficient</u></b>	<b><u>Standard Error</u></b>
<b>Price</b>	-0.02	0.00
<b>Volatility</b>	0.06	0.01
<b>Principal</b>	1.38	0.02

As with mark-ups, whether the transaction was a principal transaction or not had a substantial effect, with statistical significance, on the size of the mark-down quite similar

to the magnitude of the effect of principal status on mark-ups charged. Stock price volatility had only a modest effect on the mark-down, increasing the mark-down by 6 basis points as one moved from P10 to P90 in the sample. Stock price also had a noticeable, although hardly overwhelming, effect on the mark-down charging being responsible for a 7 basis increase in the mark-down as one moved from P10 to P90. As with stock price volatility, the effect of stock price on mark-downs is quite similar to that documented for mark-ups.

When a probit regression was run to see which variables affected the probability of being charged more than 5%, the results track the findings just described. Stock price volatility has little effect while an increase in stock price reduces somewhat the probability of being charged more than 5%. Unlike mark-ups, principal transactions are associated both with higher mark-downs and a greater probability of being charged 5%.

### *C. Stock Price*

Stock price, both in the ordinary regression analyses and in the probit regressions, is an important factor affecting the size of mark-ups and mark-downs. This is consistent with the reliance on stock price as a legitimate factor affecting broker-dealer prices in the decisional law on mark-ups. In particular, a common claim is that stocks selling for below \$10 per share can warrant the broker-dealer charging customers' higher mark-ups and mark-downs than would otherwise be the case. Given the perceived importance of stock price as an explanatory factor, this variable merits further investigation.

The stock price appears to have little effect on the mark-up or mark-down charged once stock price exceeds, roughly speaking, \$5.00, but is strongly correlated with the mark-up or mark-down charged for prices below this amount. This calls into some question whether \$10 is the right price breakpoint for when the price level of the stock becomes an important explanatory variable. The SPECIAL STUDY attempted to answer the question of the proper price breakpoint by looking at the effect of stock price on the mark-up charged for 328 transactions in 53 over-the-counter stocks. However, the SPECIAL STUDY's analysis had very few transactions in which the price of the security was less than \$10 making it quite difficult to draw any conclusions for transactions

involving securities in this price range (with 19 transactions involving securities worth less than \$5 and 18 transactions involving securities worth between \$5 and \$10 dollars).<sup>35</sup>

The non-linear relationship between stock price and mark-up charged raises the following question: which price breakpoints best explain the size of the mark-up/mark-down charged? After experimenting with a large number of break-points, the following breakpoints appear to be inflection points for the size of both mark-ups and mark-downs: 40 cents, \$1, \$5 and \$10. The effect on mark-ups, for example, of having a price greater than 40 cents as compared to being less than 40 cents is, on average, 320 basis points. The effect of these price breakpoints was estimated by creating dummy variables for each price breakpoint and measuring their coefficient values with the dependent variable being the size of the mark-up or mark-down (as always in percentage terms). The association between these price breakpoints and the size of the mark-up or mark-down charged is summarized in Table III below.

**TABLE III: PRICE BREAKPOINTS**

<b>Price Breakpoint</b>	<b>Mark-up</b>	<b>Mark-down</b>
40 Cents	-320 basis points	-385 basis points
\$1	-96 basis points	-78 basis points
\$5	-28 basis points	-20 basis points
\$10	+ 9 basis points	-7 basis points

Table III indicates that much of the association between stock price and mark-ups/mark-downs is in the lower price ranges with the price breakpoint of 40 cents representing by far the most important threshold. The effect on the mark-up or mark-down charged of whether or not the security being bought or sold is above or below the five dollar mark and, even more so, above or below the ten dollar mark is relatively unimportant (the size of the effect at the \$10 level is quite small). This suggests that the price breakpoints should be lowered considerably from the \$10 that is sometimes mentioned in the mark-up context with much of the focus being rather on whether the stock in question is a penny-stock. The fact that what was once considered “low-priced

<sup>35</sup> SPECIAL STUDY, Table VII-21.

securities” for purposes of determining whether a mark-up was excessive should be considerably tightened is consistent with the observation that securities markets today are far more efficient and competitive than they were several decades ago.

#### *D. Solicitation*

One of the interesting pieces of data gathered by the NASD from the fourteen broker-dealers was whether the transaction was solicited by the broker-dealer. Indeed, approximately 80% of all the transactions in the sample were in fact solicited.

The solicitation status of a transaction is of interest in its own right for at least three reasons. First, the law has long viewed broker-dealers as often operating under a heightened obligation to the customer when the transaction is solicited. For instance, the *Hughes* court, in the course of concluding that there was an implied broker-dealer representation that the price charged bears a reasonable relationship to the prevailing market price, pointed to the solicited nature of the transaction at issue. Second, there has long been the concern that solicited transactions increase concerns over investor protection. Is the transaction being solicited because it represents an attractive deal to the customer or for some other, perhaps more self-serving, reason? Third, there is reason to believe that solicitation status might be a good candidate as an explanatory variable for the price charged given that one would expect the costs of solicitation (such as hiring a sales force) to be recaptured through increased mark-ups and mark-downs. Indeed, one explanation for why mark-ups tend to be larger than mark-downs relates to the fact that broker-dealer sales tend to be solicited transactions a higher percentage of the time than broker-dealer purchases.

A transaction that is solicited, controlling for all the other independent variables examined in Sections A and B, is associated with a 57 basis point increase in the mark-up charged, but only an 8 basis increase in the mark-down. This is therefore a substantial difference between mark-ups and mark-downs in terms of the impact of solicitation. As a result, there might well be a basis for greater regulatory concern regarding solicited broker-dealer sales than there is for solicited broker-dealer purchases.

### *E. “Problematic” Trades*

Only a small percentage of mark-ups and mark-downs in the sample exceeded the NASD’s 5% guideline. Approximately 1.7% of all mark-downs exceed 5% while only 1.2% of mark-ups exceed this threshold. In comparison, 10.6% of transactions that the SPECIAL STUDY examined had mark-ups of more than 5%.<sup>36</sup> The dramatic reduction in the incidence of 5%+ transactions in the last forty-years is consistent with the development of more efficient and competitive capital markets, even for less liquid and lower priced securities.

As described in the data description, the NASD received, among other items, information from the fourteen broker-dealers concerning their standard commission schedules. Approximately, 21% of broker-dealer sales to customers that were in excess of 5% were also in excess of the charge indicated on the standard commission schedule for the type of transaction in question. Some 26% of broker-dealer purchases from customers that were in excess of 5% were also in excess of the charge indicated on the standard commission schedule. Trades in which the mark-up mark-down both exceeded 5% and the charge indicated on the standard commission schedule were labeled “problematic.” These trades were labeled as problematic as they exceeded the NASD 5% guideline as well as the proper charge as indicated by the broker-dealer’s own internal pricing schedule.

The question that was then explored was which factors are correlated with “problematic” trades. Probit regressions were run in which the dependent variable was whether the trade was “problematic” so defined. Several findings from this analysis are worth highlighting. As one moved to more and more expensive trades, as measured by the size of the charge indicated on the broker-dealer’s standard commission schedule, both mark-ups and mark-downs were more likely to be “problematic.” Interestingly, the effect of an increase in the charge indicated on the standard commission schedule on the likelihood of a trade being “problematic” was significantly greater for mark-downs than it was for mark-ups. As was documented earlier, principal status is an important determinant of the size of mark-ups and mark-downs. Interestingly, the broker-dealer acting as a principal made it more likely that there is a “problematic” mark-up as

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<sup>36</sup> Id. at Table VII-20.

compared to the increased likelihood of a “problematic” mark-down. Finally, consistent with the analysis of the determinants of mark-ups and mark-downs, an increase in stock price rendered it slightly less likely that a trade is “problematic.”

## **VII. CONCLUSION**

The law of mark-ups has long focused on which factors properly drive the size of mark-ups and mark-downs in the course of determining whether a particular mark-up or mark-down should be deemed “excessive.” It is difficult to answer this question on a case by case basis without the benefit of a large sample of transactions. As a result, this paper has investigated, using a unique dataset, the determinants of mark-downs and mark-ups. In particular, solicitation status appears to be especially important for the size of the mark-up charged, principal status for both mark-ups and mark-downs, and various price breakpoints, well below the \$10 level, being quite important for both mark-ups and mark-downs. The paper also documents the substantial reduction in broker-dealer mark-ups and mark-downs over the course of the last forty years (since the SPECIAL STUDY examined the determinants of mark-ups and mark-downs) even in a sample largely consisting of lower-priced, less liquid securities.