2005

Correcting the Empirical Foundations of IPO-Pricing Regulation

Royce de Rohan Barondes
1298@com.com

Follow this and additional works at: <https://ir.law.fsu.edu/lr>

Part of the [Law Commons](#)

Recommended Citation

Royce de Rohan Barondes, *Correcting the Empirical Foundations of IPO-Pricing Regulation*, 33 Fla. St. U. L. Rev. (2005) .
<https://ir.law.fsu.edu/lr/vol33/iss2/3>

This Article is brought to you for free and open access by Scholarship Repository. It has been accepted for inclusion in Florida State University Law Review by an authorized editor of Scholarship Repository. For more information, please contact efarrell@law.fsu.edu.

FLORIDA STATE UNIVERSITY LAW REVIEW

CORRECTING THE EMPIRICAL FOUNDATIONS OF IPO-PRICING REGULATION

Royce de Rohan Barondes

VOLUME 33

WINTER 2005

NUMBER 2

Recommended citation: Royce de Rohan Barondes, *Correcting the Empirical Foundations of IPO-Pricing Regulation*, 33 FLA. ST. U. L. REV. 437 (2005).

CORRECTING THE EMPIRICAL FOUNDATIONS OF IPO-PRICING REGULATION

ROYCE DE ROHAN BARONDES*

ABSTRACT

Recent events are replete with stories of fraudulent or opportunistic behavior in the initial public offering (IPO) process—behavior that extended to the highest-reputation investment banks. Curiously, notwithstanding this evidence, recent financial economics literature asserts investment bank conflicts of interest “certify” IPO issuers.

This Article develops new empirical evidence that casts doubt on this “certification” hypothesis by examining the pre-IPO price adjustment of IPOs involving qualified independent underwriters (QIUs), particularly IPOs in which more than ten percent of the net proceeds are being directed to participating investment banks (for example, to repay a prior extension of credit). These offerings have similar pre-IPO-pricing patterns to those others interpret as involving certification. Investment bank exit, however, cannot comfortably be categorized as certification. These results, together with other recent results in the legal literature, support the view that factors other than “certification” account for IPO-pricing phenomena in IPOs involving investment bank conflicts of interest.

The SEC is finally considering important proposals put forward by the NASD and the NYSE to reform IPO marketing, albeit five years after the internet bubble in IPOs and other securities transactions burst. These results support increased disclosure-focused regulation of the IPO process.

I. INTRODUCTION.....	438
II. THE MECHANICS OF IPO MARKETING AND PRICING	441
A. <i>IPO-Pricing Mechanics</i>	441
B. <i>Motivation for Investigating Alternative Theories</i>	444
C. <i>Regulation of IPO Pricing</i>	446
III. PRIOR EMPIRICAL INVESTIGATIONS.....	450
IV. DATA	452
V. EMPIRICAL MODELS AND RESULTS.....	455
A. <i>Estimation Techniques</i>	457
B. <i>Control Variables</i>	458
C. <i>Results</i>	462
VI. CONCLUSION	468

* Senior Fellow, Contracting and Organizations Research Institute; and Associate Professor, University of Missouri-Columbia School of Law. The author would like to thank John Howe, Cynthia McDonald, participants at a seminar hosted by the Contracting and Organizations Research Institute, and for comments on preliminary results, participants at the 2002 Annual Huber Hurst Research Seminar.

I. INTRODUCTION

Five years after the internet bubble in initial public offerings (IPOs)¹ and other securities transactions burst,² the Securities and Exchange Commission (SEC) is finally considering important proposals to reform IPO marketing.³ The proposals, put forward by the National Association of Securities Dealers, Inc. (NASD) and the New York Stock Exchange, Inc. (NYSE), in part seek to restrain opportunistic IPO pricing by investment banks that would disadvantage issuers.

Recent events are replete with stories of fraudulent or opportunistic behavior in the IPO-pricing process, which extended to the highest-reputation investment banks. Credit Suisse First Boston and Morgan Stanley, among others, settled administrative charges that essentially involved charging issuers hidden fees. The charges were collected by placing hot IPOs with investors who returned the "favor" by paying above-market prices in other transactions.⁴ This kind of

1. See, e.g., Jeffrey R. Hirschhorn, 2000 Year-in-Review: Dashed Dreams, Crumbling Fortunes, <http://www.ipomonitor.com/reviews/2000> ("The 2000 IPO market was a year of extremes, beginning in a frenzy and ending in a collapse.").

2. The NASDAQ composite stock index closed on January 3, 2000, at 4131.15, reached 5048.62 at close on March 10, 2000, and opened on January 2, 2001, at 2474.16. Yahoo! Finance Historical Prices for NASDAQ Composite, <http://finance.yahoo.com/q/hp?s=%5EIXIC> (enter dates in "Set Date Range"; then follow "Get Prices") (last visited Oct. 27, 2005).

3. Self-Regulatory Organizations; Notice of Extension of the Comment Period for the Proposed Rule Changes by the New York Stock Exchange, Inc. and the National Association of Securities Dealers, Inc. Relating to the Prohibition of Certain Abuses in the Allocation and Distribution of Shares in Initial Public Offerings, Exchange Act Release No. 51,039, 70 Fed. Reg. 3415 (Jan. 24, 2005) (extending the public comment period until February 15, 2005); Self-Regulatory Organizations; Notice of Filing of Proposed Rule Changes by the New York Stock Exchange, Inc. and the National Association of Securities Dealers, Inc. Relating to the Prohibition of Certain Abuses in the Allocation and Distribution of Shares in Initial Public Offerings ("IPOs"), Exchange Act Release No. 50,896, 69 Fed. Reg. 77,804 (Dec. 28, 2004) [hereinafter Exchange Act Release No. 50,896].

4. See SEC Sues CSFB for IPO Violations; CSFB Will Pay \$100 Million, SEC Litigation Release No. 17,327 (Jan. 22, 2002) (announcing settlement, without admission or denial, of allegations that Credit Suisse First Boston allocated IPO shares to investors "willing to funnel between 33 and 65 percent of their IPO profits to CSFB . . . [i]n the form of excessive brokerage commissions"); Bear Stearns, Deutsche Bank, Morgan Stanley Settle NASD IPO Charges, 36 Sec. Reg. & L. Rep. (BNA) 947 (May 24, 2004) (discussing settlement of NASD charges, without admission or denial, involving allegations very high commissions were paid to the investment banks in exchange for allocations of IPO shares). See generally *EBC I, Inc. v. Goldman Sachs & Co.*, 777 N.Y.S.2d 440, 442-43 (N.Y. App. Div. 2004) (reversing dismissal of claims alleging breach of contract and unjust enrichment and affirming claim alleging breach of fiduciary duty against lead manager). The fiduciary claim alleged that the underwriter:

[U]nderpriced plaintiff's shares in order to reap an additional profit, beyond the amount realized on the spread between the price of its own subscription and the higher public offering price, when it 'flipped' its shares in the balloon-priced aftermarket, and that such underpricing was also the consideration given for 'kickbacks' from defendant's favored customers, to whom defendant had allo-

activity deceives investors who buy without knowing the full extent of the brokers' compensation, and it is deceitful to issuers who, when the underwriters are engaged, are unaware of the full extent of the underwriters' compensation. A second type of allegation involves underwriters who condition IPO allocations on investors agreeing to purchase in the aftermarket. Not disclosing such information renders the prospectus description of the plan of distribution misleading. Goldman Sachs, for example, agreed to settle for \$40 million on allegations that it improperly considered investors' post-IPO aftermarket purchases in determining initial IPO allocations.⁵ A third set of allegations involves claims that hot IPOs were allocated to the individual accounts of corporate executives to facilitate the investors steering corporate business to the investment banks allocating hot IPOs.⁶

Current financial economics scholarship strikes a note that is discordant with this evidence of widespread investment bank malfeasance. Professors Li and Masulis, empirically examining a set of 1480 IPOs, assert that they find support for what they call the "certification hypothesis."⁷ In their words, the certification hypothesis provides: "[U]nderwriters with superior access to issuer information can credibly validate issuer financial health, thereby increasing investor demand and supporting higher security offer prices"⁸ The Li and Masulis certification hypothesis in fact contains two separate hypotheses: (1) some underwriter relationships with issuers may give the underwriters better access to information, and (2) some set of underwriter affiliations may provide some assurance of the value of the investment, supporting greater prices.

cated shares in the IPO that were also flipped in the aftermarket, disguised as commissions on unrelated transactions.

Id. at 442-43.

5. SEC Sues Goldman Sachs & Co. for IPO Violations; Goldman Sachs Will Pay \$40 Million, SEC Litigation Release No. 19,051, (Jan. 25, 2005), <http://www.sec.gov/litigation/litreleases/lr19051.htm>.

6. This was one of the allegations against ten major investment banks that were settled in the \$1.4 billion Global Research Analyst Settlement with, *inter alia*, the SEC and the New York Attorney General's office. Press Release, SEC, NY Attorney General, NASD, NASAA, NYSE and State Regulators Announce Historic Agreement to Reform Investment Practices (Dec. 20, 2002), <http://www.sec.gov/news/press/2002-179.htm>; Complaint at ¶ 142, SEC v. Citigroup Global Mkts., Inc., No. 03 Civ. 2945 (WHP), (S.D.N.Y. Apr. 28, 2003); Complaint at ¶ 7, SEC v. Credit Suisse First Boston LLC, No. 03 Civ. 2946 (WHP) (S.D.N.Y. Apr. 28, 2003). This list of malfeasance in the IPO process is meant to be illustrative, not exhaustive. See, e.g., Goldman Sachs Sub, Formerly Spear Leeds, Settles NASD Allegations of Hiding IPO Sales, Sec. L. Daily (BNA) (Mar. 23, 2005), WL 3/23/2005 SLD d17 (discussing the \$1 million settlement by a subsidiary of Goldman Sachs of NASD charges that the subsidiary violated NASD rules by taking actions that concealed from market participants resales of IPO securities).

7. Xi Li & Ronald W. Masulis, Venture Capital Investments by IPO Underwriters: Certification, Alignment of Interest, or Moral Hazard? 21 (Dec. 29, 2004) (unpublished working paper), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=559105.

8. *Id.* at 2.

One of the statistics Li and Masulis examine to support this hypothesis is the absolute value of the pre-IPO price adjustment. Some background of the IPO pricing process, which is detailed in Part II, is required to understand precisely what that statistic is. For the moment, however, it is sufficient to note that the IPO process in the United States ultimately results in the public dissemination of a preliminary price estimate for each IPO as well as the actual IPO price—the pre-IPO price adjustment being the actual price minus that estimate. Li and Masulis find a negative relationship between the absolute value of the pre-IPO price adjustment and the percentage beneficial ownership of the issuer by investment banks participating in the IPO. On the basis of this and other evidence, they assert these investments certify issuers and allow underwriters to make better pre-IPO price estimates.⁹

The problem with their analysis is that the relationship they investigate may well involve the first kind of certification—allowing better access to information—but not involve the second kind—providing assurance of value. A seller's superior access to information does not necessarily mean the seller assures value. Superior access to information may be used to select items for sale that can be sold at prices higher than those that would be supported if the private information were public. That is, it may be the investment banks know more and now are trying to sell off assets identified as lemons, a situation comparable to a used car dealer selling his personal car.

The primary contribution of this Article is to rebut their conclusion as to the second component of certification, as part of providing better evidence concerning IPO pricing—evidence that is pertinent to addressing proposed regulatory reform. Li and Masulis find a negative relationship between the absolute value of the pre-IPO price adjustment and the percentage beneficial ownership of the issuer by investment banks participating in the IPO.¹⁰ In their view, lower absolute value of the pre-IPO price adjustment for some set of IPOs is consistent with “certification,” that is, assurance of value.¹¹ This Article rebuts that conclusion by examining IPOs where the issuer uses a significant portion of the IPO proceeds to pay off participating investment banks (or their affiliates or associates); that is, the IPO is bailing out those investment banks.¹² An analysis of the pre-IPO

9. *Id.* at 21.

10. *Id.*

11. *Id.*

12. There are also a few more technical concerns with Li and Masulis's investigation. First, they take percentage ownership from prospectuses. *Id.* at 9. The prospectus disclosure addresses the level of control; it is not based on financial interest. 17 C.F.R. §§ 228.403 instruction 4, 229.403 instruction 2, 240.13d-3 (2005). An investment bank affli-

price adjustment in 1168 IPOs from 1997 through 2000 is reported in Part V. That analysis shows IPOs involving this kind of investment bank exit involve a pre-IPO price adjustment pattern similar to that which Li and Masulis categorize as consistent with assurance of value. However, investment bank exit is not easily categorized as reflecting investment bank assurance of value. In sum, the relationship they identify also exists in cases that are not easily categorized as involving certification, which challenges their conclusions.

In addition to demonstrating that certain pre-IPO-pricing relationships cannot be uniquely ascribed to certification, it would be helpful to provide for regulators a comprehensive, compact, and accurate theory of IPO pricing—a substitute for the certification hypothesis. This Article, however, forgoes attempting to provide such a comprehensive model. As noted above,¹³ there is little question that the IPO market has been affected by deceitful and manipulative conduct, which creates substantial roadblocks to the formulation of an accurate, elegant model.

II. THE MECHANICS OF IPO MARKETING AND PRICING

A. *IPO-Pricing Mechanics*

Some background information concerning the IPO-pricing process and its regulation is required to understand the way in which one can examine empirically the competing theories of IPO pricing. In the United States, most IPOs are sold on a “firm commitment” basis¹⁴ in which the issuer formally sells the securities to one or more investment banks (a group of two or more investment banks acting in this capacity being called a “syndicate”¹⁵) that make a public offering of the securities at a fixed price.¹⁶ The investment banks are compensated by purchasing the securities at a price equal to the public offer-

ate would be considered to beneficially own for this purpose all stock over which it had voting power or investment power, even if it had no financial interest in the stock. 17 C.F.R. §§ 228.403 instruction 4, 240.13d-3(a) (2005). Moreover, it includes some securities one does not own but merely has the contractual ability to acquire within sixty days. 17 C.F.R. § 240.13d-3(d)(1)(i) (2005). Second, they find that when they “substitute underwriter dollar ownership in place of underwriter percentage ownership . . . [their] primary conclusions are qualitatively unchanged, though the *significance* of the results *noticeably weakens*.” Li & Masulis, *supra* note 7, at 19 (emphasis added). If issuer certification is responsible, as opposed to, for example, control, one would expect greater strength from investigating the dollar amount invested, not the percentage ownership.

13. See *supra* notes 4-6 and accompanying text.

14. Jay R. Ritter, *The Costs of Going Public*, 19 J. FIN. ECON. 269, 272 tbl.2 (1987) (citing data indicating that firm commitment contracts are used in most IPOs that raise over \$2 million).

15. See generally LOUIS LOSS & JOEL SELIGMAN, SECURITIES REGULATION § 2.A.2 (3d ed. 2004) (discussing the historical origins of underwriting syndicates).

16. *Id.*

ing price minus an agreed-upon percentage commission, a commission which is typically is about seven percent.¹⁷

Although the investment banks typically do not have binding obligations to consummate the IPO until the IPO is priced,¹⁸ the investment banks nevertheless assume some risk in the underwriting. There are two types of risk. First, they may overestimate the demand and agree to a price that is too high. That is because although they will have received indications of interest before the pricing, they cannot send out the written confirmations of sales before the securities have been priced.¹⁹ Second, the IPO typically will be priced in the afternoon on a particular day, with the closing scheduled to occur four business days later.²⁰ There is a possibility that a market decline between pricing and closing may unsettle the underwriters' ability to consummate resales, which necessarily cannot close before the original placement to the underwriters closes.²¹

17. Hsuan-Chi Chen & Jay R. Ritter, *The Seven Percent Solution*, 55 J. FIN. 1105, 1105 (2000).

18. *See, e.g.*, *Café La France, Inc. v. Schneider Sec., Inc.*, 281 F. Supp. 2d 361, 364, 376 (D.R.I. 2003) (granting judgment after a bench trial to an investment bank on claims arising from alleged failure to fulfill obligations under a letter of intent for an IPO); CARL W. SCHNEIDER ET AL., *GOING PUBLIC: PRACTICE, PROCEDURE AND CONSEQUENCES* 38 (2002) (noting letters of intent typically state they do not create binding obligations, except as to reimbursement of expenses).

19. Unless the registration statement is effective and the recipient has received a final prospectus, a written confirmation constitutes a prospectus under section 2(a)(10) of the Securities Act of 1933, 15 U.S.C. § 77b(a)(10) (2000). *See also* 17 C.F.R. § 230.430A (2005) (indicating that delivery of a prospectus used after a registration statement has been declared effective under that rule but before pricing is inadequate to make a contemporaneously delivered confirmation not a prospectus); Elimination of Certain Pricing Amendments and Revision of Prospectus Filing Procedures, Securities Act Release No. 6714, 52 Fed. Reg. 21,252, 21,257 (June 5, 1987) ("However, use of such a prospectus [omitting pricing information] is not permitted for purposes of satisfying the requirements of section 5(b)(2) in connection with delivery of a security for sale or for delivery after a sale or the requirements of section 2(10)(a) in connection with delivery of other written communications (e.g., confirmations) to investors.").

20. Currently, where an IPO is priced after 4:30 p.m. on a particular business day, which is common, the closing is held on the fourth following business day. *See* Deanna L. Kirkpatrick, *The Underwriting Agreement*, in *HOW TO PREPARE AN INITIAL PUBLIC OFFERING* 2004, at 277, 288 (PLI Corporate Law & Practice Course Handbook Series No. 1450, 2004).

21. There are some conditions to the investment banks' obligations that decrease this risk. One typical condition would be a material adverse change in the issuer's financial condition between pricing and closing, a period of a few days. *See generally* First Boston Corp., SEC No-Action Letter, [1985] Fed. Sec. L. Rep. (CCH) ¶ 78, at 152 (Sept. 2, 1985) (stating the position of the SEC staff that a market out may properly be a condition to consummation of a firm commitment underwriting, but not where it permits avoidance of the purchase obligation merely by virtue of an inability to market the securities); LOSS & SELIGMAN, *supra* note 15, § 2.A.2 (describing both the market-based condition and the issuer-specific condition as part of a "market out"). Another typical condition is a material adverse change in the financial markets as a whole. *Id.* § 2.A.2. It is rare, however, for underwriters to assert this condition as a basis for not closing a securities offering. *See id.* There are some examples to the contrary, however. *See, e.g.*, *Walk-In Med. Ctrs. v. Breuer Capital Corp.*, 818 F.2d 260, 265 (2d Cir. 1987) (affirming a judgment in favor of the issuer,

There are a number of steps that ultimately lead to the determination of an IPO price. The initial tentative steps begin when a corporation first assembles the team that will participate in its IPO, which occurs a number of months before the IPO is priced. It is typical for an attractive corporation to interest more than one investment bank in managing its IPO.²² The process in which an investment bank is selected to manage an IPO is frequently called a “beauty pageant.”²³ In making their selections, issuers compare prospective IPO managers on the basis of a number of criteria, including expected price.²⁴

These price estimates are not binding; IPO prices ordinarily are not determined until months later.²⁵ Typically, between the beauty pageant and final pricing, (1) there is a “due diligence” review of the issuer from accounting, legal and business perspectives;²⁶ (2) a preliminary prospectus is prepared and filed with the SEC;²⁷ (3) the SEC reviews the filing; (4) the preliminary prospectus is revised to reflect SEC comments and information disclosed by the due diligence reviews;²⁸ and (5) the offering is marketed, where the investment banks receive indications of interest from prospective investors.²⁹

Prior to the pricing, the only writing permitted to be used to offer the IPO securities is a preliminary prospectus,³⁰ and in the case of an IPO, SEC rules require that this preliminary prospectus indicate an estimated price,³¹ which is frequently stated in the form of a price range. One can use the difference between the price estimate and the actual IPO price (the pre-IPO price adjustment) to assess the pre-IPO performance of the underwriters. However, there are some pos-

finding the investment bank had terminated the offering because of a decline in the issuer's stock, as opposed to general market conditions); *cf.* *Galacticomm Techs., Inc. v. First Equity Corp. of Fla.*, 751 So. 2d 1272, 1273 (Fla. 3d DCA 2000) (holding an issuer adequately pleaded a claim against an investment bank for breach of a firm commitment underwriting agreement, reversing the trial court).

22. SCHNEIDER ET AL., *supra* note 18, at 7.

23. *E.g.*, Avital Louria Hahn, *Investment Banks Continue to Hunt for Telecom Research*, INVESTMENT DEALERS DIG., Jan. 10, 2000, at 10 (using the term).

24. SCHNEIDER ET AL., *supra* note 18, at 7; Abby M. Alderman & Kenneth Y. Hao, *The Initial Public Offering Process*, in HOW TO PREPARE AN INITIAL PUBLIC OFFERING 1995, at 405, 411, 415 (PLI Corporate Law & Practice, Course Handbook Series No. B-904, 1995).

25. *See* SCHNEIDER ET AL., *supra* note 18, at 7-8.

26. Stacy J. Kanter, *Sample Timetable and Responsibility Schedule for an Initial Public Offering of Common Stock*, in HOW TO PREPARE AN INITIAL PUBLIC OFFERING 2004, at 9, 23 (PLI Corporate Law & Practice Course, Handbook Series No. 1459, 2004) (indicating business due diligence continues and legal due diligence begins in first week of sample timetable).

27. *Id.* at 21 (indicating filing registration statement with SEC in seventh week).

28. *Id.* (indicating estimated receipt of SEC comments and filing of a response in eleventh week).

29. *Id.* (indicating road show scheduled to begin in twelfth week).

30. 15 U.S.C. § 77e(b)(1) (2000); 17 C.F.R. § 230.430(a) (2004).

31. 17 C.F.R. §§ 228.501(a)(8), 229.501(b)(3) instruction 1 (2004).

sible concerns with using this statistic. For example, after the preliminary filing, the issuer may decide to effect a stock split or reverse stock split in connection with the IPO. That would cause a price change, albeit one not reflecting a change in firm valuation. There also is some question whether this price reflects the estimate as of the beauty pageant or the estimate as of the time the document is filed or some combination of those estimates.³² Nevertheless, it is a statistic that has been used previously in both the legal³³ and the financial economics literature.³⁴ Most significantly, it is a statistic used by Li and Masulis³⁵ as part of their attempt to support the certification hypothesis.

B. Motivation for Investigating Alternative Theories

Assorted anecdotal evidence concerning the IPO-pricing process suggests certification is not the hallmark of the process. Rather, there is evidence that last-minute investment bank holdups are a significant issue. Between the selection of an investment bank to manage an IPO and the IPO pricing, the balance of relative negotiating power shifts in favor of the investment banks, because the issuer cannot feasibly change investment banks at the last minute. For example, one pricing was described as the underwriters presenting a “take it or leave it” offer.³⁶ Another story describes the problems more generally: “Pricing is a factor that caught many senior managers by surprise. By the time the pricing meeting occurs, companies typically are not negotiating from a position of strength.”³⁷ Malone describes IPO pricing in the following way:

The company executives, in turn, often come away from the pricing session embittered. Until this moment, the underwriter may have

32. Some portion of the information produced by due diligence investigations will be identified by the time the preliminary prospectus is prepared. That information may in part be reflected in the price estimate disclosed in the preliminary prospectus. It is likely, however, that the price estimate will not fully reflect that information. If the information is negative, the managing investment bank has an incentive to postpone indicating it has revised its price estimate downward. Early price revisions suggest the investment bank may have lied in the beauty pageant in order to secure the business. It is easier to attribute variations from the estimate to other factors after the securities have been marketed. The managing investment bank also has an incentive to postpone bad news, because the issuer becomes increasingly committed to receipt of the proceeds as time passes, limiting its ability to change plans (or its managing underwriter).

33. Royce de R. Barondes, *Professionalism Consequences of Law Firm Investments in Clients: An Empirical Assessment*, 39 AM. BUS. L.J. 379, 430-35 tbls.4, 5 (2002).

34. E.g., Kathleen Weiss Hanley, *The Underpricing of Initial Public Offerings and the Partial Adjustment Phenomenon*, 34 J. FIN. ECON. 231, 242 tbl.3 (1993).

35. See Li & Masulis, *supra* note 7, at 19-22.

36. Robert A. Mavis, *The Making of a Millionaire*, INC. MAG., May 1995, at 86, available at <http://www.inc.com/magazine/19950501/2264.html>.

37. Carol Hall & Cynthia Robbins-Roth, *Going Public Without Panic*, RECORDER, May 6, 1992, at 8.

seemed to be their greatest advocate, but now, when it is too late to turn back, the underwriter turns on them; indifferent to the company's needs, the underwriter now takes care of its own image, low-balling the price to guarantee the maximum number of shares sold to look good in the proposal to the next sucker.³⁸

In one of the most vivid examples, a chief financial officer described the pricing process as follows: "I feel like I've been to a proctologist—and he had a very cold finger."³⁹ This information is consistent with advice in practitioner guides for firms contemplating IPOs, which notes prospective issuers should ask previous clients about the difference between preliminary pricing and final pricing⁴⁰ or last-minute surprises.⁴¹

This anecdotal evidence may be inaccurate, or it may accurately describe pricing. The problems, however, may not be more severe when the investment banks have enhanced conflicts. This question, then, provides the motivation for the empirical investigation in this Article.

One might question whether this view of the IPO-pricing process, which motivates this investigation, is inconsistent with the presence of venture capital firms as investors in IPO firms. One might, for example, seek to reject out of hand any assertion that investment banks can engage in strategic conduct because the presence of venture capital firms acting as repeat players would be knowledgeable of this practice and would prevent it. The presence of repeat players as IPO investors is not inconsistent with this view of the IPO-pricing process, however. If the process puts pre-IPO investors in the position of being subject to a last-minute holdup that cannot practicably be avoided in the existing regulatory environment, knowledgeable investors would reflect the expected cost of the holdup when they bargain about the terms of their initial investments.

As discussed in the Introduction, although this Article presents a motivation for undertaking the empirical investigation reported be-

38. MICHAEL S. MALONE, *GOING PUBLIC: MIPS COMPUTER AND THE ENTREPRENEURIAL DREAM* 197-98 (1991).

39. Robert D. Hof & Gabrielle Saveri, *Inside an Internet IPO*, BUS. WK., Sept. 6, 1999, at 60.

40. STEPHEN C. BLOWERS ET AL., *THE ERNST & YOUNG LLP GUIDE TO THE IPO VALUE JOURNEY* 88 (1999) ("Some questions you may wish to ask are: . . . Did the underwriters significantly reduce the . . . estimated selling price during the registration process?"); DAVID P. SUTTON & M. WILLIAM BENEDETTO, *INITIAL PUBLIC OFFERINGS: A STRATEGIC PLANNER FOR RAISING CAPITAL* 97 (1988) ("Questions to ask the underwriter include the following: . . . How close to the preliminary pricing was the final price for other deals?").

41. JAMES B. ARKEBAUER & RON SCHULTZ, *GOING PUBLIC: EVERYTHING YOU NEED TO KNOW TO TAKE YOUR COMPANY PUBLIC, INCLUDING INTERNET DIRECT PUBLIC OFFERINGS* 170 (1998) ("Some questions to ask include these: Were there any last-minute surprises?"); BLOWERS ET AL., *supra* note 40, at 88 ("Did the underwriters present any last-minute surprises or demands?").

low, no attempt is being made to provide a complete catalog of economic theories that are consistent with the results. Part of the problem with creating a test that excludes all other theories is that this market is full of anomalies that make it difficult to create a unique, elegant, unifying model.

There is a final concern. This Article investigates the change in price, from an estimate to the actual price. Variations in the price change among IPOs can be caused by changes in either the IPO price or the price estimate. One might analogize this investigation to an examination of the time it takes some set of people to travel a certain distance. Their trips may be made longer by changing either their starting points or by changing their speeds of travel. One might ascribe two causes to a set of IPOs involving lower pre-IPO price adjustment. It might be caused either by less marketing after the beauty pageant or by the beauty pageant being more active, requiring prospective investment banks to compete more aggressively in order to get the business.

One can conceive of circumstances in which the issuer's attributes would affect the beauty pageant. For example, the issuer's level of sophistication may affect the presentations made in the beauty pageant. A sophisticated issuer might be expected to examine price estimates more critically, which could influence the price estimates given. For this reason, caution is required in seeking to draw definitive, affirmative conclusions from the empirical analyses. Nevertheless, this Article formulates tests that are useful for the more limited role (that is, the "negative" role) of showing that the pricing relationships found by Li and Masulis cannot necessarily be ascribed to certification in the form of assurance of value.

C. Regulation of IPO Pricing

The federal securities laws regulating the sales of securities are described as "disclosure" regulation, as opposed to "merit" regulation⁴²—meaning that federal law does not directly regulate the prices at which IPO securities are sold. Rather, federal law mandates disclosure of assorted information in a preliminary prospectus used before the IPO is priced in the final prospectus and in the registration statement.⁴³

42. THOMAS LEE HAZEN, *LAW OF SECURITIES REGULATION* § 1.2[3] (5th ed. 2004). Where not preempted by federal law, state securities law, on the other hand, may seek to regulate the merits of an offering. LOSS & SELIGMAN, *supra* note 15, § 1.B.1 (discussing the merit regulation component of state securities laws and the partial preemption of state merit regulation). This Article's discussion of the legal framework regulating offerings reflects the law in effect prior to the revisions, effective December 2005, made by Securities Offering Reform, Securities Act Release No. 8591, 70 Fed. Reg. 44,722 (Aug. 3, 2005).

43. Form S-1, 2 Fed. Sec. L. Rep. (CCH) ¶ 7127 (Feb. 2, 2005); Form SB-2, 2 Fed. Sec. L. Rep. (CCH) ¶ 7371 (Nov. 2, 2001). Federal law requires delivery of the prospectus, then

Self-regulatory organizations, which include, *inter alia*, the national securities exchanges and registered securities associations,⁴⁴ provide another source of regulation—a source that may regulate the merits of an offering. The NASD, a national securities association that regulates and supervises the conduct of its member brokers and dealers, is one form of self-regulatory organization.⁴⁵ NASD rules seek to protect the investing public from sales of overpriced IPO securities where participating investment banks have conflicts of interest by requiring the stock be sold at a price no higher than “that recommended by a qualified independent underwriter.”⁴⁶

In the late 1990s (throughout the time period of the data set studied), the conflicts of interest that triggered the requirement for a QIU included, *inter alia*:⁴⁷ (1) a member participating in the distribution (or certain related persons) sold securities in the offering or in the following ninety days, unless those securities were not more than one percent of the securities being offered;⁴⁸ (2) ten percent or more of the

in preliminary form, to those anticipated to purchase in the IPO, at least forty-eight hours before confirming sales. 17 C.F.R. § 240.15c2-8(b) (2004).

44. 15 U.S.C. § 78c(a)(26) (2000).

45. LOSS & SELIGMAN, *supra* note 15, §§ 7.C.1.-2. Rules proposed by the NASD regulating its members are subject to SEC approval and abrogation. 15 U.S.C. § 78s(b), (c) (2000).

46. NATIONAL ASSOCIATION OF SECURITIES DEALERS MANUAL, R. 2720(c)(3)(A) (2001) [hereinafter NASD MANUAL I]. In addition to passing on the pricing, a QIU is obligated to “participate in the preparation of the registration statement and . . . exercise the usual standards of ‘due diligence’ in respect thereto.” *Id.* R. 2720(c)(3)(A). An investment bank acting as a QIU assumes the potential liability of an underwriter under 15 U.S.C. § 77k (2000), according to lower court authority. *Harden v. Raffensperger, Hughes & Co.*, 65 F.3d 1392, 1403 (7th Cir. 1995) (acting as a QIU imposes underwriter liability under 15 U.S.C. § 77k (2000), and, for purposes of the limit in 15 U.S.C. § 77k (2000), a QIU is considered to have underwritten the entire issue). There is other authority construing the legal consequences of assuming the obligations of a QIU. *E.g.*, *Glassman v. Computervision Corp.*, 90 F.3d 617, 625 (1st Cir. 1996) (affirming dismissal for failure to state a claim as to, *inter alia*, claim prospectus disclosure concerning the recommendation of a QIU was false or misleading); *Feiner v. SS & C Techs.*, 11 F. Supp. 2d 204, 210 (D. Conn. 1998) (holding a claim is stated by allegations arising from, *inter alia*, a QIU’s performance); *In re Walnut Equip. Leasing Co.*, No. 97-19699DWS, 1999 WL 1271762 (Bankr. E.D. Pa. Dec. 28, 1999) (finding indemnification claim of QIU not acting as underwriter for attorneys’ fees in defending itself subordinated under 11 U.S.C. § 510(b) (2000)). A detailed discussion of the rules governing QIUs is contained in Stephen J. Schulte, *Qualified Independent Underwriters: A Primer for the Practitioner*, in HOW TO PREPARE AN INITIAL PUBLIC OFFERING 1997, at 463 (PLI Corporate Law & Practice Course, Handbook Series No. 1008, 1997).

47. The circumstances listed are those that most frequently require the use of a QIU in the sample of IPOs studied. Other circumstances can require the use of a QIU. Rule 2720 required the use of a QIU, *inter alia*, where an NASD member was assisting in the distribution of securities of an “affiliate.” NASD MANUAL I, *supra*, at R. 2720(c)(1). NASD member affiliates included firms that “controls, is controlled by or is under common control with” the member. *Id.* R. 2720(b)(1)(A).

48. *Id.* R. 2710(c)(7)(C). For this purpose, members participating in the distribution include, in addition to underwriters, other NASD members in the selling group. *Id.* R. 2720(c)(1) (referencing “underwrit[ing], participat[ing] as a member of the underwriting syndicate or selling group, or other assist[ing] in the distribution”).

issuer's common stock or a class of preferred stock or subordinated debt was owned by a member participating in the distribution (or their affiliates or associates);⁴⁹ and (3) more than ten percent of the net offering proceeds, excluding underwriting compensation, was to be paid to members participating in the distribution (or their affiliates or associates), subject to certain exceptions.⁵⁰ Of course, a mechanism that seeks to assure prices are not too *high*, as this one does, would normally not directly benefit *issuers*.

The interests triggering the requirement for a QIU may create powerful incentives. For example, the prospectus for the \$100 million June 7, 2000, IPO of Ubiquitel Inc. involves an underwriter having a conflict of interest by virtue of ownership of the issuer's preferred stock and subordinated debt. The prospectus discloses that an affiliate of the lead underwriter previously agreed to purchase \$100 million additional shares of preferred stock if the IPO did not close before July 31, 2000.⁵¹ That relationship seems likely to provide a strong incentive for the investment bank to close the IPO.

In exchange for these efforts, QIUs typically receive only modest compensation. For example, in the \$137 million October 2000 IPO of Westport Resources Corporation, Credit Suisse First Boston charged only \$10,000 to act as QIU, compared to the \$9.3 million aggregate underwriting fee for the offering.⁵²

The bursting of the internet bubble and the numerous recent corporate scandals⁵³ produced a plethora of revisions to the regulatory

49. *Id.* Rs. 2720(b)(7), 2720(c)(1).

50. *Id.* R. 2710(c)(8) (titled "Conflict of Interest" and requiring the price be "established pursuant to Rule 2720(c)(3)"). These rules are revised reasonably frequently. For example, the venture capital rules, which governed sales by member investment banks (or related persons) in the IPO itself were eliminated in 2004. NAT'L ASS'N OF SEC. DEALERS, NOTICE TO MEMBERS 04-13, 149-50 (2004); NASD MANUAL I, *supra* note 46, R. 2710(c)(7)(c) (containing the term "venture capital restrictions" as its caption) (amending Rule 2710, approved Dec. 23, 2003, effective Mar. 22, 2004), *available at* http://www.nasd.com/web/groups/rules_regs/documents/notice_to_members/nasdw_003258.pdf. Instead, the rules now generally prevent the sale of securities acquired by underwriters and related persons within the 180 days before the filing of the registration statement either in the offering or within 180 days thereafter. NATIONAL ASSOCIATION OF SECURITIES DEALERS MANUAL, R. 2710(g)(1) (2005) [hereinafter NASD MANUAL II]. For this purpose, "[u]nderwriter and [r]elated [p]ersons" means, "underwriter's counsel, financial consultants and advisors, finders, any participating member, and any other persons related to any participating member." *Id.* R. 2710(a)(6).

51. Ubiquitel Inc., Prospectus, 12,500,000 Shares of Common Stock, at 129 (June 7, 2000), *available at* <http://www.sec.gov/Archives/edgar/data/1108487/000091205700027832/a424b4.txt>.

52. *See* Westport Res. Corp., Prospectus, 9,150,000 Shares of Common Stock, at 1, 73 (Oct. 19, 2000), *available at* <http://www.sec.gov/Archives/edgar/data/1117021/000095013400008742/d77955b4e424b4.txt>.

53. A scorecard, useful in keeping track of the numerous reprobates, has been provided by the *Wall Street Journal*. Dow Jones & Company Inc., *Executives on Trial: Scandal Scorecard*, WALL ST. J., Oct. 3, 2003, at B1.

environment, an environment that remains in flux. Most important for purposes of this investigation are proposals for reforming the IPO process initiated by the NYSE/NASD IPO Advisory Committee,⁵⁴ which resulted in proposed rule changes by the NASD and the NYSE.⁵⁵ The joint committee formulated twenty proposals for revisions, which ultimately resulted in the proposed rule changes at the NYSE and the NASD. The SEC's consideration of the proposals is currently pending.⁵⁶

The proposals include reforms that would benefit issuers, as well as some designed to benefit investors. For example, one proposal requires NYSE members and NASD members who are "running the books" of an IPO to provide regular reports of the indications of interest (that is, perceived demand) during the IPO process.⁵⁷ The NASD provides the following rationale: "[G]reater participation by issuers in pricing and allocation decisions would better ensure that those decisions are consistent with the fiduciary duty of directors and management, and would provide management with more information to evaluate the underwriter's performance."⁵⁸ Other proposals would, *inter alia*, restrict quid pro quo allocations of IPOs,⁵⁹ ban some "spinning,"⁶⁰ and restrict certain actions designed to combat "flipping" IPOs.⁶¹

54. NYSE/NASD IPO Advisory Committee, Report and Recommendations of a Committee (2003), available at <http://www.nyse.com/pdfs/iporeport.pdf>. See generally Ely R. Levy, *The Law and Economics of IPO Favoritism and Regulatory Spin*, 33 SW. U. L. REV. 185 (2004) (discussing economic theories of IPO pricing and potential reform).

55. Exchange Act Release No. 50,896, *supra* note 3. The SEC also recently adopted substantial revision to the offering process generally. Securities Offering Reform, Securities Act Release No. 8591, 70 Fed. Reg. 44,722 (Aug. 3, 2005).

56. Exchange Act Release No. 50,896, *supra* note 3.

57. *Id.* at 77,805-06 (reproducing proposed NYSE Rule 470(D) and NASD Rule 2712(e)).

58. *Id.* at 77,811.

59. *Id.* at 77,804-05 (reproducing proposed NYSE Rule 470(A) and NASD Rule 2712(a), each of which would ban "offer[ing] or threaten[ing] to withhold [IPO] shares . . . as a consideration or inducement for the receipt of compensation that is excessive").

60. *Id.* at 77,804-05 (reproducing proposed NYSE Rule 470(B) and NASD Rule 2712(b)). "Spinning" includes "awarding IPO shares to the executive officers and directors of an investment banking client." *Id.* at 77,810. See generally Sean J. Griffith, *Spinning and Underpricing: A Legal and Economic Analysis of the Preferential Allocation of Shares in Initial Public Offerings*, 69 BROOK. L. REV. 583 (2004) (providing a detailed discussion of the issues and some of the financial economics theory); Christine Hurt, *Moral Hazard and the Initial Public Offering*, 26 CARDOZO L. REV. 711, 788-89 (2005) (providing, *inter alia*, a criticism of the current bookbuilding method of pricing and allocating IPO shares); Therese H. Maynard, *Spinning in a Hot IPO—Breach of Fiduciary Duty or Business as Usual?*, 43 WM. & MARY L. REV. 2023 (2002) (analyzing various implications of spinning); Andres Rueda, *The Hot IPO Phenomenon and the Great Internet Bust*, 7 FORDHAM J. CORP. & FIN. L. 21 (2001) (discussing legal issues pertinent to effecting IPO allocations in a hot market).

61. Exchange Act Release No. 50,896, at 77,804-05 (reproducing proposed NYSE Rule 470(C) and NASD Rule 2712(c)). "Flipping" refers to the resale of IPO securities within thirty days of the IPO. *Id.* at 77,805. See generally Royce de R. Barondes, *Adequacy of Disclosure of Restrictions on Flipping IPO Securities*, 74 TULANE L. REV. 883 (2000) (discussing disclosure obligations pertinent to restrictions on flipping).

The empirical evidence presented in this Article is useful in sketching the environment in which the reform proposals would operate. Assume, for example, that investment banks use their (or their affiliates') control of issuers in a way that adversely affects issuers. In that case, requiring investment banks to provide greater disclosure at the time pricing decisions are made may not be adequate. The information may arrive too late, unless it is made public in a way that companies, when they are negotiating pre-IPO financing with investment bank affiliates, have access to pricing information concerning IPOs of other firms in which those affiliates invested. This kind of information would be particularly useful on a comparative basis, in order to allow issuers to consider it in selecting firms to provide pre-IPO financing.

Of course, a firm seeking pre-IPO financing could individually ask sources of capital to provide information about other transactions. The problem is that is not efficient. It requires duplicative inquiries and imposes costs as prospective issuers would need to take steps to assure they had received full information.

However, our assessment of the advantages of creating a public source of this information depends on the empirical results. If we find evidence consistent with any of these conflicts of interest not influencing pricing, one might be less concerned with facilitating the dissemination of comparative pricing information.

III. PRIOR EMPIRICAL INVESTIGATIONS

There have been numerous empirical investigations of the IPO-pricing process—the literature is sufficiently large to have separate works summarizing the literature.⁶² Historically, there has been an average initial return, a return over one or a few days, somewhere between ten and twenty percent.⁶³ Because very large aggregate sums are raised in IPOs—\$488 billion, in 2001 dollars, from 1980 to 2001 by one count⁶⁴—and ten to twenty percent of these sums is also large, it is not surprising that this phenomenon has received a significant amount of financial economics scholarship.

62. TIM JENKINSON & ALEXANDER LJUNGQVIST, *GOING PUBLIC: THE THEORY AND EVIDENCE ON HOW COMPANIES RAISE EQUITY FINANCE* (2d ed. 2001) (providing a recent collection of theories); Jay R. Ritter & Ivo Welch, *A Review of IPO Activity, Pricing, and Allocations*, 57 J. FIN. 1795 (2002) (same).

63. *E.g.*, Roger G. Ibbotson et al., *Initial Public Offerings*, 1 J. APPLIED CORP. FIN., Summer 1988, at 37, 41 tbl.1 (16.4% from 1960 through 1987). At times, the market is particularly hot, producing significantly greater average initial returns. For example, Ljungqvist and Wilhelm find average IPO returns in 1999 through 2000 to be significant, depending on the sample selected. Alexander Ljungqvist & William J. Wilhelm, *IPO Pricing in the Dot-Com Bubble*, 58 J. FIN. 723, 729 tbl.II (2003).

64. Ritter & Welch, *supra* note 62, at 1795 (in 2001 dollars).

One prominent theory postulates (1) that an issuer typically has greater knowledge of information pertinent to assessing the firm's value and (2) that investors understand they have less knowledge and therefore offer low prices but (3) that this effect (investors offering low prices) can be mitigated by third party "certification."⁶⁵ Others have empirically tested this theory, finding lower underpricing in IPOs with lesser risk, such as those underwritten by high-prestige investment banks⁶⁶ and those of issuers having venture capitalists as investors.⁶⁷

The second component of IPO pricing that can be investigated quantitatively is the pre-IPO price adjustment. One traditional theory argues the pre-IPO price adjustment reflects the level of marketing activity. Better investment banks are associated with more pre-IPO activity,⁶⁸ so that there is a positive relationship between absolute value of the pre-IPO price adjustment and investment bank quality.⁶⁹

This Article focuses on investment bank conflicts of interest in IPO pricing. As to that issue, other empirical work investigates the relationship between underpricing and each of the following: percentage beneficial ownership (negative, significant);⁷⁰ the issuer having a commercial bank that could (through an affiliate) have taken the issuer public (negative, significant);⁷¹ the presence of a common stock QIU (not significant);⁷² the presence of a proceeds QIU (nega-

65. William L. Megginson & Kathleen A. Weiss, *Venture Capital Certification in Initial Public Offerings*, 46 J. FIN. 879, 880 (1991).

66. Richard Carter & Steven Manaster, *Initial Public Offerings and Underwriter Reputation*, 45 J. FIN. 1045 (1990) (finding prestigious underwriters are associated with lower initial returns). *Contra* Randolph P. Beatty & Ivo Welch, *Issuer Expenses and Legal Liability in Initial Public Offerings*, 39 J. L. & ECON. 545, 556, 588-99 (1996) (finding contrary results in a later period).

67. Megginson & Weiss, *supra* note 65, at 879. *Contra* Peggy M. Lee & Sunil Wahal, *Grandstanding, Certification and the Underpricing of Venture Capital Backed IPOs*, 73 J. FIN. ECON. 375, 377 (2004) (finding contrary results when controlling for endogeneity).

68. Kathleen Weiss Hanley, *The Underpricing of Initial Public Offerings and the Partial Adjustment Phenomenon*, 34 J. FIN. ECON. 231, 241 (1993).

69. *Id.* at 242 tbl.3.

70. Li & Masulis, *supra* note 7, at 38 tbl.4, 39 tbl.5. *Contra* Paul Gompers & Josh Lerner, *Conflict of Interest in the Issuance of Public Securities: Evidence from Venture Capital*, 42 J.L. & ECON. 1, 10, 20 (1999) ("While significance levels are low, there does appear to be a monotonic relationship between venture capital/underwriter affiliation and underpricing. A closer relationship is associated with greater underpricing.").

71. Carola Schenone, *The Effect of Banking Relationships on the Firm's IPO Underpricing*, 59 J. FIN. 2903, 2913, 2924 tbl.VI (2004).

72. Royce de R. Barondes, *NASD Regulation of IPO Conflicts of Interest—Does Gatekeeping Work?*, 79 TULANE L. REV. 859, 889 tbl.2 (2005). There is some related evidence provided by Muscarella and Vetsuypens. Chris J. Muscarella & Michael R. Vetsuypens, *A Simple Test of Baron's Model of IPO Underpricing*, 24 J. FIN. ECON. 125, 125 (1989) (finding IPOs of investment banks that participated in the distribution of their own IPO to have underpricing comparable to that of other IPOs). Li and Masulis say they find a similar absence of a statistically significant relationship "[w]hen a QIU indicator variable is added as

tive, significant);⁷³ and the presence of a noncommon security QIU (negative, significant).⁷⁴ The complementary investigations of pre-IPO price adjustment, or its absolute value, are less numerous: percentage beneficial ownership (negative, significant);⁷⁵ and percentage beneficial ownership relative to absolute value (negative, significant).⁷⁶ It is helpful to depict the results in tabular form, which is shown in Table 1.⁷⁷

TABLE 1
PRIOR INVESTIGATIONS OF THE RELATIONSHIP BETWEEN IPO PRICING
AND INVESTMENT BANK CONFLICTS OF INTEREST

INVESTMENT BANK CONFLICTS OF INTEREST INVESTIGATED	INITIAL RETURN	PRE-IPO PRICE ADJUSTMENT	PRE-IPO PRICE ADJUSTMENT
Percent Common Stock Beneficial Ownership	—	—	—
Issuer Has a Relationship Bank with an Affiliate That Could Underwrite the IPO	—		
Presence of a Common Stock QIU	~		
Presence of a Noncommon Security QIU	—		
Presence of a Proceeds QIU	—		

It is readily apparent that the literature omits the corresponding information investigating the relationship between pre-IPO price adjustment, or its absolute value, and various circumstances requiring a QIU. This Article provides this complementary information as part of providing a more complete basis for reforming IPO-pricing regulation.

IV. DATA

For purposes of this investigation, all common stock IPOs consummated from January 31, 1997, through December 1, 2000, were located in the Securities Data Company (SDC) database of securities

a new control variable.” Li & Masulis, *supra* note 7, at 19. The results are unreported, meaning they do not reproduce the full regressions, which makes it somewhat difficult to discuss their results. Moreover, their discussion is not entirely clear in indicating whether the indicator variable includes any kind of QIU, because it follows a sentence discussing NASD rules that require the use of a QIU for ownership of “10% or greater in an issuer’s debt or equity,” which omits reference to receipt of proceeds requiring a QIU, as well as sales in the offering by participating NASD members.

73. Barondes, *supra* note 72, at 889 tbl.2.

74. *Id.*

75. Li & Masulis, *supra* note 7, at 40 tbl.6 (particularly as to lead underwriter shares).

76. *Id.*

77. Relationships significant at the 10% level (or better) are indicated with a “+” or a “-” sign; a “~” identifies relationships that are not statistically significant.

offerings (a commercial database available for a fee).⁷⁸ The data used in this investigation excludes some of those offerings reported by SDC. Offerings of financial companies, identified as firms having four-digit primary SIC codes beginning with “6” (6xxx), are excluded. That filter removes certain unusual offerings, for example, offerings of financing entities and IPOs concurrent with the demutualization of insurance companies. In addition, offerings have been eliminated where the prospectus on file with the SEC indicates that the offering involved (1) a simultaneous offering of warrants or (2) some other anomaly in the offering (for example, although the offering is classified by SDC as an IPO, the prospectus reveals the stock was trading over the counter before the offering). Lastly, the sample used excludes offerings where the securities could not be located in the Center for Research in Security Prices (CRSP) database. The resulting sample includes 1168 offerings, consisting of all IPOs in that period that might be classified as “traditional” IPOs for which SDC’s and CRSP’s databases report the information used in the models presented below.⁷⁹

The pertinent statistics of the offerings used below are those reported in the SDC database, with the following exceptions: the shares outstanding after the offering and whether the issuer had two or more classes of stock outstanding after the offering are taken from the prospectuses. The first closing price for the security as well as prices for the NASDAQ composite index at pertinent times are taken from CRSP. In a few instances, the information reported by SDC is adjusted to reflect corrections posted on Professor Jay Ritter’s web site.⁸⁰

The SDC database does not report whether a QIU was required. To identify offerings involving QIUs, all prospectuses filed with the SEC for this period were electronically searched using Lexis. The search identified those that appeared to involve an IPO that referenced either a qualified independent underwriter or NASD Rule 2720, the rule that governed the use of a QIU. That review identified 59 IPOs where a

78. This period was chosen because the SEC fully implemented electronic filing of prospectuses by U.S. issuers during 1996. Changes and Corrections to EDGAR Phase-in List, Securities Act Release No. 7258, 61 Fed. Reg. 2270, 2271 (Jan. 25, 1996); 17 C.F.R. § 232.901(a)(1) (1996). Some of the information used in the regressions was hand collected from the SEC filings. Starting in 1997 avoids having a sample censored in a way that may affect the results. Starting with calendar years 1997 through 2000, the first and last thirty days were removed, as part of creating control variables described below, leaving a data set of IPOs from January 31, 1997, through December 1, 2000. See *infra* note 100 and accompanying text.

79. Two of the variables used in the empirical results are based on averages of certain statistics of all IPOs in the sample within thirty days of the particular IPO. One IPO was both more than thirty days before the next IPO in the sample and more than thirty days after the preceding IPO in the sample. For absence of a match of at least one other IPO within that sixty-day window, this IPO was removed from the sample, leaving a total of 1168 IPOs.

80. Jay R. Ritter, IPO DATA, <http://bear.cba.ufl.edu/ritter/ipodata.htm> (last visited Mar. 13, 2006).

QIU was required by virtue of ownership by participating NASD members (or their affiliates or associates) of 10% or more of the issuer's common stock (a "common stock QIU"), 18 IPOs where 10% or more of the issuer's preferred stock or subordinated debt was so held (a "noncommon security QIU"), and 55 IPOs where a QIU was required because more than 10% of the net proceeds was being paid to participating NASD members (or their affiliates or associates) (a "proceeds QIU").⁸¹

Summary statistics for all 1168 IPOs and the three subsets of IPOs involving these conflicts of interest are presented in Table 2. The pre-IPO adjustment in IPOs where there is a common stock QIU is similar to that of the full sample, with means of 9.3% and 8.9%, respectively. The mean of the absolute value of the pre-IPO price adjustment is also similar, 19.8% and 22.5%, respectively. IPOs involving the two other types of QIUs are dissimilar: -0.7% and -11.7% mean pre-IPO price adjustment where there is a proceeds QIU and a noncommon security QIU, respectively. Interestingly, the mean of the absolute value of the pre-IPO price adjustment seems dissimilar from the full sample only for the subsample involving proceeds QIUs, 12.9%, compared to 19.7% for noncommon security QIUs and 22.5% for the full sample.

These summary statistics, then, provide an initial sense that there are material differences in the IPO-pricing process among the full sample and the three subsamples. One cannot, of course, firmly conclude that it is the pricing process that varies among these subsamples based on the summary statistics. The variation among subsample statistics may be produced by differences in the firm-specific attributes among the subsamples, not by differences in the pricing process. Most prominently, as indicated in Table 2, only 38% of the IPOs involving a proceeds QIU are classified by SDC as involving a high technology issuer, compared to 70% of the full sample and 61% of each of the IPOs involving common stock QIUs and IPOs involving noncommon security QIUs. The average IPO size is much larger for IPOs involving proceeds QIUs (\$161 million), common stock QIUs (\$116 million) and noncommon security QIUs (\$124 million) than in the sample as a whole (\$86 million). Variations in each of these other statistics could account for differences in pre-IPO price adjustment in the subsample, meaning that it might be the variation in the characteristics of the IPOs involving QIUs, as opposed to the related party interests themselves, that accounts for differences in pre-IPO price adjustment. For this reason, alternative techniques, such as multiple regression, are required to assess the relationship between pre-IPO price adjustment and the presence of a conflict of interest.

81. The elimination of the first thirty days of 1997 and the last thirty days of 2000 changes only the first number, and only from 60 to 59.

TABLE 2
SUMMARY STATISTICS
Summary Statistics of 1168 IPOs from January 31, 1997, Through December 1, 2000

STATISTICAL CATEGORIES	ALL IPOs (1168 IPOs)				SUBSAMPLES OF IPOs INVOLVING EACH TYPE OF QIU											
	MEAN	MED.	MIN.	MAX.	PROCEEDS QIUs (55 IPOs)				COMMON STOCK QIUs (59 IPOs)				NONCOMMON SECURITY QIUs (18 IPOs)			
pre-IPO adj-just (%)	8.9	6.3	-58.3	344	-0.7	0.0	-50.0	71	9.3	6.7	-39.1	192	-11.7	-2.5	-50.0	20
pre-IPO adj-just (%)	22.5	16.4	0.0	344	12.9	8.6	0.0	71	19.8	11.1	0.0	192	19.7	16.4	0.0	50
offer size (\$ millions)	85.7	52.5	5.0	5470	161.4	101.3	7.2	924	115.6	80.0	13.5	767	124.2	65.9	7.2	924
est. offer size (\$ millions)	77.3	50.0	1.5	4267	154.3	100.0	6.0	700	103.4	60.0	15.8	693	122.7	78.4	6.0	700
Venture backed	0.55	-	-	-	0.33	-	-	-	0.44	-	-	-	0.50	-	-	-
underwriter reputation	7.8	8.1	1.1	9.1	8.7	9.1	3.1	9.1	8.4	9.1	4.1	9.1	8.3	9.1	3.1	9.1
retain (%)	0.716	0.752	0.000	0.946	0.657	0.704	0.000	0.901	0.693	0.737	0.000	0.881	0.725	0.752	0.514	0.850
dual class	0.07	-	-	-	0.20	-	-	-	0.07	-	-	-	0.22	-	-	-
high tech	0.70	-	-	-	0.38	-	-	-	0.61	-	-	-	0.61	-	-	-
bubble period	0.57	-	-	-	0.53	-	-	-	0.53	-	-	-	0.50	-	-	-

V. EMPIRICAL MODELS AND RESULTS

A. Estimation Techniques

Two techniques were used to examine the relationship between pre-IPO price adjustment and QIUs: multiple regression and estimation of the average effect of the treatment using propensity score matching. Each technique involves assembling a set of control variables predicted to be associated with the variable of interest, pre-IPO price adjustment.

The multiple regression technique involves estimating the following two relationships:

- (1) *pre-IPO price adjustment (percentage)* = $\beta_0 + \beta_1 \text{ control variable}_1 + \dots + \beta_n \text{ control variable}_n + \beta_{n+1} \text{ proceeds QIU} + \beta_{n+2} \text{ common stock QIU} + \beta_{n+3} \text{ noncommon security QIU} + \varepsilon$.
- (2) *abs (pre-IPO price adjustment (percentage))* = $\beta_0 + \beta_1 \text{ control variable}_1 + \dots + \beta_n \text{ control variable}_n + \beta_{n+1} \text{ proceeds QIU} + \beta_{n+2} \text{ common stock QIU} + \beta_{n+3} \text{ noncommon security QIU} + \varepsilon$.

The second technique is somewhat less familiar. The basic concern is the following: various control variables may be associated with a change in the likelihood that there is a QIU. For example, IPOs of firms with greater pre-IPO assets may be more likely to have a conflict requiring a QIU, because those firms may be more likely to need substantial pre-IPO financing. That creates what is called “endogeneity,” which may affect the validity of the ordinary least squares regressions.⁸² Programs written for Stata statistical software provide an alternative technique.⁸³ Applying the technique to this data involves two steps. In the first step, the programs estimate the relationship (likelihood) between a particular conflict requiring a QIU and various control variables to produce “propensity scores,” meaning, in this case, the likelihood that a particular offering will involve a QIU for one of these circumstances.⁸⁴ For this investigation, there need to be three estimations of propensity scores, one for each of the three circumstances requiring a QIU. In the second step, which is again performed three times (once for each of the three circumstances requiring a QIU), observations involving a QIU are matched with other observations not involving a QIU for that reason, on the basis of propensity scores. The program then estimates the average

82. See JEFFREY M. WOOLDRIDGE, *ECONOMETRIC ANALYSIS OF CROSS SECTION AND PANEL DATA* 50-51 (2001).

83. See generally Sascha O. Becker & Andrea Ichino, *Estimation of Average Treatment Effects Based on Propensity Scores*, 2 STATA J. 358 (2002) (discussing the programs).

84. See, e.g., WOOLDRIDGE, *supra* note 82, at 620-21 (discussing propensity scores); Paul R. Rosenbaum & Donald B. Rubin, *The Central Role of the Propensity Score in Observational Studies for Causal Effects*, 70 BIOMETRIKA 41 (1983).

effect of the treatment—each of the three circumstances requiring a QIU being what is termed a “treatment”—on the treated (called the “ATT”) and the standard error of that estimate. As the authors of the program note, however, “[The] programs . . . only allow [one] to reduce, and not eliminate, the bias generated by unobservable confounding factors. . . . [T]he bias is eliminated only if the exposure to treatment can be considered to be purely random among individuals who have the same value of the propensity score.”⁸⁵

The programs provide a number of ways to match observations based on propensity scores. The results in this Article are based on kernel matching, in which “all treated are matched with a weighted average of all controls with weights that are inversely proportional to the distance between the propensity scores of treated and controls.”⁸⁶

The propensity scores were generated by probit models. The technique calls for first stratifying the sample based on the propensity for the presence of the treatment being estimated and confirming within each stratum that the means of the control variables are balanced.⁸⁷

B. Control Variables

Because there is a substantial amount of existing empirical literature addressing the IPO process, one can look to those prior investigations for guidance in selecting an appropriate set of control variables.

Use of a size variable is common in the literature.⁸⁸ One reason is that larger offerings may attract greater interest in the beauty pageants, which could affect competition in the setting of the preliminary price estimates. The size used in the estimations is the esti-

85. Becker & Ichino, *supra* note 83, at 358.

86. *Id.* at 361 (emphasis removed). In order to satisfy the balancing property, the independent variables vary slightly between estimations of the pre-IPO price adjustment and the absolute value of the pre-IPO price adjustment. *See infra* note 87 and accompanying text. The results reported are based on limiting observations not involving the treatment to the area of “common support,” meaning having a propensity of having the treatment within the range of propensities of observations having the treatment. Becker & Ichino, *supra* note 83, at 360.

87. *See* Becker & Ichino, *supra* note 83, at 359-60 (discussing the balancing requirement). Two of the control variables included in the models reflect changes in other securities prices. In models estimating absolute value of the pre-IPO price adjustment, the absolute values of those variables are used. This slight change ultimately requires addition of one more variable in the estimation of the propensities of the three types of QIUs in models used to assess the pre-IPO price adjustment. For this purpose, the square of one variable was included in the estimation of the pre-IPO price adjustment, but not the absolute value of the pre-IPO price adjustment. *See infra* note 101 and accompanying text.

88. *E.g.*, Richard Carter & Steven Manaster, *Initial Public Offerings and Underwriter Reputation*, 45 J. FIN. 1045, 1057 (1990); Megginson & Weiss, *supra* note 65, at 896.

mated offer size at the time the IPO is initially filed, as opposed to the actual offer size.⁸⁹

Controlling for the reputation of the investment bank is common.⁹⁰ Loughran and Ritter provide rankings of investment bank quality⁹¹—a ranking that is commonly used in the IPO literature.⁹² On this scale, the highest rank is 9.1.⁹³ For each offering, the rank of the underwriter “running the books” (the managing underwriter or the lead manager) was identified, based on the Loughran and Ritter rankings.⁹⁴ The relationship between price adjustment and this particular measure of prestige may be nonlinear. In the estimation of the pre-IPO price adjustment (but not the absolute value of that adjustment), the square of this ranking is also used. Use of this additional variable in that estimation produces propensity scores that satisfy the balancing property, and for purposes of comparison, it is helpful to have the same control variables in the regressions and the ATT estimations.

The quality of the issuer’s stockholders may be related to the sophistication of the issuer and how the beauty pageant progresses. The presence or absence of venture capital backing, which has been previously used in the IPO literature,⁹⁵ is one factor that may evidence issuer sophistication. The SDC database identifies IPOs of issuers that SDC classifies as having venture backing. A dummy variable that reflects SDC’s classification of the issuer as venture backed is therefore used.

The percentage of the offering retained by pre-IPO shareholders may reflect private information concerning the quality of the firm.⁹⁶ Alternatively, it may affect the willingness of stockholders to accept

89. As Hansen notes, use of the actual size raises econometric concerns, because the size adjusts in proportion to price, which is a component of the variable that is being predicted. Estimated size is used to eliminate that concern. Robert S. Hansen, *Do Investment Banks Compete in IPOs?: The Advent of the “7% Plus Contract,”* 59 J. FIN. ECON. 313, 339 (2001).

90. *E.g.*, Megginson & Weiss, *supra* note 65, at 897.

91. Tim Loughran & Jay R. Ritter, Carter-Manaster Reputation Rankings for IPO Underwriters 1980-2004, <http://bear.cba.ufl.edu/ritter/rank.pdf> (providing data used in Tim Loughran & Jay R. Ritter, *Why Has Underpricing Changed over Time?*, FIN. MGMT., Autumn 2004, at 5 [hereinafter, Loughran & Ritter, *Changed over Time*]) and updating rankings provided in Carter & Manaster, *supra* note 88).

92. *E.g.*, Li & Masulis, *supra* note 7; *cf.* Richard B. Carter et al., *Underwriter Reputation, Initial Returns, and the Long-Run Performance of IPO Stocks*, 53 J. FIN. 285, 285 (1998) (finding more explanatory power with their measure compared to others).

93. Loughran & Ritter, *Changed over Time*, *supra* note 91, at 35.

94. On rare occasions, more than one underwriter may be so identified. In those cases, the average rank was assigned.

95. Megginson & Weiss, *supra* note 65, at 897.

96. See Hayne E. Leland & David H. Pyle, *Informational Asymmetries, Financial Structure, and Financial Intermediation*, 32 J. FIN. 371 (1977) (“[T]he entrepreneur’s willingness to invest in his own project can serve as a signal of project quality.”).

price deviations. For this reason, the models include a control variable—*retain*—which is designed to reflect the percentage of the issuer retained by the pre-IPO shareholders. The precise definition of this variable is somewhat complex. The regressions could, but do not, use for this purpose the following fraction:

$$\frac{\text{shares outstanding after the IPO} - \text{shares offered in the IPO}}{\text{shares outstanding after the IPO}}.$$

Use of that variable would be problematic for the same reason that the regressions use the estimated size instead of the actual IPO size.⁹⁷ The number of shares offered may be influenced by the final price, and it is improper to use a variable influenced by the dependent variable (the price) as an independent variable. The solution is to adjust the variable to reflect the value that fraction was anticipated to be at the time the preliminary prospectus was filed. To make that computation, two substitutions are made. First, the shares expected to be outstanding after the IPO (based on the preliminary prospectus) are substituted for the actual number shares outstanding after the IPO. Second, the number of shares the preliminary filing indicates were to be offered is substituted for the final number of shares offered. Thus, the variable *retain* equals:⁹⁸

$$\frac{\text{shares expected to be outstanding after the IPO} - \text{shares expected to be offered in the IPO}}{\text{shares expected to be outstanding after the IPO}}.$$

Some issuers have two classes of common stock. The variable *retain* is not comparable between issuers that do not have two classes of common stock and those that do. A dummy variable *dual class* controls for variation in *retain* arising where the existence of a second class of common stock would cause the variable *retain* to overstate percentage ownership.

The natural logarithm of the issuer's total assets before the offering, expressed in millions of dollars, is also included as a control variable. This variable is included because it is hypothesized that it may affect the likelihood that there will be a QIU (not because of a direct impact on pre-IPO price adjustment). The financing needs of larger firms before an IPO may be greater. Firms with more pre-IPO assets may therefore be more likely to obtain financing from affiliates of investment banks that, for example, are ultimately repaid in an IPO.

To account for technology stocks being "hot" during the period, a dummy variable reflecting the participation of a high technology issuer is included. This variable is taken from the SDC database and

97. See *supra* note 89 and accompanying text.

98. The shares outstanding after the offering were taken from the prospectuses. The expected shares to be outstanding were computed by subtracting the shares actually offered and adding the shares initially registered.

equals one where SDC classifies the issuer in one or more high technology areas.

In half the estimations, the percentage change, expressed as a decimal, in the NASDAQ Composite Index over the time the offer was in registration is used to control for changes in the market as a whole.⁹⁹ For models estimating the absolute value of the pre-IPO price adjustment, the absolute value of this change in the NASDAQ Composite Index is used instead.

Two other variables control for temporal changes in pre-IPO price adjustment. First, the models also include a dummy variable reflecting offerings in 1999 and 2000 (the bubble period). Second, half the estimations include the average pre-IPO price adjustment of all other IPOs within thirty days (before or after) of the IPO in question. The other estimations, those where the absolute value of the pre-IPO price adjustment is being estimated, include the absolute value of the average pre-IPO price adjustment over the corresponding sixty day period.¹⁰⁰

The estimates also include the number of days the offering is in registration, that is, the time between the first filing with the SEC reported by SDC and the date of the IPO. This variable is not commonly used in financial economics literature, yet there are good reasons to believe this variable is important. For example, if the SEC asks difficult questions during its review, it may take longer to satisfy the SEC that the disclosure is accurate. This variable therefore may be a proxy for problems the issuer's offering presents.

In the estimation of the ATTs through propensity score matching, these control variables are used as independent variables in estimating the propensities of there being a proceeds QIU, a common stock QIU, and a noncommon security QIU with probit models. Thus, there are six probit models. There are, for example, two for estimating the probability that there will be a proceeds QIU: one includes underwriter reputation², the NASDAQ change, and the average pre-IPO price adjustment of other IPOs within 30 days; and the other includes the absolute value of the NASDAQ change and the absolute value of the average pre-IPO price adjustment of other IPOs within thirty days. Similarly, there are two probit models for estimating the probability that there will be a common stock QIU and two probit models for estimating the probability that there will be a noncommon security QIU.

99. In particular, this variable represents the percentage change, expressed as a decimal, from the last closing reported price reported on or before *the filing date* reported by SDC to the last closing price on or before *the IPO date* reported by SDC.

100. To be clear, it is the absolute value of the average, and not the average of the absolute values, that is used.

The ordinary least squares regressions add four dummy variables to the independent variables used in the estimation of ATTs through propensity score matching. The additional variables include one reflecting each of the three types of interest referenced above requiring the use of a QIU, and a fourth variable indicating whether an NASD member with a conflict is acting as lead manager in the offering.¹⁰¹ These two regression models are represented in the following equations:

- (1) *pre-IPO price adjustment (percentage)* = $\beta_0 + \beta_1 \ln(\text{est. size}) + \beta_2 \text{underwriter reputation} + \beta_3 \text{underwriter reputation}^2 + \beta_4 \text{NASDAQ return from the filing of the registration statement to the IPO date (percentage expressed as a decimal)} + \beta_5 \text{mean pre-IPO price adjustment of all other IPOs within 30 days (expressed as a percentage)} + \beta_6 \text{venture backed} + \beta_7 \text{retain} + \beta_8 \text{dual class} + \beta_9 \text{high tech} + \beta_{10} \text{bubble period (1999–2000)} + \beta_{11} \ln(\text{total assets before IPO, in millions}) + \beta_{12} \text{days in registration} + \beta_{13} \text{proceeds QIU} + \beta_{14} \text{common stock QIU} + \beta_{15} \text{noncommon security QIU} + \beta_{16} \text{affiliate is lead} + \varepsilon$.
- (2) *abs (pre-IPO price adjustment (percentage))* = $\beta_0 + \beta_1 \ln(\text{est. size}) + \beta_2 \text{underwriter reputation} + \beta_3 \text{abs(NASDAQ return from the filing of the registration statement to the IPO date (percentage expressed as a decimal))} + \beta_4 \text{abs (mean pre-IPO price adjustment of all other IPOs within 30 days (expressed as a percentage))} + \beta_5 \text{venture backed} + \beta_6 \text{retain} + \beta_7 \text{dual class} + \beta_8 \text{high tech} + \beta_9 \text{bubble period (1999–2000)} + \beta_{10} \ln(\text{total assets before IPO, in millions}) + \beta_{11} \text{days in registration} + \beta_{12} \text{proceeds QIU} + \beta_{13} \text{common QIU} + \beta_{14} \text{noncommon security QIU} + \beta_{15} \text{affiliate is lead} + \varepsilon$.

In addition, results from the first-listed model excluding the underwriter reputation² variable are included, for purposes of showing that the results of interest in the regression are not materially affected by using that additional variable. The results of these regressions are presented in Table 3. Table 4 presents the results of the six estimations of the ATTs through propensity score matching.

C. Results

The results of the ordinary least squares regressions and the estimation of the ATTs through propensity score matching are qualitatively similar. There is a negative, statistically significant relationship between pre-IPO price adjustment and both a proceeds QIU and a noncommon security QIU. The relationship between pre-IPO price adjustment and a common stock QIU is not statistically significant.

101. The prospectuses sometimes do not identify the investment bank with a conflict of interest. In some cases, the information could not be discovered from other SEC filings.

Equality of the coefficients for proceeds QIU and common stock QIU is rejected with p -values 0.058 and 0.045 in models 1 and 2, respectively. There is a negative, statistically significant relationship between absolute value of the pre-IPO price adjustment and a proceeds QIU, with the relationships for the two other types of QIUs not statistically significant. However, we cannot reject equality of the coefficients for common stock QIU and proceeds QIU at customary levels (p -value of 0.133).¹⁰²

These results do not comfortably support the certification hypothesis. Investment bank exit from a financial relationship with a private firm does not implicitly certify the issuer. If anything, it does the converse. Nevertheless, the kind of pre-IPO price adjustment that Li and Masulis find for large percentage common stock ownership, which they ascribe to certification,¹⁰³ is found for investment bank exit.

Lastly, one might be interested in comparing the estimated impacts of the relationships Li and Masulis find for beneficial ownership of common stock and the relationships found in this Article for receipt of a percentage of the proceeds. Their discussion argues in support of the economic significance of some results they find by multiplying an estimated coefficient by the average underwriter percentage common stock ownership in IPOs where there is any underwriter stock ownership.¹⁰⁴ One can thus try to extend their methodology to

102. It is possible that pertinent information about the quality of managing underwriters that affects the IPO pricing process is not captured in the underwriter reputation measure. To investigate whether that is the case, fixed effects models, sometimes called LSDV (least squares dummy variable) models, see WILLIAM H. GREENE, *ECONOMETRIC ANALYSIS* 616 (3d ed. 1997), were also prepared. These substitute dummy variables for the participation of each of the managing underwriters. Where the regression includes a constant, a dummy variable reflecting the participation of one investment bank must be omitted. See DAMODAR N. GUJARATI, *BASIC ECONOMETRICS* 504 (3d ed. 1995). During the course of the sample, some investment banks who acted as lead underwriters merged. In preparing the dummy variables, all predecessors where there was at least some commonality in the names were treated as the same firm. Consider, for example, the merger of an investment bank named *A B, Inc.*, with a second bank named *C D, Inc.* If the successor is named *A C, Inc.*, IPOs are treated as having the same lead manager where the lead manager is *A B, Inc.*, *C D, Inc.*, or *A C, Inc.* If the successor is named *A B, Inc.*, however, IPOs having *A B, Inc.* and *C D, Inc.*, as lead managers are treated as being managed by different firms. This procedure produces 130 separate dummy variables.

To account for the offerings with two investment banks identified as the "lead manager," the IPO was treated as being managed by the first-listed firm. The results of these models were, in general, qualitatively similar. Estimating pre-IPO price adjustment, the estimated coefficients [t -statistics] were -5.614 [1.853], 2.938 [0.609], and -17.582 [2.977] for a proceeds QIU, a common stock QIU and a noncommon security QIU, respectively. The corresponding coefficient estimates for estimating the absolute value of the pre-IPO price adjustment were -6.678 [2.904], 1.775 [0.424], and -5.357 [1.067], respectively, the last estimate being perhaps somewhat dissimilar to the results in Table 3.

103. Li & Masulis, *supra* note 7, at 21.

104. *Id.* at 12.

compare the magnitude of the relationship they estimate to the magnitude of the relationships the results in this Article find.

In IPOs in Li and Masulis's sample where the lead underwriters own common stock of the issuer, the average common stock ownership percentage of the lead underwriters is 10.4%.¹⁰⁵ Their estimated coefficient for pre-IPO price adjustment for lead underwriter percentage ownership is -0.22.¹⁰⁶ Multiplying that coefficient by 10.4% yields an estimated -2.3% (that is, -2.3 percentage points) pre-IPO price adjustment. In sum, they estimate a -2.3% lower pre-IPO price adjustment in IPOs where the lead underwriter has common stock ownership equal to the average ownership in IPOs where there is a nonzero lead underwriter ownership.

On the other hand, the regression results in Table 3 show the receipt of proceeds is associated with an estimated change in pre-IPO price adjustment of -6.2 percentage points or -7.3 percentage points,¹⁰⁷ while estimation of the ATT through propensity score matching shows a -10.6 percentage points decrease. Using their procedure, only a relatively large lead underwriter ownership of 28% or 48% would correspond, respectively, to a -6.2 percentage point or a -10.6 percentage point change in pre-IPO price adjustment.

105. *Id.* at 36 tbl.2. There is some ambiguity in the way they present these statistics. This statistic is in a portion of a table captioned "Panel B. Summary Statistics of IPOs with Underwriter Ownership." Underneath this caption are row headings titled "Shareholdings of All Underwriters," "Shareholdings of Lead Underwriters," "Shareholdings of Nonlead Underwriters," and "Warrant Holdings of Lead Underwriters." The percentages are 11.0%, 10.4%, 8.4%, and 5.0%, respectively. If these percentages were "[s]ummary [s]tatistics of IPOs with [u]nderwriter [o]wnership," one might expect the second and third percentages to sum to the first percentage. From reviewing the annual breakdowns they provide, it appears that the 10.4% represents shareholdings of lead underwriters of IPOs with lead underwriter ownership.

One general problem with computing percentages using beneficial percentage ownership figures is that, the way the SEC rules work, the percentage ownership in each IPO can add up to more than 100%. That is because each holder's percentage is a fraction whose numerator is the number of shares the holder owns or can acquire, and the denominator is the number of shares outstanding plus the number of shares the particular holder can acquire. 17 C.F.R. § 240.13d-3(d)(1)(i) (2005).

106. Li & Masulis, *supra* note 7, at 40 tbl.6. The magnitude of the estimated coefficient for nonlead underwriter percentage ownership is lower, -0.15.

107. *See supra* Table 2, models 1 and 2.

TABLE 3
REGRESSION RESULTS¹⁰⁸

VARIABLES	(1) PRE-IPO Adj (%)	(2) PRE-IPO Adj (%)	(3) PRE-IPO Adj (%)
constant	48.077 [1.442]	75.112 [2.197]**	14.519 [0.517]
ln(est. size)	-5.096 [2.592]***	-4.903 [2.495]**	-1.489 [0.912]
underwriter reputation	3.203 [5.139]***	-7.999 [3.331]***	1.037 [2.089]**
underwriter reputation ²		0.926 [4.800]***	
NASDAQ pre-IPO Return (decimal)	20.166 [2.008]**	20.514 [2.044]**	
average of others' pre-IPO +/- 30 days (%)	0.869 [6.979]***	0.880 [7.112]***	
NASDAQ pre-IPO return (decimal)			4.631 [0.445]
average of others' pre-IPO +/- 30 days (%)			0.582 [5.397]***
venture backed	2.113 [1.148]	2.181 [1.198]	3.449 [2.239]**
retain	22.700 [3.072]***	21.226 [2.901]***	19.621 [3.527]***
dual class	6.706 [1.769]*	5.261 [1.380]	5.409 [2.118]**
high tech	4.501 [2.161]**	4.208 [2.033]**	4.328 [2.809]***
bubble period	-3.806 [1.242]	-4.633 [1.543]	-1.108 [0.572]
ln (total assets before IPO (millions))	0.773 [0.855]	0.505 [0.550]	-0.358 [0.486]
days in registration	-0.047 [2.433]**	-0.047 [2.472]**	0.011 [0.783]
proceeds QIU	-6.232 [2.111]**	-7.340 [2.514]**	-6.461 [2.994]***
common stock QIU	3.815 [0.841]	3.188 [0.710]	-0.199 [0.052]
noncommon security QIU	-14.865 [2.456]**	-15.390 [2.523]**	0.801 [0.189]
affiliate is lead	-2.476 [0.612]	-1.837 [0.460]	-0.544 [0.193]
Observations	1168.00	1168.00	1168.00
R-squared	0.261	0.272	0.140

108. Ordinary least squares estimation of relationship between pre-IPO price adjustment (percent) or absolute value pre-IPO price adjustment and the following interest requiring the use of a QIU: participation of NASD members (or affiliates) receiving more than 10% of the net proceeds, participation of NASD members (or affiliates) owning 10% or more of the issuer's common stock, and participation of NASD members (or affiliates) owning 10% or more of the issuer's preferred stock or subordinated debt. The sample comprises 1168 IPOs of nonfinancial firms from Jan. 31, 1997, through Dec. 1, 2000. In brackets below estimated coefficients are *t*-statistics computed using Huber-White robust standard errors. Significance at the 1%, 5% and 10% levels are shown by ***, ** and *, respectively.

TABLE 4
ATT ESTIMATION¹⁰⁹

	NO. OF OBS.	NO. OF CONTROLS	ATT	<i>t</i> - STATISTIC
<i>Pre-IPO Price Adjustment (%)</i>				
Proceeds QIU	55	604	-10.608	-3.406***
Common Stock QIU	59	1060	0.868	0.190
Noncommon Security QIU	18	945	-18.499	-3.245***
<i>Abs. Pre-IPO Price Adjustment (%)</i>				
Proceeds QIU	55	619	-7.477	-3.077***
Common Stock QIU	59	1066	-2.063	-0.590
Noncommon Security QIU	18	1108	-2.392	-0.572

It is probably easy to make too much of these comparisons. The models cannot predict coefficients with sufficiently small confidence intervals to give substantial precision to this kind of comparison. Moreover, the models have different control variables and, in one case, modeling techniques, which further complicates any comparison. The best that may be said with confidence is that the results give us no reason to believe the impact of percentage underwriter share beneficial ownership dominates the impact of receipt of proceeds, and there is some suggestion of the converse.

It is helpful to place the results of this investigation in the context of other literature. Table 1 is reproduced below, supplemented with

109. Estimation of ATT on percentage pre-IPO price adjustment and absolute value of pre-IPO price adjustment through propensity score matching, using kernel matching. Treatments consists of (1) QIU for participation of NASD members (or affiliates) receiving more than 10% of the net proceeds; (2) QIU for participation of NASD members (or affiliates) owning 10% or more of the issuer's common stock; and (3) QIU for participation of NASD members (or affiliates) owning 10% or more of the issuer's preferred stock or subordinated debt.

Propensity scores for estimating ATTs for pre-IPO price adjustment are estimated with three probit models, each estimating the likelihood of one of the three interests requiring a QIU and having the following independent variables: ln(est. size); underwriter reputation; underwriter reputation²; venture backed; retain; dual class; high tech; bubble period; ln (total assets before IPO (millions)); days in registration; average percentage pre-IPO price adjustment of all other IPOs priced within 30 days of the IPO; and the percentage change in the NASDAQ from filing to the last close before the IPO date (expressed as a decimal).

Propensity scores for estimating ATTs for absolute value of pre-IPO price adjustment are estimated with three probit models, each estimating the likelihood of one of the three interests requiring a QIU and having the following independent variables: ln(est. size); underwriter reputation; venture backed; retain; dual class; high tech; bubble period; ln (total assets before IPO (millions)); days in registration; the absolute value of the average percentage pre-IPO price adjustment of all other IPOs priced within 30 days of the IPO; and the absolute value percentage change in the NASDAQ from filing to the last close before the IPO date (expressed as a decimal).

Following ATTs are *t*-statistics, computed using bootstrapped standard errors (200 repetitions). Estimations limited to areas of common support. Significance at the 1% level shown by ***.

the results of this investigation and the results from other work of the author.¹¹⁰

TABLE 5
COLLECTED RELATIONSHIPS BETWEEN IPO PRICING AND INVESTMENT
BANK CONFLICTS OF INTEREST¹¹¹

CONFLICTS OF INTEREST INVESTIGATED	INITIAL RETURN	PRE-IPO PRICE ADJUST- MENT	PRE- IPO PRICE ADJUST- MENT	INITIAL RETURN AT LEAST 25%	UNDER- PRICING STRATUM – PRE-IPO ADJUSTMENT STRATUM
Percentage Common Stock Beneficial Owner- ship	–	–	–		
Issuer Has a Relationship Bank with an Affiliate That Could Underwrite the IPO	–				
Presence of a Common Stock QIU	~	~ This Article	~ This Article	+	+
Presence of a Noncommon Security QIU	–	– This Article	~ This Article	~	~
Presence of a Proceeds QIU	–	– This Article	– This Article	–	~

Prior work of others¹¹² would suggest that, in IPO pricing, large investment bank percentage beneficial ownership produces results similar to that based on the existence of other contractual pre-IPO relationships between issuers and investment banks. Others have asserted each represents certification, as Li and Masulis and Schenone argue is the case as to large common stock beneficial ownership¹¹³ and the presence of a pre-IPO credit relationship,¹¹⁴ respectively. Table 5 illuminates reasons to be concerned with that conclusion.

First, it is not clear why, if certification accounts for the results, that these noncommon investments would have results similar in only some respects to large percentage beneficial ownership of common stock (other than the absence of a significant relationship not

110. Barondes, *supra* note 72.

111. Tabular representation of the results of recent investigations of various conflicts of interest and IPO pricing statistics. Relationships significant at the 10% level are indicated with a “+” or a “–” sign; a “~” identifies relationships that are not statistically significant. Those presented in this Article are identified with “This Article.”

112. See Li & Masulis, *supra* note 7; see also Schenone, *supra* note 71.

113. Li & Masulis, *supra* note 7, at 1.

114. Schenone, *supra* note 71, at 2903 (ascribing the results to the relationship “ameliorat[ing] asymmetric information problems”).

proving the absence of a relationship). *Second*, the concern with attributing certification to common stock investments and pre-IPO debt relationships is reaffirmed by looking at the last two columns. Other work shows a positive relationship between the presence of a common stock QIU and the likelihood there will be an initial return of at least 25% (a large initial return)¹¹⁵ and the underpricing stratum minus the pre-IPO adjustment stratum.¹¹⁶ This second statistic can be defined by example. If an IPO is in the first (lowest) quartile of IPOs in pre-IPO price adjustment and the second (second-lowest) quartile in underpricing, this second statistic equals 1.0. So, the statistic reflects how the parties split the difference in value between the initial estimate and the post-IPO market price. The second statistic (difference in strata) is not significant for noncommon security QIU or for a proceeds QIU, but there is a significant and negative relationship between a proceeds QIU and the variable reflecting a large initial return is significant but negative. If certification accounts for the other results, that does not explain why there are different signs for the likelihood of a large initial return.

VI. CONCLUSION

Current financial economics literature conceptualizes investment bank conflicts of interest as playing a certification role in IPO pricing. In light of the persistent investment bank malfeasance in the IPO process, that conclusion is puzzling. Were it accurate, those results would support focusing any regulatory reform of the IPO process on offerings involving low-quality investment banks.

This Article examines those conclusions, presenting new empirical evidence concerning the pre-IPO price adjustment process. IPOs where more than ten percent of the proceeds are being paid to participating NASD members involve relatively lower pre-IPO price adjustment. There is also a negative relationship for the absolute value of that adjustment. The relationships others suggest support certification also exist in a context that is difficult to categorize as involving certification.

The conclusion that these IPOs do not involve certification provides support for pending proposals to require greater disclosure to issuers of the level of pre-IPO interest.¹¹⁷ However, it is not clear that proposal goes far enough. Addressing concerns that conflicts of interest influence investment bank performance would require either direct regulation of the pricing itself or increased public disclosure of information that would enhance the ability of market forces to re-

115. Barondes, *supra* note 72, at 890 tbl.3.

116. *Id.* at 896 tbl.6.

117. See *supra* notes 55-59 and accompanying text.

strain opportunistic behavior. Enhanced disclosure could address pre-IPO demand, beauty pageant estimates, or details of a conflict of interest requiring use of a QIU beyond those currently required to be disclosed.¹¹⁸

118. Rule 2720 sets forth the following disclosure requirement:

All offerings included within the scope of this Rule shall disclose . . . that the offering is being made pursuant to the provisions of this Rule, that the offering is either being made by a member of its own securities or those of an affiliate, or those of a company in which the member or its associated persons, parent or affiliates own the common stock, preferred stock or subordinated debt of the company, the name of the member acting as qualified independent underwriter, if any, and that such member is assuming the responsibilities of acting as a qualified independent underwriter in pricing the offering and conducting due diligence.

NASD MANUAL II, *supra* note 50, at R. 2720(d)(2).