

# UNDERWRITERS' CIVIL LIABILITY FOR IPOs: AN ECONOMIC ANALYSIS

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## ABSTRACT

This article explores new justifications for imposing liability on underwriters. The article discusses whether civil liability should be imposed on the leader of a consortium of underwriters (the lead or, more commonly, managing underwriter) and other underwriters of initial public offerings (IPOs) for misleading information in the offering prospectus. The justification of such liability is based on two new models that simulate the decision-making process of managing underwriters. The first model indicates that a statute imposing liability on underwriters plays a crucial role in solving the problem of hidden action by the managing underwriter, in which the degree of effort that the managing underwriter makes in performing due diligence is not revealed in the aftermarket. The second model shows that the managing underwriter acts strategically in setting the offering price and in allotting securities to investors, and that the law plays a central role in reducing the offering-related costs. This model describes the convergence of supply and demand in the bookbuilding method.

The principal thesis of the study is that in the current structure of capital markets, the strategic behavior of the managing under-

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writer of a consortium of underwriters creates substantial costs through its method of distributing securities in the primary market and that this phenomenon justifies imposing civil liability on managing underwriters. In the first model, the moral hazard problem cannot be solved without statutory backing. In the second model, the managing underwriter cultivates a two-way relationship with potential investors during the course of marketing the offering. In this model, the managing underwriter determines the offering price and the allotment of securities to investors in a way that maximizes its profits. In equilibrium, only some of the regular investors perform valuations of the offered securities to the degree that enables efficiency in building a market-demand curve. The model indicates that imposing civil liability on the managing underwriter using the bookbuilding method can increase the efficiency of the allotment mechanism operation.

Imposing liability on the managing underwriter is also expected to put some restraints on its strategic behavior in the after-market. Another aspect of efficiency that results from imposing liability, is that the managing underwriter's power to effectively supervise company directors, such as providing oversight of executive hirings and personal interest agreements, is strengthened. Imposing civil liability on managing underwriters is further justified by the fact that managing underwriters are the least expensive insurers, particularly in the distribution of systemic risks.

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## 1. INTRODUCTION

This article explores new justifications for imposing legal liability on managing underwriters. Under prevailing United States law, the underwriters<sup>1</sup> of an initial public offering ("IPO") of securities bear civil liability for damages suffered by investors resulting from misleading information in the offering prospectus.<sup>2</sup> The un-

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<sup>1</sup> Section 2(a)(11) of the Securities Act of 1933, 15 USC § 77b(a)(11), defines the term "underwriter" as follows:

The term "underwriter" means any person who has purchased from an issuer with a view to, or offers or sells for an issuer in connection with, the distribution of any security, or participates or has a direct or indirect participation in any such undertaking, or participates or has a participation in the direct or indirect underwriting of any such undertaking; but such term shall not include a person whose interest is limited to a commission from an underwriter or dealer not in excess of the usual and customary distributors' or sellers' commission. As used in this paragraph the term "issuer" shall include, in addition to an issuer, any person directly or indirectly controlling or controlled by the issuer, or any person under direct or indirect common control with the issuer.

For a detailed examination of the definition's components, see LOUIS LOSS & JOEL SELIGMAN, *FUNDAMENTALS OF SECURITIES REGULATION* 324-40 (5th ed. 2004) (defining an underwriter) [hereinafter *FUNDAMENTALS*]; LOUIS LOSS & JOEL SELIGMAN, II *SECURITIES REGULATION*, 1138.44-.70 (3rd ed. 1999) (discussing how to determine whether a particular person is an underwriter) [hereinafter *SECURITIES REGULATION*]; THOMAS LEE HAZEN, *TREATISE ON THE LAW OF SECURITIES REGULATION* Vol. 1, 131-46 (4th ed. 2002) (describing the underwriting process); Jennifer O'Hare, *Institutional Investors, Registration Rights, and the Specter of Liability Under Section 11 of the Securities Act of 1933*, 1996 WIS. L. REV. 217, 230-39 (1996) (discussing the four types of statutory underwriters: (1) persons who purchase with a view to distribution; (2) persons who offer or sell for an issuer; (3) persons who purchase from a control person; (4) and persons who participate in the distribution of a security).

<sup>2</sup> In the United States, section 11 of the Securities Act of 1933 (15 U.S.C. § 77k (1997)) is the most popular base for lawsuits against underwriters. In addition to the underwriter, Section 11 holds the undersigned on registration statements, the issuing firm, its directors, the experts that have undersigned opinions attached to the prospectus, and the underwriters all liable under civil law. According to section 11(a), they are liable "[i]n case any part of the registration statement, when such part became effective, contained an untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary to make the statements therein not misleading." 15 U.S.C. § 77k(a). I will refer to this as misleading information or a misleading statement. Any buyer of securities in an IPO or in the secondary market may thus sue for damages due to such misleading information. In section 11 suits, the plaintiff need not prove reliance on a misleading statement, the existence of a causal relation, or damages. If the registration statement contains misleading information, the underwriters, the issuing firm's

derwriters are subject to a negligence standard and bear the burden of proving that the misleading information in the prospectus are not the result of their negligence.

The central subject matter of this article seeks to answer to the following question: based on the economic analysis approach taken by the law, and more particularly, the economic analysis of torts, should civil liability be imposed on the managing underwriter of the consortium of underwriters and the other underwriters of IPOs for the misleading information in the offering prospectus?

In an IPO, the underwriter<sup>3</sup> is a financial intermediary whose primary roles are to: 1) distribute the offered securities, 2) give quasi-insurance to the issue, and 3) bridge information gaps between sellers and buyers in the primary market.<sup>4</sup> Usually, underwriters act as a consortium to fulfill these roles. The crucial work of the consortium is done by the managing underwriter.<sup>5</sup> Before an

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directors, and the experts that have undersigned on opinions, but not the issuing firm itself, are only exempt from section 11(a) liability if they can rely on one of the defenses outlined in section 11(b). The most important of those will apply if they show that they have carried out a reasonable investigation and had a reason to believe, and indeed believed, that no misleading information was included in the registration statement. This means that the liability standard applied to the underwriters, the issuing firm's directors, and the experts that have undersigned opinions is negligence, and that they carry the burden of proof to show that they have not been negligent. For a general discussion of section 11 liability and its components, see LOSS & SELIGMAN, *FUNDAMENTALS OF SECURITIES REGULATION*, *supra* note 1, at 1227-34 (outlining the requirements of a section 11 suit); LOSS & SELIGMAN, *SECURITIES REGULATION*, vol. IX, *supra* note 1, at 4247-76 (discussing the elements of a section 11 action); HAZEN, *supra* note 1, at 581-618 (describing the right of action created by section 11).

<sup>3</sup> "Underwriting" is an insurance term. In insurance transactions, it means joining, by means of signing an insurance policy, an insurance obligation by a consortium of insurers. See THE NEW PALGRAVE DICTIONARY OF MONEY AND FINANCE Vol.III 721-24 (Peter Newman et al. eds., 1994) (discussing the differences between underwriting insurance contracts and underwriting new issues).

<sup>4</sup> In "firm-commitment" underwriting, a common type of underwriting used in American IPOs, underwriters perform their roles by purchasing securities from the issuer in order to distribute them to the public. See Ronald J. Gilson & Reinier H. Kraakman, *The Mechanisms of Market Efficiency*, 70 VA. L. REV. 549, 613-21 (1984) (discussing the role of the investment banker).

<sup>5</sup> For a detailed discussion of the historical development of the roles that underwriter consortiums and the managing underwriter play, see, JOSEPH AUERBACH & SAMUEL L. HAYES III, *INVESTMENT BANKING AND DILIGENCE: WHAT PRICE DEREGULATION?* 17-21 (1986) (noting efforts to make syndicates larger, simpler,

IPO, the issuing firm usually contacts an underwriter who will ultimately manage the IPO.<sup>6</sup> This underwriter is usually an investment bank. As IPO manager, the managing underwriter's duties include advising the issuer, providing investment-banking services, including management and financial support for company activities, assisting in formulating the prospectus, carrying out due diligence, assessing the value of securities to be sold, determining the IPO's structure and terms, and creating and managing the securities' underwriting and distribution networks. The managing underwriter affects an IPO's structure and terms, including the price of the securities offered, and the information about the offering disclosed to the public.<sup>7</sup>

Civil (and criminal) liability for underwriters for including misleading information in the prospectus can have far-reaching effects on trading in capital markets. Among other things, underwriters would charge larger commissions to cover liability costs. This difference in charged commissions could total a few billion dollars every year in the various exchanges around the world. Theoretically, at least, holding them liable might decrease the efficiency of capital raising, reduce the amount of capital raised, and lead to irregularities in the capital markets' resource allocation mechanism.<sup>8</sup>

An extensive review of the regulation of capital markets in the

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and faster-acting); LOSS & SELIGMAN, FUNDAMENTALS OF SECURITIES REGULATION, *supra* note 1, at 58-66; LOSS & SELIGMAN, SECURITIES REGULATION, *supra* note 1, at 327-46; HAZEN, *supra* note 1, at 75-76.

<sup>6</sup> See, e.g., HAZEN, *supra* note 1.

<sup>7</sup> See HAZEN *supra* note 1 (discussing the managing underwriter's crucial role in the IPO); see also Gilson & Kraakman, *supra* note 4, at 620 ("The investment banker's role as an informational and reputational intermediary can dramatically affect the efficiency of the market's response to an innovative security."); ROBERT A. SCHWARTZ, RESHAPING THE EQUITY MARKETS: A GUIDE FOR THE 1990s 98-101 (1993) (discussing the roles of investment bankers and underwriters in appraising and pricing new shares issued in IPOs); ROBERT G. ECCLES & DWIGHT B. CRANE, DOING DEALS: INVESTMENT BANKS AT WORK 35-52 (1988) (discussing the "network" nature of investment banking).

<sup>8</sup> Arguably, the higher the commission charged by underwriters, the more they should be held liable, similar to a tax on the primary market. This would change the allocation of resources by creating incentives to substitute other means of capital raising and investment, and would shift the distribution of wealth. See, e.g., RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW, 523-24 (4th ed. 1992) (discussing how taxation is used to change the allocation of resources and the distribution of wealth).

United States is currently under way. In 1998, the Securities and Exchange Commission ("SEC") publicized its plan for a comprehensive reform concerning disclosure with a view to elasticize the rules and promote public offerings.<sup>9</sup> Additional reforms are being implemented in line with the Sarbanes-Oxley Act of 2002<sup>10</sup> and in reference to investigations of biased analyst reports and securities allocations, particularly with regard to the "hot IPOs" during the big wave of "hi-tech" offerings from 1999 to March 2001. Despite the extensive changes in the wake of these reforms, the changes do not include any reduction in underwriter liability.

As opposed to the approach represented by American law and legal reforms pertaining to the underwriter-liability regime, the scientific literature is in dispute over the question of imposing liability on underwriters.<sup>11</sup> The dispute revolves around the understanding of how costs are structured in the capital markets, how the markets operate, and how underwriter functions are identified. In this article, the main purpose is to explore new justifications for imposing liability on underwriters.

The main thesis presented here is that the managing underwriter's strategic behavior and the creation of a consortium of underwriters create substantial costs in allotting securities in the pri-

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<sup>9</sup> Regulation of Securities Offerings, Securities Act Release No. 7606A, Exchange Act Release No. 40632A, Investment Company Act Release No. IC-23519A, 63 Fed. Reg. 67,174 (proposed Nov. 13, 1998), available at <http://www.sec.gov/rules/proposed/337606a1.txt>. This plan includes elasticizing the rules limiting communication between issuers and potential investors until the actual IPO, and allows for the preparation of various kinds of written presentations for potential investors after filing the registration statement. The plan also suggests rules to be applied to underwriters. See *id.*, at 67,230-34 (discussing the role of underwriters).

<sup>10</sup> Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, 116 Stat. 745 (codified in scattered sections of 11, 15, 18, 28, and 29 U.S.C.).

<sup>11</sup> See discussion *infra* in Section 2.1. Another question is the appropriate liability standard that should be applied when civil liability is sought against chief executives and other members of an underwriting consortium for misleading information in an IPO prospectus. For a comprehensive discussion of this issue, see John C. Coffee, Jr., *Gatekeeper Failure and Reform: The Challenge of Fashioning Relevant Reforms*, 84 B.U. L. REV. 301 (2004); Assaf Hamdani, *Gatekeeper Liability*, 77 S. CAL. L. REV. 53 (2003); Frank Partnoy, *Barbarians at the Gatekeepers?: A Proposal for a Modified Strict Liability Regime*, 79 WASH. U. L.Q. 491 (2001) [hereinafter *Barbarians*]; Frank Partnoy, *Strict Liability for Gatekeepers: A Reply to Professor Coffee*, 84 B.U. L. REV. 365 (2004) [hereinafter *Strict Liability*].

mary market. This increased cost justifies imposing civil liability on the managing underwriter and other underwriters for misleading information found in IPO prospectuses.

Prior models addressed the question of whether imposing civil liability ignored the strategic behavior of the managing underwriter and focused instead on other market activity and market players in examining the operating costs of the mechanism used for distributing securities in the primary market. (Some justified imposing liability on the managing underwriter and other underwriters, while others concluded that imposing civil liability is unjustified.) One model presented here indicates that a statute imposing liability on underwriters plays a crucial role in solving the problem of hidden action by the managing underwriter, in that the degree of effort that the managing underwriter makes in performing due diligence is not revealed in the after-market without statutory backing. Another model suggests that the managing underwriter acts strategically in setting the offering price and allotting securities to investors and that the law plays a central role in reducing offering-related costs.

In addition, this study examines the consequences of imposing liability as it relates to allocating the damages and insuring the risk of misleading information in the offering prospectus. This study concludes that a law imposing civil liability on the managing underwriter will cause the managing underwriter to internalize the risk and insure against it most optimally given the numerous benefits provided by risk insurance.

Using the two models to illustrate the strategic behavior of the managing underwriter enables a focus on yet another aspect of the offering procedure and allows the examination of the main procedures used by managing underwriters to distribute securities.

The first model focuses on the procedure for selecting the managing underwriter, for preparation of the prospectus draft by the company, for performance of due diligence by the managing underwriter, and for doing the offering.<sup>12</sup> This model suggests that the operational strategies of major players and the structure of the primary market create the complex problem of hidden actions, none of which are fully resolved by market mechanisms.

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<sup>12</sup> For a presentation of this model, see discussion *infra* Section 2.1.



The first model's thesis is that the existing capital markets structure creates a problem of hidden actions by firm executives and the managing underwriter, leading to a moral hazard problem. This differs from the traditional presentation of the issue in the literature as an adverse selection problem.<sup>13</sup> Under the present framework, the managing underwriter's strategic behavior and method of distributing securities in the primary market entails heavy costs. This phenomenon alone justifies holding both the managing underwriter and the other underwriters of an IPO liable for misleading information in the prospectus. I argue that the existing primary-market problem can also be presented as a moral hazard problem, and not only as an adverse selection problem.

The first model answers two fundamental questions: (1) why hiring based on the managing underwriter's reputation alone is not enough to solve the asymmetric information problem, and (2) how a law holding the managing underwriter liable solves this problem.

The answer to the first question is that without a law holding managing underwriters liable, investors cannot know how much effort the managing underwriter has exerted in performing due diligence. They cannot review the raw data provided to the managing underwriter by the firm or a record of the managing underwriter's activities; thus investors are in no position to judge, based on the securities' performance alone, whether a drop in share value is due to unrelated causes (such as a business failure by the firm) or to inadequate disclosure.

A particularly important role is attributed in this model to the managing underwriter's reputation, which it offers a firm to compensate for investor distrust resulting from their inability to monitor the managing underwriter's activity. Managing underwriters rely on their reputation to retain and attract clients. If investors could be convinced that a managing underwriter's reputation would suffer if it did not put forth its best effort, they would also believe the underwriter is putting forth its best effort. However, since investors do not know the causes of share price changes, they have no reason to believe a managing underwriter's reputation will change in proportion to the effort it exerts. Therefore, investors should not believe that a managing underwriter's best efforts

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<sup>13</sup> *Id.*

will also yield the underwriter the most profits. This is a moral hazard problem resulting in several potential market equilibriums.

The answer to the second question is that a law requiring optimal managing underwriter effort may facilitate a new, more efficient equilibrium by creating a convention for the managing underwriter's chosen strategy. With no incentive to mislead investors, the managing underwriter prefers the optimal-effort equilibrium and the investors can justifiably trust this choice. The problem is that the managing underwriter cannot convince the investors that among all possible equilibriums, the one chosen will actually obtain the best result. Therefore, the managing underwriter cannot convince the investors to give their trust and to accept the equilibrium that takes into account the good, accurate information supplied by the managing underwriter. However, a social convention regarding the managing underwriter's strategy may push it to recognize the ideal equilibrium.

The law's role in resolving the hidden action problem is to provide a credible threat of revealing a managing underwriter's actions to investors. When the share price drops and the investors suspect their managing underwriter has not exerted optimal effort, they may turn to the courts, where the managing underwriter's behavior can be reviewed. Such judicial review will begin in the early procedural stages of the legal process; through various disclosure requirements, such as document disclosure, the managing underwriter's *modus operandi* can be exposed. Additional tools that can increase investor certainty in their assessment of the managing underwriter's actions, are the litigation process generally and the legal decisions rendered in later stages of the legal process.

The model additionally concludes that when the managing underwriter is held legally liable, it is much easier and cheaper to convince company executives to opt for the proper disclosure strategy. This is because the law causes the managing underwriter to put forth effort in conducting due diligence. As a result, it becomes unprofitable for executives to opt for a disclosure strategy.

The second model<sup>14</sup> presented focuses on the IPO pricing process and the way securities are distributed to investors. In this model, the managing underwriter's strategic actions play a major

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<sup>14</sup> For a presentation of this model, see discussion *infra* Section 2.2.

role in determining the allotment mechanism's efficiency. I argue that even during the process of interfacing the companies' security supply and investor demand, the managing underwriter plays an important role, generating sufficient costs to justify liability. Unlike previous studies, the present model focuses on the central players' strategic actions and the gamut of the managing underwriter functions—insurance, bridging information gaps, marketing and distribution, and post-IPO market support—which also have an effect on underwriter actions.<sup>15</sup> The model also takes into account the fact that the issuing process involves information that flows from the firm to the managing underwriter and investors, and vice versa.<sup>16</sup>

The model is based on a single system of selling securities in the primary market called the bookbuilding method.<sup>17</sup> In primary markets around the world, there are two main groups of security selling mechanisms. The first includes offerings that comply, to a certain degree, with rules of equality in receiving bids from the public and distributing them among the various bidders.<sup>18</sup> This

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<sup>15</sup> For a description of the various roles underwriters play, see *supra* text accompanying notes 3–5.

<sup>16</sup> For a description of the two-way direction of information flow in the IPO's process, see *supra* note 4.

<sup>17</sup> For a description of the bookbuilding method and its implications, see Lawrence M. Benveniste & Walid Y. Busaba, *Bookbuilding vs. Fixed Price: An Analysis of Competing Strategies for Marketing IPOs*, 32 J. FIN. & QUANTITATIVE ANALYSIS 383 (1997) (discussing the best way to “price and place” IPOs); Lawrence M. Benveniste & Paul A. Spindt, *How Investment Bankers Determine the Offer Price and Allocation of New Issues*, 24 J. FIN. ECON. 343, 343 (1989) (concluding that “by using their access to investors to collect information, underwriters can reduce IPO underpricing”); Hsuan-Chi Chen & Jay R. Ritter, *The Seven Percent Solution*, 55 J. OF FIN. 1105, 1105 (2000) (examining “several features of the IPO underwriting business that result in a market structure where spreads are high”); Francesca Cornelli & David Goldreich, *Bookbuilding and Strategic Allocation*, 56 J. FIN. 2337 (2001) (analyzing the bookbuilding practices of investment bankers); Ann E. Sherman & Sheridan Titman, *Building the IPO Order Book: Underpricing and Participation Limits with Costly Information*, 65 J. FIN. ECON. 3 (2002) (examining the bookbuilding system for marketing IPOs).

<sup>18</sup> For a description of the various methods included in this group and their implications, see Bhagwan Chowdhry & Ann Sherman, *International Differences in Oversubscription and Underpricing of IPOs*, 2 J. CORP. FIN. 359 (1996) (discussing the implications of oversubscription); Bhagwan Chowdhry & Ann Sherman, *The Winner's Curse and International Methods of Allocating Initial Public Offerings*, 4 PAC.-BASIN FIN. J. 15 (1996) (analyzing investor size); Benveniste & Busaba, *supra* note 17.

group of mechanisms also includes the auction method. The second group includes the bookbuilding method, which allows managing underwriter discretion (subject to various legal and conventional rules) in selecting investors to participate in the offering. In the United States, most IPOs are conducted using this method, and it is increasingly used in exchanges all over the world.<sup>19</sup>

The model provides answers to two major questions: 1) how does the managing underwriter's strategic behavior impact the offering price and the distribution of securities to investors and 2) how does the law imposing civil liability on the managing underwriter impact the method of distribution?

In response to the first question, in accordance with the various changes in the description of the market's structure and manner of operation, the model shown includes a new description of the way market equilibrium is determined. At equilibrium, only some of the regular investors do valuations of the offered securities, enabling efficiency in building a market-demand curve.<sup>20</sup> At equilibrium, the strategic actions of the managing underwriter achieve precisely sufficient efficiency in building the demand curve. On the other hand, such actions allow for the avoidance of the creation of excessively high costs of examination and information verification for investors. The managing underwriter's ability to create an efficient equilibrium depends on its ability to reward regular investors by "underpricing"<sup>21</sup> and allotting to them a relatively large number of shares. Thus, in a particular offering, investors who

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<sup>19</sup> For a description of the global trend of the bookbuilding method's increased use, a comparison of this method with others including egalitarian rules (concerning the receipt of bids from the public and their distribution among the bidders), such as the fixed price method, and a review of the first method's advantages, see, e.g., Tim Loughran, Jay R. Ritter & Kristian Rydqvist, *Initial Public Offerings: International Insights*, 2 PAC.-BASIN FIN. J. 165 (1994) (discussing the timing of offerings); Ann E. Sherman, *Global Trends in IPO Methods: Book Building vs. Auctions with Endogenous Entry* (Working Paper, December 2004), available at [http://papers.ssrn.com/sol3/Delivery.cfm/SSRN\\_ID644602\\_code28144.pdf?abstractid=276124&mirid=1](http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID644602_code28144.pdf?abstractid=276124&mirid=1) (discussing the controversy of bookbuilding in the United States); Benveniste & Busaba, *supra* note 17.

<sup>20</sup> See *infra* Section 2.2.

<sup>21</sup> The underpricing phenomenon consists of an increase in share value over the IPO evaluation in the first trading session, after registering for trading on an exchange. For an explanation of the creation of this phenomenon, see *infra*, Sections 2.1.4.3. & 2.2.

perform a valuation and forward the price data to the company, are rewarded by the managing underwriter more than investors who do not do this.

In response to the second question, the discussion indicates that imposing civil liability on the managing underwriter using the bookbuilding method can increase the efficiency of method for distributing securities. Given the statutory rule that imposes civil liability on the managing underwriter, investors can rely on the company's representations that are provided to them as part of road shows<sup>22</sup> and to decrease the costs of maintaining the system of examination and the costs of information verification, such as lawyers' and accountants' fees.

Another conclusion derived from the model is that when liability is placed on the managing underwriter, the regular investors' demand will conform to the higher degree of certainty that exists when the statutory rule of liability applies. Therefore, the managing underwriter, who extrapolates the demand curve of the regular investors and creates the market-demand curve, can calculate a higher level of demand. This is due to the informed investors' increased demand and to the fact that the extrapolated coefficients (the multipliers in the move from the demand curve of the regular investors to the estimated market-demand curve) will be higher. These factors cause an equilibrium in which a higher price for the offered securities is attained systematically. This price more precisely reflects the full estimated value of the offered securities, thus reducing efficiency loss due to the securities allotment mechanism in the primary market.

Regarding the law's objective to direct the behavior of the

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<sup>22</sup> "Road shows" are marketing campaigns conducted after the submission of the first draft of the prospectus to the SEC. In a road show, representatives of the consortium director general, together with senior managers of the offering firm, present the firm to prospective investors and analysts, and receive informal bids for securities offered in the IPO. This method, common around the world and necessary to complete the IPO, uses two-way information flow. On one hand, it provides information about the firm for prospective investors and on the other, provides pricing information for the managing underwriter. See LOSS & SELIGMAN, FUNDAMENTALS OF SECURITIES REGULATION, *supra* note 1, at 58-66 (presenting a detailed study on informal bids); Benveniste & Spindt, *supra* note 17, at 349 (explaining the phenomenon of road shows); Sherman, *supra* note 19, at 1 (clarifying some of the global trends surfacing in the IPO market).

managing underwriter, another aspect of efficiency that results from imposing liability is the managing underwriter's strengthened power underwriter to effectively supervise the company's directors. From a welfare distribution perspective, if we accept the models' conclusions and the analysis presented in this article, it can reasonably be assumed that the company, the managing underwriter, and the various investors all benefit from the additional efficiency that results from imposing liability on the managing underwriter.

Regarding the law's objective to distribute damages and risk (risk-spreading), the discussion will focus on a question, which has not yet been analyzed in this manner in the scientific literature; namely whether imposing liability on the managing underwriter can lead to increased efficiency in the way the system distributes market risk. This analysis indicates a number of arguments that justify imposing liability on the managing underwriter, which are based on the market costs. There are advantages to the law that imposes civil liability on the managing underwriter that derive from the managing underwriter being the "least expensive insurer," particularly in distributing systemic risks.<sup>23</sup> It appears that systemic risks and specific risks in the offering prospectus cannot be completely separated. In such a situation, only the managing underwriter has the professional know-how, information, and economies of scale needed to make the separation efficiently and distributing the risks optimally. This justification contradicts the argument raised in much of the literature,<sup>24</sup> that there is justification for waiving underwriter liability, because it is inefficient to have investors pay an insurance premium for the specific risk associated with the offered security.

Furthermore, imposing liability will help resolve problems of under-insurance and high costs of damages and risk distribution by way of agreement. It will enable utilization of the managing underwriter's deep pockets for the purpose of risk diversification and will exploit the advantages of using a consortium of under-

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<sup>23</sup> See discussion *infra* Section 3.1. (presenting this claim and discussing damage distribution and insurance concepts).

<sup>24</sup> See discussion *infra* Section 2.1.1. (discussing the literature of mandatory disclosure and management oversight).

writers.

My conclusion is that imposing civil liability on the managing underwriter is a proper model for action because it effectively reduces the managing underwriter's strategic operations costs and can be expected to redirect the economic welfare.

My research methodology is based on the economic analysis of a torts law approach, which views the presence of misleading information in the IPO prospectus as a tortious event, or "accident."<sup>25</sup> The transaction's cost structure is a major feature of this analysis method. As in the common case of tortious event costs, we are concerned here with costs associated with a valuable activity (the IPO transaction) when there is a certain probability for an event to occur (the presence of misleading information in the prospectus), whether expectedly or unexpectedly, which will damage the parties and reduce their utility. Furthermore, as opposed to discussing the issue within the framework of contract law, a tort law discussion is unique in that the parties to the transaction cannot negotiate prior to the event, unless at a great cost. Here, there are many potential investors, most of whom are unfamiliar with the issuing firms and financial intermediaries. The costs of locating those investors before the IPO are high. Thus, should the firm and its underwriters wish to talk to investors prior to registration, they can only do so at a very high cost. Moreover, the costs of bargaining with the investors are high. Even assuming that a relatively large proportion of the investors may be located in advance and convinced to negotiate with the firm and its underwriters, the coordination costs entailed are prohibitively high. An additional cost factor derives from the need to consider potential buyers of securities in the secondary market. Adding stipulations to the prospectus referring to selling the securities to investors may reduce the negotiability of those securities or their IPO price.

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<sup>25</sup> See POSNER, *supra* note 8, at 179-235 (outlining an economic-based analysis of tort recovery). See also ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 287-371 (2d ed. 1997) (explaining fundamentals relating to the economics of torts); WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 312-16 (1987) (commenting on the fundamental economic framework of tort law), STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* 5-46 (1987) (presenting the basic theory of liability and deterrence); Steven Shavell, *Strict Liability Versus Negligence*, 9 J. LEGAL STUD. 1-25 (1980) (comparing the economic implications of employing a strict liability or a negligence assessment).

In accordance with the method of economic analysis of tort law, separate discussion is given to the considerations resulting from the main objectives of torts law, deterrence (channeling behavior) and distribution of risk and damages. These topics are divided into separate discussions on the efficiency and welfare distribution aspects<sup>26</sup> of the questions and, after that, a discussion on the mix of considerations.

The article is structured as follows: Sections 2, 3, and 4 are devoted to the question of directing the managing underwriter's behavior. Section 2 presents the two new efficiency-based models and their implications regarding the utility aspects of directing behavior. Section 3 discusses welfare distribution aspects derived from the analysis offered, concluding that all players may benefit from holding underwriters liable. Section 4 discusses the combination of efficiency and welfare distribution considerations. Section 5 discusses various aspect of attaining the objective of distributing the potential damage resulting from the presence of misleading information in the IPO. Section 5.1 describes the way damages are distributed and the insurance system in the primary market (based on the models presented in the article). I then discuss whether holding the managing underwriter liable may increase the efficiency of the market damage distribution system. This section suggests justifications for holding the managing underwriter liable, based on the fact that the market entails certain costs that require such liability. Section 5.2 discusses the welfare distribution aspects of holding the managing underwriter liable within the area of damage distribution and insurance. Section 5.3 discusses combining the efficiency and welfare distribution considerations of liability in that particular area. Section 6 discusses the tension existing in this particular case between attaining the objectives of directing behavior, on the one hand, and distributing damage, on the other. Section 7 concludes.

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<sup>26</sup> For presentation of the distinction in economic analysis of law terms between efficiency, on the one hand, and welfare distribution and distributive justice aspects and definitions, on the other, see POSNER, *supra* note 8, at 455-75. See generally JOHN ARTHUR & WILLIAM H. SHAW, JUSTICE AND ECONOMIC DISTRIBUTION (2d ed. 1991) (discussing different approaches to issues surrounding distributive justice); JOHN E. ROEMER, THEORIES OF DISTRIBUTIVE JUSTICE (1996) (presenting a survey of the different theories on distributing justice).



## 2. THE QUESTION OF DIRECTING BEHAVIOR: EFFICIENCY ASPECTS

### 2.1. *Model One: A Double Moral Hazard Standard*

#### 2.1.1. *A review of the literature*

The method of arguing the issue of mandatory disclosure and its enforcement is inspired by the discussion over the question of management oversight.<sup>27</sup> The most common depiction of the costs of the security allocation mechanism<sup>28</sup> is based on costs resulting from adverse selection problem (information asymmetry) between company managers and the investors at large.<sup>29</sup>

The literature on underwriter liability is based on that discussing mandatory disclosure. Again, it usually presents the existing problem as an adverse selection problem. In our opinion, and as shown below, the basic problem in the market can also be pre-

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<sup>27</sup> See generally JAMES D. COX ET AL., *SECURITIES REGULATION: CASES AND MATERIALS* 43-44 (2nd ed. 1997) (describing the debate over mandatory disclosure); John C. Coffee, Jr., *Market Failure and the Economic Case for a Mandatory Disclosure System*, 70 VA. L. REV. 717 (1984) (describing the "post-revisionist" phase of securities regulation literature). In both of the following sources, the authors refer to the same fundamental articles which inspire the discussion on the regulation of firm executives: Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976) and Stephen A. Ross, *Disclosure Regulation in Financial Markets: Implications of Modern Finance Theory and Signaling Theory*, in *ISSUES IN FINANCIAL REGULATION* 177 (F. R. Edwards ed., 1979).

<sup>28</sup> Easterbrook and Fischel have presented the standard approach to the issue, claiming that the stock market creates an inherent asymmetrical information problem focused on the investors' incapability to identify the type of firm whose securities are sold on the market, *i.e.*, whether it is of high or low quality. FRANK H. EASTERBROOK & DANIEL R. FISCHEL, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* 276-314 (1991) (developing further the information problems associated with the stock market); Frank H. Easterbrook & Daniel R. Fischel, *Mandatory Disclosure and the Protection of Investors*, 70 VA. L. REV. 669, 692-96 (1984) (describing the problem created in such a market as one of adverse selection).

<sup>29</sup> For a discussion of game theory and the adverse selection problem and an in-depth analysis of imperfect information in economics, see DAVID M. KREPS, *A COURSE IN MICROECONOMIC THEORY* (1990) (focusing on adverse selection and market signaling); IAN MOLHO, *THE ECONOMICS OF INFORMATION: LYING AND CHEATING IN MARKETS AND ORGANIZATIONS* (1997) (presenting important aspects of imperfect information, adverse selection and moral hazard); ERIC RASMUSEN, *GAMES AND INFORMATION: AN INTRODUCTION TO GAME THEORY* (1989) (introducing theories on "noncooperative game theory and asymmetric information").

sented as a hidden actions problem, leading to a moral hazard problem

As mentioned above, and as opposed to the approach relying on American law and suggested legal reforms regarding the underwriter liability regime, recent literature questions the effectiveness of such a regime. On the one hand, many writers found great benefits in holding underwriters legally liable for various reasons, including the positive effect of underwriters as reputable intermediaries<sup>30</sup> on the precise pricing of securities<sup>31</sup> and on the behavior of the managements of issuing firms,<sup>32</sup> and in preventing entry of low-quality firms who mislead investors and present themselves as high-quality firms.<sup>33</sup>

On the other hand, some have claimed that it is inefficient to hold underwriters liable. Thus, Choi described the primary market as a market with both high- and low-quality firms, financial intermediaries, and uninformed investors.<sup>34</sup> At the first stage (i.e., the investment stage), the companies select whether to be high or low quality. At the second stage (i.e., the IPO stage), the market comprises a constant amount of firms of both kinds, and they, in turn, present themselves as high- or low-quality firms in order to sell their stock. Since investors cannot distinguish between high- and low-quality firms, a market equilibrium is reached where, at the second stage, all firms present themselves as high-quality and the investors respond by devaluating the securities, while at the first stage, all firms prefer to be low-quality. In this market, financial intermediaries have the important role of verifying a company's

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<sup>30</sup> See Merritt B. Fox, *Shelf Registration, Integrated Disclosure, and Underwriter Due-Diligence: An Economic Analysis*, 70 VA. L. REV. 1005, 1008-09 (1984) (examining whether modern finance theory demonstrates that the information improvement resulting from due diligence produces social benefit).

<sup>31</sup> Shelf Registration, Securities Act Release No. 33-6499, 1983 SEC LEXIS 315 (Nov. 17, 1893).

<sup>32</sup> See Reinier H. Kraakman, *Gatekeepers: The Anatomy of a Third-Party Enforcement Strategy*, 2 J.L. ECON. & ORG. 53, 60-61 (1986) (examining collateral liability and when it should be imposed).

<sup>33</sup> See John C. Coffee, Jr., *Re-Engineering Corporate Disclosure: The Coming Debate Over Company Registration*, 52 WASH. & LEE L. REV. 1143, 1177-85 (1995) (surveying the degree to which the old order of securities regulation is changing).

<sup>34</sup> See Stephen Choi, *Market Lessons for Gatekeepers*, 92 NW. U. L. REV. 916, 919-20 (1998) (explaining that third-party intermediaries operate in diverse markets and therefore alternative mechanisms to control fraud must be implemented).

quality. The higher the verification quality, the greater the companies' incentive to invest in higher quality. On the other hand, a higher verification standard involves greater expense (higher commissions due to higher costs of information verification and legal and accounting costs).<sup>35</sup>

Choi claimed that intervening in the market by holding the financial intermediaries liable can be inefficient and costly for the IPO market.<sup>36</sup> In his view, the benefit of barring entry to misleading, low-quality firms might be overshadowed by the costs, such as those involved in unnecessary defense required of all market participants where the market already provides effective defense, for example, through the investors' ability to identify product quality. Choi, therefore, suggested holding the financial intermediaries not liable in the traditional legal sense, and instead suggested implementing a system of self-tailored liability in which underwriters are able to select their applicable duties out of several alternatives, including the effective period of binding contractual commitments to the investors.<sup>37</sup>

The literature has also criticized the previous system of holding underwriters liable, relying on similar portrayals of the structure and operation of the primary market. Thus, Partnoy claimed, that the costs of lawsuits against underwriters are prohibitively high (*ex ante*), and that, in many cases, the underwriters fail the examination.<sup>38</sup> Partnoy pointed to the fact that underwriters, acting as gatekeepers, may prefer to jeopardize their reputation in order to secure higher short-term profits. The existing legal solution of offering underwriters the defense of due diligence entails high costs as a result of legal uncertainty, litigation, and other costs resulting from the fact that the law, due to the centralization it imposed on underwriters, grants them excessive property rights.<sup>39</sup> Partnoy,

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<sup>35</sup> *Id.* at 932–33.

<sup>36</sup> *Id.* at 946–49.

<sup>37</sup> *Id.* at 949–66.

<sup>38</sup> See *Barbarians*, *supra* note 11, at 517–28 (espousing the belief that underwriters provide some insurance that financial markets will absorb an offering and that underwriters will stabilize the offering); see also *Strict Liability*, *supra* note 11 (focusing on explanations for the accounting and financial reporting irregularities that arose in 2001–2002).

<sup>39</sup> *Id.*

therefore, reasons that a different solution should be found—one not relying on underwriter reputation. He suggested that the underwriter liability regime should be strict liability with an option for change.<sup>40</sup>

Other studies discussed the role of “gatekeepers” in the primary market and the question of holding them legally liable. Some have pointed to the need of reducing legal intervention in this area,<sup>41</sup> while others have argued for the necessity of such liability, for various reasons.<sup>42</sup>

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<sup>40</sup> See *Barbarians*, *supra* note 11, at 491–93, 540–46. The rule would be that underwriters would be held liable for any damages resulting from a legal decision or settlement holding the issuing company liable to investors. The underwriters will have the option of changing the rule by agreeing with the company on limiting the percentages of their involvement in its liability. This will be subject to the proviso that such a change be stated in the prospectus up to a certain legal minimum (such as the rate of commissions charged or a constant rate between 1% and 5%).

<sup>41</sup> See Donald C. Langevoort, *Information Technology and the Structure of Securities Regulation*, 98 HARV. L. REV. 747, 755–56 (1985) (claiming that advances in technology will reshape the economic roles played by broker-dealers and that these advances will necessitate new securities regulations); see also Donald C. Langevoort, *Toward More Effective Risk Disclosure for Technology-Enhanced Investing*, 75 WASH. U. L.Q. 753, 754–54 (1997) (arguing that technological change is nothing new to the world of finance and therefore the adequacy of risk disclosure requirements under federal securities regulation does not require any deep insight into technological evolution); Donald C. Langevoort, *Deconstructing Section 11: Public Offering Liability in a Continuous Disclosure Environment*, 63 LAW & CONTEMP. PROBS. 45, 62–63 (2000) (rethinking civil liability in capital-raising transactions). See generally Howell E. Jackson, *Reflections on Kaye, Scholer: Enlisting Lawyers to Improve the Regulation of Financial Institutions*, 66 S. CAL. L. REV. 1019, 1021 (1993) (addressing whether third-party enforcement actions offer an effective mechanism for regulating financial intermediaries); Howell E. Jackson, *The Expanding Obligations of Financial Holding Companies*, 107 HARV. L. REV. 509, 566–67 (1994) (examining the public debate over the enhanced obligations of holding companies and the imposition of new legal obligations); Victor P. Goldberg, *Accountable Accountants: Is Third-Party Liability Necessary?*, 17 J. LEGAL STUD. 295, 296–97 (1988) (arguing that to hold the accountant liable to third parties would be equivalent to making him a guarantor against unfortunate events, which would not be in the interest of the plaintiff class).

<sup>42</sup> See John C. Coffee, Jr., *The Acquiescent Gatekeeper: Reputational Intermediaries, Auditor Independence and the Governance of Accounting* 1–62 (Columbia Law Sch. Pub. Ctr. for Law and Econ. Stud., Working Paper No. 191, 2001), available at <http://cegopp.cema.edu.ar/download/TheAcquiescentGatekeeper.pdf> (last visited Apr. 3, 2006) (defining the conditions under which gatekeeper liability is likely to work and to fail); see also Coffee, *supra* note 27 (positing that gatekeepers who serve investors respond to self-serving incentives to the detriment of the

An important study on the evaluation of securities issued by investment banks was recently conducted by Deloof, De Maese-neire, and Inghelbrecht.<sup>43</sup> Based on data from the Brussels Stock Exchange ("BXS") for the years 1939–2000, these researchers found that evaluations of IPOs by the underwriting consortium managers are based, in each issue, on a variety of value assessment methods. Some of those are precise (such as the method based on the predicted net cash flow) while others are systematically biased.<sup>44</sup> This finding suggests that managing underwriters deliberately bias the offering price, or at least that underpricing takes place despite the fact that the managing underwriter knows the expected post-IPO market price. These results support the approach, which stresses the managing underwriter's strategic behavior in each stage of the issuing process.

### 2.1.2. *The players, their strategy set, and payoffs*

The model presented here does not involve firms of varying quality, but various levels of misleading descriptions of offered securities. The investors, who estimate that each firm might report inadequate information at a certain distribution of deception levels, weigh this information into the price that ought to be paid for the offered securities. Consequently, the equilibrium stock-market price will be lower than the price resulting from a situation in which all parties have complete information (or where the firm can convince the investors of having provided adequate disclosure without substantial transaction costs).

The present model differs in its analysis of primary market structure and mode of operation from the above-mentioned models. In the present model, the central players in the market act strategically: the issuing companies can chose how to portray them-

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shareholders).

<sup>43</sup> See Marc Deloof, Wouter De Maese-neire & Koen Inghelbrecht, *The Valuation of IPOs by Investment Banks and the Stock Market: Empirical Evidence* 1–32 (Universiteit Gent: Faculteit Economie en Bedrijfskunde, Working Paper No. 2002/136, 2002) available at [http://www.feb.ugent.be/fac/research/WP/Papers/wp\\_02\\_136.pdf](http://www.feb.ugent.be/fac/research/WP/Papers/wp_02_136.pdf) (last visited Apr. 3, 2006) (arguing that underwriters consciously under price IPOs by relying on a valuation method that tends to underestimate value).

<sup>44</sup> *Id.*

selves; the managing underwriter can choose the effort they exert in carrying out due diligence requirements; and investors can choose the degree of trust they have in the presentations of each issuing company and managing underwriter and tailor their demands for the securities offered to the appropriate level of trust.

A primary element of the present model is its conception of the strategies applied by the issuing companies, the underwriting consortium executives, and the investors, as based on hidden actions by the participants. This conception takes into account the fact that the activities of participants in the primary market usually are not exposed during the secondary trade in company securities. Furthermore, even when various participants in the allocation process are sued, the uncertainty as to their behavior is often not reduced at all, due, among other things, to settlements at an early stage of the legal process.

Another central element of the model is that it translates the participants' hidden actions problem into a moral hazard problem, as is customary in game theory literature.<sup>45</sup> Based on this literature, it is justifiable to present the primary-market problem also as a moral hazard problem (in the present context, as in many other situations, adverse selection and moral hazard problems coexist). Kreps clarifies the distinction between the problems as follows: a *moral hazard* occurs "where one party to a transaction may undertake a certain action that (a) affects the other party's valuation of a transaction but where (b) the second party cannot monitor/enforce perfectly," while *adverse selection* occurs "where one party to a transaction knows things pertaining to the transaction that are relevant but unknown to the second party."<sup>46</sup> The existing problem in the primary market matches the definition of a moral hazard problem. The main feature of the primary-market problem is the inability to monitor the actions of the issuing company's executives, as well as the actions of the managing underwriter.

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<sup>45</sup> Not every hidden action problem is a moral hazard problem, and vice versa. For a theoretical illustration of a hidden action problem leading to a moral hazard problem, see KREPS, *supra* note 29, at 577-624; RASMUSEN, *supra* note 29, at 163-222; MOLHO, *supra* note 29, at 60-184.

<sup>46</sup> KREPS, *supra* note 29, at 57. For a similar definition of moral hazard, see ROBERT S. PINDYCK & DANIEL L. RUBINFELD, *MICROECONOMICS* 606 (Prentice Hall 5th ed. 2001) ("In general, *moral hazard* occurs when a party whose actions are unobserved affects the probability or magnitude of a payment.").

### 2.1.2.1. *The players*

It is assumed that the issuing firm wishes to sell a given amount of securities at the highest possible price, in order to maximize its transaction profits. The firm is risk neutral. It uses a prospectus to provide investors with information about the offered product.

The firm's real share price ( $S_i$ ) is determined by two parameters: (1) the investor's return expectancy ( $\bar{S}_i$ ), which is a function both of the distribution of the firm's chances for success and of its dividend allocation policy; and (2) the return variance ( $\bar{\sigma}_i^2$ ), or the assumption that securities are distributed in a known pattern a normal distribution ( $S_i \sim N(\bar{S}_i, \bar{\sigma}_i^2)$ , for example).

The IPO is being prepared right after the company's informal understandings with the underwriter, based on a letter of intent, in which the underwriter assesses the company's value. Only later, after the underwriter has carried out due diligence procedures, is the price of the offered securities determined. I will assume here that the managing underwriter's discretion in determining the IPO price is broad enough to enable a great degree of flexibility (despite informal promises in the letter of intent). In order to focus in this section on information gaps between the firm and the managing underwriter on the one hand, and the investors on the other, I will also assume that there are no conflicts of interest between the firm and the managing underwriter in determining the issue price.<sup>47</sup>

The actual IPO process begins once the issuing firm has selected its managing underwriter. The managing underwriter is in a situation where hiring distribution and risk-reduction services also include hiring reputation. This is because reputation cannot be separated from the other services provided. The investors know that the managing underwriter collects and analyzes all information required for the transaction with a view to maximize the utility from collecting the information and assessing it minus the collection and assessments costs. The investors realize that this means the managing underwriter carries out a comprehensive check of in-

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<sup>47</sup> See, e.g., David P. Baron, *A Model of the Demand for Investment Banking Advising and Distribution Services for New Issues*, 37 J. FIN. 955, 955-76 (1982) (illustrating a model where the leader has an interest in underpricing the IPO due to information gaps and conflicts of interest between the offering firm and the leader).

formation relevant to evaluating the transaction. Information about the securities' value and the risk they represent is important to the managing underwriter in order to estimate the deal and determine its various terms. Should a managing underwriter make a mistake and overestimate the securities' value, the stock offered may not sell, and the underwriters may be stuck with overpriced securities. In this case, when it is realized that the share price is falling (following information processing by the secondary market), the managing underwriter's reputation inevitably suffers. Even in a case where investors realize that the prospectus contains misleading information and the share price is dropping, loss of reputation naturally ensues.

Underwriters know that their ability to do business with companies in the future depends on their past successes. Their reputation is highly sensitive to failure in selling issued stock and to mistakes in collecting and assessing information. In addition to closing the deal and maximizing profits, the underwriters wish mainly to create as good a reputation as possible. For my purposes here, I will also assume that the underwriters act as objective intermediates.

In the suggested model, underwriters select the price of securities offered to the public. Their selection is based on data provided by the firm—and double-checked by them—and is later conveyed to investors through the draft prospectus. The investors' response in evaluating the real price of the offered securities is then the final basis for the managing underwriter's estimate of the expected real price.

The investors all have identical (and partial) information about the distribution of the firm's value, mainly based on the partial information in the prospectus. The investors decide whether to believe the issuing company's statement that all relevant information has indeed been credibly provided. Based on this data, the investors assess the real share price ( $S_i$ ). The investors are also risk neutral.

Note that the investors cannot tell whether the managing underwriter has received the relevant information, analyzed it, assessed it professionally, and presented it accurately in the draft prospectus.

#### 2.1.2.2. *The players' strategy set*

The issuing firm has the following two options: (1) disclose all



the information in the prospectus and provide the underwriter with all additional, relevant information, such as secret information, five-year plans, project assessments, etc. ("disclosure (d)"); or (2) provide misleading information in the prospectus or to the underwriter ("nondisclosure (f)"). The firm formulates the draft prospectus and hands it over to the managing underwriter, together with raw data. Having received the information, the managing underwriter checks and assesses it. Due to third-party effects of publishing the information, the information conveyed to the underwriter also includes raw data not reflected in the prospectus.

Not knowing which option the firm has chosen, the managing underwriter must choose a level of effort to apply to its due diligence duties. The underwriter and the company know this level, but the investors do not. Should a managing underwriter opt for a low level of effort ( $a_1$ ), the model assumes it will not identify inadequate disclosure.<sup>48</sup> If it chooses optimal effort ( $a_2$ ), the model assumes it will identify inadequate disclosure and amend it. A managing underwriter exerting more effort ( $a_3$ ) achieves the same degree of effectiveness as with the lower effort level. The managing underwriter's IPO cost includes due diligence costs, which are directly proportional to its effort, losses due to the purchase of unsold stock, and costs of manipulating the post-IPO market, which depend on its success, and last, but not least, its distribution costs.

Not knowing what course was taken by the company and what effort was exerted by the managing underwriter, the investors have to decide whether to believe the company's presentations included in the prospectus, which is published without security prices ("option y") or not to believe them ("option n"). In addition, such investors have beliefs regarding the managing underwriter's course of action. These beliefs depend on the managing underwriter's reputation, which is dependent, in turn, on past successes. In this context, success means succeeding in previous primary

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<sup>48</sup> I assume here that the firm does not opt for nondisclosure at a level perceived by the investors and the leader as serious fraud, which necessarily means losing its business. The model could be expanded to include an action where the firm makes serious nondisclosures and the managing underwrite reacts by severing all contact with the firm because of a fear that this would come to the investors' knowledge and lead to a failed IPO (in addition to serious damage to the managing underwriter's own reputation).

market offerings to make the IPO price reflect disclosure by the issuing firms, both in the prospectus and of secret information divulged to the underwriter alone.

The managing underwriter concentrates on the investors' demand data, not knowing whether or not the investors have chosen to believe the firm. In the event that the managing underwriter chooses the low effort level, it doesn't know whether the firm has opted for disclosure or nondisclosure. The managing underwriter, an objective and unbiased intermediary, decides on the price that the securities are to be offered to the public. This price reflects supply and demand data, as studied by the managing underwriter. Not knowing the course selected by the firm and the degree of effort exerted by the managing underwriter, the investor has a presumption concerning how the managing underwriter acts. This presumption or belief depends on the managing underwriter's reputation, which is dependent on past success. Success means that in previous primary market offerings, the managing underwriter managed to make the IPO price reflect disclosure by the issuing firms, both in the prospectus and regarding confidential information divulged only to the underwriter.

Based on this information, the investor has a particular belief concerning the managing underwriter's behavior, which is, in turn, dependent on the managing underwriter's reputation at that point in time ( $M_0$ ). The investor assigns a certain probability to the likelihood that the managing underwriter will perform due diligence at an optimal effort level. I assume that this probability is equal to the managing underwriter's reputation ( $p(a_2) = M_0$ ). The investor also believes that there is some probability that the managing underwriter will exert minimal effort. Since he doesn't believe the managing underwriter would exert an effort level higher than optimal, I conclude that the probability, as perceived by the investor, of the managing underwriter to exerting minimal effort is:  $p(a_1) = 1 - p(a_2) - p(a_3) = 1 - M_0$ .

### 2.1.2.3. *The payoffs*

In the model, the main utility for the managing underwriter is an increase in reputation ( $M_0 < M_1$ ). The managing underwriter's reputation changes according to investors' estimates of its success rate, information they usually cannot assess with certainty. The investors base their assessment on information gathered before the IPO, information about the managing underwriter's behavior dur-

ing the IPO (believe -  $y$ ; disbelieve -  $n$ ), information about the company's and the managing underwriter's behavior in the post-IPO market (findings that confirm indications concerning their hidden actions), and information about the behavior of securities in that market ( $S_i$ ). Upon discovery that the prospectus contains misleading information that the managing underwriter should have identified, the managing underwriter's reputation is damaged. If information reveals that the company engaged in nondisclosure and the managing underwriter engaged in suboptimal effort levels, then the investors respond by monitoring share prices. The sharper the (non-systematic) price drops, the greater the investors' certainty that it was related to the nondisclosure.<sup>49</sup> If such implicating information is indeed revealed, the shares will drop more when investors have previously believed the company and the managing underwriter's presentations ( $y$ ). In the opposite case ( $n$ ), lower demand leads to lower prices at equilibrium (the equilibrium price includes investor expectations that the price does not reflect all of the relevant information). Correspondingly, the change in managing underwriter reputation following the IPO is fully determined only after a certain period of time ( $T_1$ ). This is required to gather and process the information concerning the company's and the managing underwriter's IPO behavior, and the behavior of share prices in the post-IPO market. Importantly, changes in managing underwriter reputation depend on the players' strategy combination ( $X$ ), changes in share prices in the post-IPO market and the investors' ability to identify each player's strategy set and understand their game play, while the managing underwriter's decision during the IPO is based on his  $T_0$  information about those parameters.

In the present model, the payoffs are the issuing company's profits, the investors' profits, and the underwriter's reputation ( $M_1$ ). Within the players' strategy set, there are four situations in

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<sup>49</sup> The assumption is that the firm is usually interested in including in its prospectus positive information to maximize the value of its securities. When misleading information is found in the prospectus, security prices rarely rise. This is also because of the fact that such a finding about the company's executives having hidden positive information is actually a finding of negative information about the company's management and a signal to the effect that the company's securities may have been manipulated.

which the investor believes the firm's presentations ( $y$ ):

- 1) When the company opts for disclosure ( $d$ ), and the managing underwriter opts for an optimal effort level ( $a_2$ ) or higher. In this case, the investor pays the real price for the securities, and both the investor and the company benefit. This result reflects normal profits by the companies as security "producers" and by the investors as security "consumers" in a competitive, completely informed market. In this case, the managing underwriter estimates that its reputation-change expectancy is maximal. This is because the probability of being certain that the company failed to disclose, or that the managing underwriter exerted a low level of effort ( $a_1$ ), is 0, while the probability for the investor to interpret a post-IPO price drop and information implicating the company's and the managing underwriter's behavior as evidence for inadequate disclosure is very low.
- 2) When the company opts for inadequate disclosure ( $f$ ) and the managing underwriter opts for an optimal effort level ( $a_2$ ) or higher. In this case, the result is identical for both the investor and the company. The managing underwriter estimates that its reputation-change expectancy is close to maximum. This is because there's a positive probability for revealing findings implicating the company. There is, therefore, a higher probability for any price drop to be interpreted by the investors as evidence for a managing underwriter strategy of low effort ( $a_1$ ), as opposed to the strategy chosen in practice.
- 3) When the company opts for disclosure and the managing underwriter opts for a sub-optimal effort level ( $a_1$ ), the result is identical for both the investor and the company. The managing underwriter's reputation-change expectancy is very close to maximum. In this case, the probability for the managing underwriter to be implicated is higher than in the previous case. There is also a higher probability for a price drop to be interpreted as evidence that the managing underwriter has indeed opted for sub-optimal effort (should these findings be

revealed, at a given certainty level, simultaneously with the drop in prices).

- 4) Lastly, when the company opts for inadequate disclosure (f) and the managing underwriter opts for sub-optimal effort ( $a_1$ ), the managing underwriter expects its reputation to be severely damaged. In this case, the probability for price drops is the highest, since the company has been sold for prices above its real value, and the same goes for the probability for this price drop to be interpreted as evidence for sub-optimal effort. Notably, in this case the investor also suffers the greatest loss.

In the remaining situations, the investor chooses not to believe the firm's presentations (n). If the managing underwriter opts for the optimal effort level (or higher than that), and the investor believes the firm's presentations, both the firm and the investor benefit from the IPO (normal profits). In this situation, the managing underwriter estimates that its reputation change expectancy is close to maximum – when it is in fact lower, because of the considerable probability of suspicious findings against the firm. Therefore, there is a higher probability for price drops to be interpreted by investors as implying a low effort strategy by the managing underwriter as opposed to the actual strategy.

If in those same activities by the firm and the investors (non-disclosure and trusting, respectively), the managing underwriter exerts the low effort level, the results for the firm and investors will be different. Investors will be willing to pay a price higher than the securities' real price, and suffer heavy losses as a result of the price drop that will inevitably ensue. The firm will profit more than normal as a result of the investors' misjudgment concerning the securities' true value. The managing underwriter, in turn, will believe that its reputation change expectancy is at the lowest level. In this case, the probability of findings against the underwriter is at its highest (because of both direct findings that the managing underwriter has exerted a low level of effort and the investors' estimation based on findings concerning the firm's behavior). In this case, there is the highest probability for a price drop, since the issued securities have been sold at prices higher than their real value, and also the highest probability for such a price drop to be interpreted by investors as implying the managing underwriter's

(actual) strategy of opting for the low effort level.

If I now assume that the firm opts for nondisclosure (f), the managing underwriter opts for the optimal effort level ( $a_2$ ), and the investors do not believe company presentations (n), the results from the point of view of the firm and the investors are similar to those obtained in the parallel situation where the firm opts for disclosure (d) and the managing underwriter and investors make the same choices as in here. In this case, the firm's profits are minimal (probably zero), while the investors' profits are small (e.g., half the normal profits). However, as opposed to the parallel case where the firm opts for disclosure (d), in this case the managing underwriter estimates a small reputation change expectancy because of the higher probability for suspicious findings against the firm that will be interpreted by investors as implying a managing underwriter strategy of opting for the lower effort level ( $a_1$ ) (as opposed to the actual strategy).

If, in same situation (i.e., firm opts for nondisclosure (f) and the investors are non-trusting [n]) the managing underwriter now exerts the low effort level ( $a_1$ ), it is reasonable to assume that the firm's profits will drop or remain unchanged, while the investors' profits will drop considerably. There is a possibility that the firm will not suffer, if the investors precisely offset the consequences of its misleading presentations. The investors will not lose money initially, but the post-IPO demand may shrink considerably upon discovery of evidence implying, at a specific level of certainty, the firm's nondisclosure strategy. The expected damage to the managing underwriter's reputation in this case is medium, since no significant correction of the securities' price during the post-IPO trade is to be expected.

### 2.1.3. *The equilibrium*

When the market operates without underwriter involvement, the issuing firm can opt for a strategy of full disclosure or for a strategy of providing information which includes misleading information. The investors, in turn, may choose to believe or disbelieve the firm's prospectus presentations. Since the firm's managerial activity is hidden and may not be revealed in the post-IPO market, a moral hazard problem is created, leading investors to

distrust the managers' presentations.<sup>50</sup> The result I hoped to achieve is that the firm will voluntarily opt for disclosure and the investors will trust it to have done so. This will ensure the most socially efficient result (normal profits for the firm and the investors). Instead, I obtain a Nash equilibrium in which the firm opts for nondisclosure and the investors choose not to trust its presentations. This is an equilibrium in which both the firm and the investors lose.

To solve this problem, the market uses the services of a consortium manager contributing its reputation to the task of bridging information gaps. Moreover, the market chooses to use an underwriter, in the allocation mechanism, to deal with intermediation and distribution costs as well as the information gaps. A new problem is thus created: this managing underwriter's activity also entails a hidden actions problem. Therefore, hiring a managing underwriter's reputation services alone does not solve the asymmetrical information problem. Without a law holding a managing underwriter liable, the investors cannot know how much effort managing underwriters have exerted in carrying out due diligence. They cannot examine the raw data submitted to them by the firm, have no record of their actions, and cannot judge—based on trade behavior alone—whether the share-price is dropping due to natural causes (e.g., business failure of the firm) or to inadequate disclosure.

Within the model, the managing underwriter's reputation plays a particularly important role. It is taken on by the issuing firm in an effort to overcome the investors' distrust resulting from their inability to monitor the company's activities. The managing underwriter relies on reputation in order to retain and expand business. If the investors could be convinced that the managing underwriter's reputation would suffer if it did not exert optimal effort, they would believe the managing underwriter indeed exerts such an effort. However, since investors do not know the reason for share-price changes, there is no reason to believe that the managing underwriter's reputation would change in accordance with its level of effort. These investors have several possible ways to as-

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<sup>50</sup> For an explanation of the moral hazard problem, see *supra* notes 46–47 and accompanying text.

sess the managing underwriter's reputation behavior. One way is for the managing underwriter's reputation to be dependent on the benefit it derives from the transaction. Another way is for the managing underwriter's reputation to be dependent on price changes, such as price drops, which suggests a low level of effort by the managing underwriter at a given degree of certainty. Since the development of reputation as dependent on the various participants' behavior in the IPO is unknown, investors cannot be convinced that it is always worth the managing underwriter's time to exert optimal effort. This is a managing underwriter moral hazard problem leading to several possible market equilibriums (including the efficient equilibrium obtained once the firm adopts an adequate disclosure strategy, the managing underwriter exerts optimal effort, and the investors believe company presentations).

#### 2.1.4. *The role of the law*

##### 2.1.4.1. *The change in the law's effect once the managing underwriter is added as a player*

When the firm and the investors hire the reputation services of the consortium manager in order to bridge primary-market information gaps, several possible equilibriums may result. A law compelling the managing underwriter to exert optimal effort creates a social convention as supporting the managing underwriter's chosen strategy.<sup>51</sup> Thus, the managing underwriter has no incentive to mislead investors and, among all possible equilibriums, opts for the optimal effort and investors believe it. An existing convention regarding managing underwriter strategy, which may constitute a sufficient condition for preferring a game play, should lead

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<sup>51</sup> See, KREPS, *supra* note 29, at 410-13, 449-51 (giving references for a reliable way of playing based on social convention); see also, Fieke Van der Lecq, *Conventions and Institutions in Coordination Problems*, 144 DE ECONOMIST 397, 401-10 (1996) (interpreting coordination problems that occur in an economy with a game-theoretic approach); H. Peyton Young, *The Economics of Convention*, 10 J. ECON. PERSP. 105, 107 (1996) (analyzing the process of forming conventions with an evolutionary "bottom up" model); Hans Van Ees & Harry Garretsen, *Existence and Stability of Conventions and Institutions in a Monetary Economy*, 28 J. ECON. BEHAV. & ORG. 275, 283-87 (1995) (analyzing conventions and institutions while accounting for historical contingencies).



to the desirable equilibrium and to the recognition of this equilibrium.

Such a legal role is relatively inexpensive and can also be played in tandem with the enforcement role. However, where the main justification for applying a certain legal arrangement is creating a social convention allowing for definite game play, this may have important implications in terms of legal simplicity and the redundancy of elaborate enforcement mechanisms. The model does not discount the possibility of a legal enforcement role as well, but rather supports the claim that holding the managing underwriter legally liable may play the crucial role of supporting market mechanisms by pointing to the desirable equilibrium.

Moreover, should the company and its managers be held liable instead of the managing underwriter, the latter's services could not be used together with legal support to create an efficient and inexpensive mechanism of credible information transfers. According to the model, no convention can be created in the manner described above by holding the company and its managers legally accountable. The law's enforcement role may indeed be used to compel them to adopt a disclosure strategy, but the costs of the required enforcement mechanism would be prohibitively high. It would involve very strong incentives for the company and its managers to redesign the game such that, when the company opts for an inadequate disclosure strategy, it and its managers would be subject to a fine that would account for the chances of not getting caught, of no evidence being found, or of an inability to use the evidence to prove inadequate disclosure.

2.1.4.2. *Holding the underwriter liable helps convince the issuing company to opt for disclosure*

Another conclusion derived from the model is that when the managing underwriter is held liable, it is much easier and cheaper to convince the firm and its managers to adopt a disclosure strategy. Given the certainty as to the managing underwriter's course of action (who choose an optimal effort level) and that of the investors (who trust that disclosure has been ensured by the managing underwriter's involvement in the IPO), the firm will not benefit from opting for nondisclosure. In this case, then, relatively weak incentives, such as reputation or minimal level of enforcement measures, will suffice to convince the firm and its managers to opt for a disclosure strategy.

2.1.4.3. *How managing underwriter liability affects the creation of a reputation-based market mechanism and underpricing cost*

It is certainly possible for a price drop or implicating findings regarding the company's or the managing underwriter's behavior to be interpreted by the investors as indicating that the managing underwriter has chosen to exert sub-optimal effort or has acted unprofessionally in assessing relevant information. This could happen despite the fact that the managing underwriter has actually opted for optimal effort and assessed relevant information professionally. This contingency gives the managing underwriter an incentive to stop acting as an objective intermediate, as modeled here. The assumption is that the managing underwriter collects investor demand data on the one hand, and company supply data, on the other, and that the underwriter is the only one who really knows them. Given this assumption, the managing underwriter can determine the IPO price so that it takes into account the possible risk of reputation damage. This damage may be due to investor misperception of effort or professionalism. The result is an intent primary-market share price drop – i.e. underpricing.

The managing underwriter's ability to reduce the price is limited by several parameters. First, it is limited by its ability to justify any change relative to the price stated in the letter of intent (the change cannot be too extreme due to the competition with other prospective consortium managers). Second, it is limited by the firm's own information about the security's real price and its bargaining power. And third, it is limited by the effect of any price change on the existing equilibrium  $(d, a_2, y)$ .

This explanation for the underpricing phenomenon is inconclusive, however. Among the primary-market security distribution costs, this important cost has been the focus of considerable interest in the literature.<sup>52</sup> The underpricing phenomenon means that the share value rises in the first day of trading after having been initially registered relative to the IPO value. This is a global phe-

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<sup>52</sup> For a general review of the phenomenon as a global one and of its various reasons as discussed in the abundant literature, see discussion *infra* Section 2.2.1.

nomenon. The reasons for this IPO underpricing effect are not clear, and many theoretical explanations have been suggested.<sup>53</sup> The importance of the present explanation derives from its consideration of the role of the law.

One well-known explanation for underpricing focuses on the interactions between this phenomenon and the risk of claims against the issuing firm and the underwriters. Such claims at the IPO stage are fairly common, and, in the United States, their rate has been estimated at no less than 5%–6%.<sup>54</sup> Accordingly, several models explain the underpricing phenomenon as deriving from the company's and the underwriters' defense against the possibility of being sued due to misleading prospectus details.<sup>55</sup> According to this explanation, riskier issues would be characterized by a higher rate of underpricing, which acts as a sort of insurance premium

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<sup>53</sup> *Id.*

<sup>54</sup> See TIM JENKINSON & ALEXANDER LJUNGQVIST, *GOING PUBLIC: THE THEORY AND EVIDENCE ON HOW COMPANIES RAISE EQUITY FINANCE* 109 (2d ed. 2001) (1996) (“[N]early 6 percent of companies floated in the USA between 1988 and 1995 subsequently were sued for violations relating to the IPO.”); see also, Michelle Lowry & Susan Shu, *Litigation Risk and IPO Underpricing*, 65 J. FIN. ECON. 309, 314–15 (2002) (describing the volume of IPO lawsuits in various years); Stephen J. Choi, *Do the Merits Matter Less After the Private Securities Litigation Reform Act?* 22–5 (NYU Law & Economics, Working Paper No. 03-04 2005), available at <http://www.ssrn.com/abstract=558285> (last visited Apr. 8, 2006) (discussing the effects of the Private Securities Litigation Reform Act on the number of claims surrounding initial public offerings from 1990–1999).

<sup>55</sup> See JENKINSON & LJUNGQVIST, *supra* note 54, at 109–14 (summarizing explanations for underpricing based on lawsuit avoidance and their empirical support); Patricia J. Hughes & Anjan V. Thakor, *Litigation Risk, Intermediation, and the Underpricing of Initial Public Offerings*, 5 REV. FIN. STUD. 709, 711–12 (1992) (elaborating on the theoretical arguments and empirical studies that support the explanation for underpricing based on lawsuit avoidance theories); Seha M. Tinic, *Anatomy of Initial Public Offerings of Common Stock*, 43 J. FIN. 789, 789–822 (1988) (developing and testing the theory that underpricing is insurance against liability and the impact on investment bankers). But see Janet C. Alexander, *The Lawsuit Avoidance Theory of Why Initial Public Offerings Are Underpriced*, 41 UCLA L. REV. 17, 20–48 (1993) (arguing that the theory depends on incorrect or simplistic assumptions about the law governing issuer and underwriter liability for IPOs); Phillip D. Drake & Michael R. Vetsuypens, *IPO Underpricing and Insurance Against Legal Liability*, 22 J. FIN. MGMT 64, 64–73 (1993) (providing further evidence that IPOs are undervalued); Nagpurnanand R. Prabhala & Manju Puri, *How Does Underwriter Price Support Affect IPOs?: Empirical Evidence*, (Duke University, Fuqua School of Business Working Paper, 1998), available at <http://www.ssrn.com/abstract=95948> (last visited Apr. 8, 2006) (providing empirical evidence that price support is related to IPO price risk).

against claims. Furthermore, a higher rate of underpricing will lead to a relatively low rate of legal claims.

As to the theoretical aspect of the above explanation, Alexander argued against it, claiming that, in practice, the underwriters do not bear the cost of the claim.<sup>56</sup> Therefore, they have no incentive to insure themselves by underpricing. Moreover, she claims that the underpricing defense is irrelevant to claims based on security laws anyway.

As to the empirical aspect, Jenkinson and Ljungqvist suggested that the existing findings do not support this explanation of the underpricing phenomenon.<sup>57</sup> Nevertheless, more recently, Lowry and Shu did find empirical support, both for a higher rate of underpricing in riskier IPOs, and for heavy underpricing leading to a relatively low rate of legal claims.<sup>58</sup>

The model presented here suggests an explanation for the claim that the law plays a role in weakening the underpricing phenomenon. I will assume the possibility that the managing underwriter reduces the equilibrium price somewhat due to the risk of reputation damage from investor misassessment of its effort and professionalism (not necessarily following a suit). Underwriter liability will increase the level of certainty regarding ex post monitoring of managing underwriter activities. Among other things, the law sets forth detailed, mandatory standards for the managing underwriter behavior, which will make it easier for investors to assess managing underwriter compliance. The law also authorizes the prosecution of managing underwriters for common law fraud and misrepresentation in the civil law context. This increased certainty is sufficient for the managing underwriter to moderate the underpricing rate.

Increasing certainty using the law is also important for establishing an intermediation mechanism based on managing underwriter reputation. Since the law gives investors tools to examine managing underwriter behavior, investor assessment of underwriter reputation will be more accurate. In addition, the ability of the various players to rely on the mechanism of intermediation and

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<sup>56</sup> Alexander, *supra* note 55, at 47-51.

<sup>57</sup> JENKINSON & LJUNGVIST, *supra* note 54, at 109-14.

<sup>58</sup> Lowry & Shu, *supra* note 54, at 333.

bridging of information gaps dependent on the managing underwriter will be greater. From the managing underwriter's point of view, the law reduces the risk of damage to reputation as a result of investor error and allows action at a lower risk level.

## 2.2. *Model Two: Underpricing Models*

### 2.2.1. *A review of the literature*

In the bookbuilding method, the managing underwriter interacts with prospective clients during the marketing phase.<sup>59</sup> In the road show, the managing underwriter presents the company to prospective investors and receives indications, or informal bids, for the amount and price of securities they expect to order. These indications inform the underwriter about the way investors analyze the information provided in the road show, as well as their own private information. The information gleaned is used to determine the offered securities' price and the way they are to be allotted to investors. The investors giving these indications are usually sophisticated, regular clients. An unwritten agreement is made between the underwriter and the investors, which, after the prospectus becomes effective and offers can be made, will be the basis of distribution. The investors do not retract their informal bid and the managing underwriter, in turn, rewards them in the allotment. Henceforth, these investors will be called regular investors.

The financing literature discussed the bookbuilding method mainly from the point of view of the IPO underpricing phenomenon. This global phenomenon involves an increase in share value in the first trading session, after having registered for trading in the exchange, compared to their IPO evaluation.<sup>60</sup> The mean IPO underpricing rate in developed economies is greater than 15%, and greater than 60% in developing economies.<sup>61</sup>

It is hard to underestimate this phenomenon. During 1980-2001, the capital raised in IPOs in the United States reached a total

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<sup>59</sup> For a description of the bookbuilding method, see *supra* notes 12 and 14.

<sup>60</sup> For an overview of IPO underpricing as a global phenomenon, see JENKINSON & LJUNGQVIST, *supra* note 54, at 29-60. For an overview of the research that estimates the underpricing rates in various countries, see *id.* at 24-27.

<sup>61</sup> *Id.*, at 37-38.

of approximately \$488 billion (in 2001 dollars).<sup>62</sup> A total of more than \$66 billion of this amount was “left on the table.” This total was calculated by multiplying the number of securities allotted in each IPO by the difference between the offering price and the closing price of the first trade session.<sup>63</sup>

The cost of the primary market securities allotment mechanism has been the focus of a considerable portion of the financing literature. In their review of the various models and empirical studies seeking to explain the underpricing phenomenon, Jenkinson and Ljungqvist split the models into three main categories: (1) asymmetric information models, (2) models focused on institutional explanations, and (3) models that take into account ownership and control considerations by the issuing firms.<sup>64</sup> Models falling under the first two categories are most relevant to the parameters at issue here.<sup>65</sup>

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<sup>62</sup> Jay R. Ritter & Ivo Welch, *A Review of IPO Activity, Pricing, and Allocations*, 57 J. FIN. 1795, 1795 (2002).

<sup>63</sup> See *id.*, at 1810-11 (reporting that “\$66 billion was left on the table during the Internet bubble”).

<sup>64</sup> For a review of theoretical and empirical studies on the underpricing phenomenon, see JENKINSON & LJUNGQVIST, *supra* note 54, at 63-138 (discussing asymmetric information models and institutional underpricing models); see also Ritter & Welch, *supra* note 62, at 1802-16 (discussing theoretical explanations of underpricing including theories based on asymmetric information, theories based on symmetric information, and theories focusing on the allocation of shares). For a review of possible reasons for the phenomenon, see also RICHARD A. BREALEY & STEWART C. MYERS, *PRINCIPLES OF CORPORATE FINANCE* 414-16 (6th ed. 2000) (stating that many investment bankers and institutional investors believe that underpricing is in the interests of the issuing firm because “a low offering price on the initial offer raises the price of the stock when it is subsequently traded in the market and enhances the firm’s ability to raise further capital.”); STEPHEN A. ROSS ET AL., *CORPORATE FINANCE* 527-29 (4th ed. 1996) (proposing an explanation for why underwriters underprice security issuances).

<sup>65</sup> For a discussion of models in the third category, which take into account considerations of ownership and issuing firm control, see JENKINSON & LJUNGQVIST, *supra* note 54, at 127-38 (discussing two opposing agency cost approach models to the underpricing phenomenon).

## 2.2.2. *Asymmetric information models*

### 2.2.2.1. *The agency problem in company-underwriter transactions*<sup>66</sup>

Baron and Holmström propose models describing the problem as an agency problem, where the agent or managing underwriter has an advantage over the firm because it is familiar with the market demand.<sup>67</sup> The firm solves the lack-of-information problem by delegating power to determine the IPO price to the managing underwriter, as the more informed party. The problem is that the managing underwriter has incentive to limit the IPO price to promote increased sales of the security, subject to the threshold price the company is willing to accept.

### 2.2.2.2. *Adverse selection*<sup>68</sup>

Rock suggested a basic model describing the problem as an adverse selection problem.<sup>69</sup> According to this model, only the group of informed investors has complete (private) information about the company's value. The managing underwriter acts as a neutral agent of the company, knows what the company knows, and serves its interests. In the competition between the investors over shares of IPOs, if the company is priced according to its "real"

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<sup>66</sup> For a review of models presenting the underpricing problem as an agency problem see *id.* at 63-75 (discussing the winner's curse model).

<sup>67</sup> See David P. Baron & Bengt Holmström, *The Investment Banking Contract for New Issues Under Asymmetric Information: Delegation and the Incentive Problem*, 35 J. FIN. 1115 (1980) (characterizing the class of price response functions that the issuer can induce the banker to choose under a delegation scheme and demonstrating that delegating the price decision to the banker can be optimal); Baron, *supra* note 47, at 957-76 (presenting "a general model of a negotiated offering incorporating the banker's informational advantage and the advising and distribution functions").

<sup>68</sup> For a review of models presenting the underpricing problem as an incentive collapse problem, see JENKINSON & LJUNGQVIST, *supra* note 54, at 86-88 (discussing models that focus on potential agency problems between the investment bank managing flotation and the issuing firm).

<sup>69</sup> See Kevin Rock, *Why New Issues are Underpriced*, 15 J. FIN. ECON. 187, 187 (1986) (presenting a model for the underpricing of initial public offering dependent on the existence of "a group of investors whose information is superior to that of the firm as well as that of other investors").

value, informed investors will use their private information to avoid "bad" investments. On the other hand, the non-informed investors will "win" a larger share of "bad" IPOs. This is the "winner's curse" phenomenon.<sup>70</sup> In order to prevent non-informed investors from exiting the market, the IPOs are underpriced compared to the issuing companies' "real" value.

#### 2.2.2.3. *Other asymmetric information models*

Booth, Smith, and Smith focus on what they dub the "certification hypothesis," which suggests that the costs of asymmetric information about the issuing firm and the resulting underpriced rate can be reduced by hiring a reputable underwriter.<sup>71</sup> Other asymmetric information models focus on a firm's ability to use underpricing to signal its true value.<sup>72</sup>

#### 2.2.2.4. *Marketing and structural constraints (information revelation theories)*<sup>73</sup>

Benveniste and Spindt's model simulates the offering process in the bookbuilding method, which relies on a two-way relationship between the managing underwriter and investors.<sup>74</sup> Accord-

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<sup>70</sup> See Chowdhry & Sherman, *The Winner's Curse and International Methods of Allocating Initial Public Offerings*, *supra* note 18 (discussing the winner's curse phenomenon).

<sup>71</sup> See James R. Booth & Richard L. Smith II, *Capital Raising, Underwriting and the Certification Hypothesis*, 15 J. FIN. ECON. 261, 261 (1986) (hypothesizing that "an underwriter can be employed to 'certify' that the issue price is consistent with inside information about future earnings prospects of the firm"); Clifford W. Smith, Jr., *Investment Banking and the Capital Acquisition Process*, 15 J. FIN. ECON. 3, 10-12 (1986) (discussing information asymmetry and relative price effects).

<sup>72</sup> See, e.g., Franklin Allen & Gerald R. Faulhaber, *Signaling by Underpricing in the IPO Market*, 23 J. FIN. ECON. 303, 304 (1989) (proposing a model that "provides an explanation for the underpricing of IPOs as an equilibrium signal of firm quality."); Mark Grinblatt & Chuan Yang Hwang, *Signaling and the Pricing of New Issues*, 44 J. FIN. 393, 394 (1989) ("[T]o overcome the asymmetric information problem, the issuer signals the true value of the firm by offering shares at a discount and by retaining some of the shares of the new issue in his personal portfolio.").

<sup>73</sup> For a review of underpricing models based on information revelation theories, see JENKINSON & LJUNGQVIST, *supra* note 54, at 88-107 (discussing information revelation theories such as the Benveniste-Spindt model and other models that extend from it).

<sup>74</sup> See Benveniste & Spindt, *supra* note 17, at 343 (analyzing the bookbuilding marketing process for IPOs). Additional models are based on Benveniste and



ing to Benveniste and Spindt, this relationship allows the first managing underwriter to provide investors with proprietary information about the company's value, receive the company's "good" and "bad" information necessary for an "accurate" IPO pricing, and reward them by underpricing the offering and allotting them a relatively higher percentage of the securities offered. The bookbuilding mechanism operates as a truth-telling verification mechanism: if it reveals that investors have not been cooperative by strategically nondisclosing real information, the managing underwriter will erase them from their regular investor list.

### 2.2.3. *Institutional explanations*

#### 2.2.3.1. *Legal liability*

As mentioned above, some models explain the underpricing phenomenon in terms of attempts made by the firm and the underwriter to defend themselves from possible lawsuits.<sup>75</sup>

#### 2.2.3.2. *Price support in the post-IPO market*<sup>76</sup>

These models focus on the managing underwriter's role of supporting the securities' price in the post-IPO market. In this market, the managing underwriter can use the following tools to reduce the risk entailed in the offering: (1) stabilization activities,<sup>77</sup>

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Spindt's analysis. See, e.g., Benveniste & Busaba, *supra* note 17, at 384 (finding that bookbuilding generates higher proceeds but exposes the issuer to greater uncertainty); Sherman & Titman, *supra* note 17 (examining the bookbuilding method for marketing IPOs); Sherman, *supra* note 19, at 1 (predicting that "offerings with higher expected underpricing will have lower expected aftermarket volatility").

<sup>75</sup> See *supra* notes 40–41 and accompanying text.

<sup>76</sup> For a review of models presenting the underpricing problem as a price support problem, see JENKINSON & LJUNGQVIST, *supra* note 54, at 115–21 (discussing price support models).

<sup>77</sup> The leader can flow bids at a price not higher than the offering price for a certain period after trade begins, so long as the securities are still being distributed, in order to support this price (and so long as that option has been made explicit in the IPO prospectus). See Commission Guidance Regarding Prohibited Conduct in Connection with IPO Allocations, 70 Fed. Reg. 19,672 (Apr. 13, 2005) (final rule) (establishing prohibited conduct in security distributions and IPO allocations); FUNDAMENTALS, *supra* note 1, at 1013–18 (explaining the misappropriation theory); IX SECURITIES REGULATION, *supra* note 1, at 3988 (discussing background and disclosure requirements).

(2) overselling offered securities when in a short position and covering the difference by over-allotting or buying securities in the secondary market,<sup>78</sup> and (3) penalty bids.<sup>79</sup> The managing underwriter also acts as a market maker in the offerings it manages.<sup>80</sup> One of the primary explanations for underpricing according to these models is that the managing underwriter uses those tools to increase its own profits.<sup>81</sup>

The underpricing model presented here belongs to the group that focuses on marketing and structural constraints, such as those

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<sup>78</sup> The managing underwriter usually has the so-called "green shoe" option to purchase at the offering price up to 15% of the amount of securities issued by the firm within thirty days of the offering date. FUNDAMENTALS, *supra* note 1, at 341. Price-supporting actions used to be quite common and were carried out in about half of the offerings between 1982 and 1983. See Daniel Asquith et al., *Evidence on Price Stabilization and Underpricing in Early IPO Returns*, 53 J. FIN. 1759, 1764-69 (1998) (discussing tests of the mixture distribution hypothesis using the period between 1982 and 1983).

<sup>79</sup> The managing underwriter can deny a selling group member's right to receive a commission if the selling group member's customers rush to resell their recently acquired securities (these investors are dubbed "flippers"), or can avoid using that member's services in the future. See *supra* note 72.

<sup>80</sup> Based on NASDAQ data in the post-offering period, the managing underwriter acts as a market maker for about half the trade volume and accumulates an average of 8% of the shares. See Katrina Ellis et al., *When the Underwriter is the Market Maker: An Examination of Trading in the IPO Aftermarket*, 55 J. FIN. 1039, 1052 (2000).

<sup>81</sup> For alternative explanations, see Reena Aggarwal, *Stabilization Activities by Underwriters after Initial Public Offerings*, 55 J. FIN. 1075, 1075 (2000) ("[A]ftermarket activities are less transparent and include stimulating demand through short covering and restricting supply by penalizing the flipping of shares."); Ellis et al., *supra* note 80, at 1039 ("[T]he lead underwriter is always the dominant market maker; he takes substantial inventory positions in the aftermarket trading, and co-managers play a negligible role in aftermarket trading."); Raymond P. H. Fische, *How Stock Flippers Affect IPO Pricing and Stabilization*, 37 J. FIN. & QUANTITATIVE ANALYSIS 319, 319 (2002) (presenting a model for how stock flippers affect IPO pricing); Ekkehart Boehmer & Raymond P. H. Fische, *Do Underwriters Encourage Stock Flipping? A New Explanation for the Underpricing of IPOs 1* (Sec. Exch. Comm., Working Paper, 2000), available at <http://ssrn.com/abstract=228434> (proposing an underpricing theory based on the issuer's need for liquidity in the aftermarket); Ekkehart Boehmer & Raymond P. H. Fische, *Underwriter Short Covering in the IPO Aftermarket: A Clinical Study 1* (J. Corp. Fin., Working Paper, 2004), available at <http://ssrn.com/abstract=278945> (presenting a case study of underwriter trading in the aftermarket of a recent IPO and concluding that the underwriter is able to observe current order flow and use this information to lower its trading cost relative to other buyers) [hereinafter Boehmer & Fische, *Underwriting Short Covering*].

proposed by Benveniste and Spindt and Sherman and Titman.<sup>82</sup> These models consider the issuing process in terms of two directions of information flow: (1) company data flowing to the managing underwriter and the investors and (2) demand data flowing from the investors to the managing underwriter and the company. However, unlike in other models, here the information given to the managing underwriter is not detailed verbal information. In the present model, the managing underwriter plots the demand curve for the offered security by analyzing the bidding data it is provided with.

This model is based on empirical findings by Cornelli and Goldreich who analyzed a relatively small sample of British IPOs using the bookbuilding process.<sup>83</sup> Cornelli and Goldreich distinguished between three types of bids registered in the book: (1) "limit bids" – the ordering of a certain amount of stock with a limit price; (2) "step bids" – the ordering of a certain amount for a certain sum of money, and a smaller amount for a higher sum; and (3) "strike bids" – the ordering of a specific amount for a specific sum.<sup>84</sup> Cornelli and Goldreich found that investors who provided the managing underwriter with orders from which more precise information may be gleaned about the investors' assessment of the security's real price were rewarded with a higher allotment.<sup>85</sup> Similar to Sherman and Titman's model, the present model recognizes the importance of information gathering and analysis costs. Unlike other models, it also recognizes that not all the regular investors approached by the managing underwriter for information invest in gathering and analyzing information.

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<sup>82</sup> See Benveniste & Spindt, *supra* note 17, at 343 ("[I]nvestment bankers use indications of interest from their client investors to price and allocate new issues."); Sherman & Titman, *supra* note 17 (examining the bookbuilding method for marketing IPOs and the moral hazard problem faced by investors when evaluation is costly).

<sup>83</sup> See Cornelli & Goldreich, *supra* note 17 (presenting one of the first studies using bookbuilding records of a leading investment bank).

<sup>84</sup> *Id.* For a study based on data from a different European investment bank, see Tim Jenkinson & Howard Jones, *Bids and Allocations in IPO Bookbuilding*, (Ctr. for Econ. and Pol. Res., Working Paper No. 3644, 2002), available at <http://www.ssrn.com/abstract=363282> (concluding there is no preference for investors who have revealed valuable information).

<sup>85</sup> Cornelli & Goldreich, *supra* note 17, at 2337 ("[T]he investment banker awards more shares to bidders who provide information in their bids.")

Various empirical studies have examined the underpricing phenomenon and the reasons for it.<sup>86</sup> These studies have not yet suggested any single model that can provide a comprehensive answer to the underpricing riddle, but they have shown that Benveniste and Spindt's model, as well as those based on it, such as Sherman and Titman's, offer relatively sound explanations for the various phenomena involved in the IPO process.<sup>87</sup>

Cornelli and Goldreich show that regular investors who have made large orders have an advantage in terms of the relative amount of securities allotted to them in an IPO over those who make smaller orders. Such an advantage, albeit insignificant, is also enjoyed by regular investors who make step bids over those who make limit bids. Finally, a significant advantage is also enjoyed by regular investors who make a step bid or a limit bid over those making a strike bid.

Cornelli and Goldreich also find that among regular investors, the more frequent ones enjoy an advantage over relatively infrequent ones, in terms of the amount of securities allotted in the

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<sup>86</sup> See generally Renna Aggarwal et al., *Institutional Allocation in Initial Public Offerings: Empirical Evidence*, 57 J. FIN. 1421 (2002) (documenting a positive relationship between institutional allocation and the IPO returns on day one); Randolph P. Beatty & Jay R. Ritter, *Investment Banking, Reputation, and the Underpricing of Initial Public Offerings*, 15 J. FIN. ECON. 213 (1986) (describing the incentives investment bankers have to enforce an underpricing equilibrium); Kathleen Weiss Hanley & William J. Wilhelm, Jr., *Evidence on the Strategic Allocation of Initial Public Offerings*, 37 J. FIN. ECON. 239 (1995) (reporting that institutional investors enjoy a favored status in underpricing offers); Kathleen Weiss Hanley, *The Underpricing of Initial Public Offering and the Partial Adjustment Phenomenon*, 34 J. FIN. ECON. 231 (1993) (documenting the relationship between underpricing and the final offer price); Shmuel Kandel et al., *The Demand for Stocks: An Analysis of IPO Auctions*, 12 REV. FIN. STUD. 227 (1999) (analyzing the demand schedule for 27 Israeli IPOs); Philip J. Lee et al., *IPO Underpricing Explanations: Implications from Investor Application and Allocation Schedules* 34 J. FIN. & QUANTITATIVE ANALYSIS 425 (1999) (studying IPOs in the Singapore stock exchange); Alexander P. Ljungqvist & William J. Wilhelm, Jr., *IPO Allocations: Discriminatory or Discretionary?*, 65 J. FIN. ECON. 167 (2002) (finding that allocation policies favor institutional investors and promote price discovery in the IPO market); Roni Michaely & Wayne H. Shaw, *The Pricing of Initial Public Offerings: Tests of Adverse Selection and Signaling Theories*, 7 REV. FIN. STUD. 279 (1994) (testing various underpricing empirical models); Tinic, *supra* note 55, at 789-93 (considering the possibility that underpricing serves as a form of insurance)

<sup>87</sup> See JENKINSON & LJUNGQVIST, *supra* note 54, at 88-93 (analyzing the Benveniste-Spindt Model).

IPO.<sup>88</sup> However, they offer no significant findings regarding particular types of orders. In fact, they show that the regular investors tend to change their order type. They conclude that their findings support Benveniste and Spindt's fundamental hypotheses, since they show a clear preference for regular investors, particularly those who have better sources of information.<sup>89</sup>

As for modeling the underpricing phenomenon, I believe that the contradictory empirical findings and the models' different interpretations reflect the multiple costs involved in the IPO process. I believe they do not imply the existence of any single theoretical model which represents the reasons for underpricing in a comprehensive manner. However, I do believe that the description by Cornelli and Goldreich's and others—especially models describing a two-way information flow, such as Benveniste and Spindt's and those based on it—offer a good starting point for describing the strategic behavior of players in the primary market. The model presented below is based, in part, on these basic descriptions. This is also true for the way the managing underwriter's strategic behavior in the post-IPO market is described in models and empirical studies.

#### 2.2.3.4. *The multiple IPO costs argument*

In general, several major transaction costs are involved in distributing securities in an IPO, which lead to underpricing, including: (1) the cost of the firm's surplus information concerning value and the firm's strategic behavior in providing this information to the public to facilitate the investment decision-making process; (2) the cost of surplus information held by the investors concerning the firm's value and their strategic behavior in providing it to the firm in order to determine the IPO terms; (3) the cost of surplus information held by the managing underwriter concerning the firm's

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<sup>88</sup> Cornelli & Goldreich, *supra* note 17, at 2354–55.

<sup>89</sup> Cornelli and Goldreich found additional facts supporting their explanation. In a subsequent study, they found that the underwriters determining the issuing price based on the price data in the bids received more than on order volume. Francesca Cornelli & David Goldreich, *Bookbuilding: How Informative Is the Order Book?*, 58 J. FIN. 1415, 1427 (2003) (examining the effects of bookbuilding by analyzing a sample of institutional bids submitted under the bookbuilding procedure).

value and its strategic behavior in passing it on from the firm to the public and vice versa for the purpose of determining the IPO terms; and (4) the managing underwriter's post-IPO market behavior.

#### 2.2.4. *The players, their strategy set, and payoffs*

##### 2.2.4.1. *The players*

The players in the model are the firm, the managing underwriter, and two types of investors—ordinary and regular.<sup>90</sup> As in the first model, the managing underwriter wishes to establish the best reputation possible, and this reputation is very much dependent on the public's post-IPO "analysis." In addition to its activities to maximize its reputation value, the risk-neutral managing underwriter also acts to maximize its own IPO profits, which depend on the IPO marketing and distribution efforts and also on choices regarding several parameters under its control, such as the IPO structure and pricing. The IPO price ( $x$ ) is determined based on the supply ( $q_0$ ) and the demand ( $E[Q(x)]$ ) data, which the managing underwriter collects. By this time, the firm has already determined the amount of securities to be offered, after having been advised by the managing underwriter. The underwriter's estimate concerning the demand curve of all the investors is based on informal orders from regular investors. This estimated demand curve is dependent on information collected up to the prospectus's effective date. However, how does the managing underwriter receive the demand data from the regular investors, and how is this processed into the entire market's predicted demand curve?

The answer lies in the bookbuilding mechanism. The managing underwriter receives relevant data from the firm and performs the due diligence procedure. After having submitted the first draft prospectus to the SEC and checking and editing it, the managing underwriter reports the data to the investors. The underwriter presents the data to sophisticated investors, who are usually part of its clientele, during the road show. These investors, which the model refers to as "regular investors," reciprocate with informal

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<sup>90</sup> The assumptions related to the players are the same as in the first model, presented in Section 2.1.2. with several changes to be discussed below.

orders, indicating their estimated price or the likely amount to be ordered. The managing underwriter processes these informal orders into the regular investors' demand curve and into the market demand curve.<sup>91</sup>

Ordinary investors (the public) are uninformed. They are risk-neutral, and hold partial information about the firm's value distribution derived from, among other things, the partial information in the prospectus. In estimating the securities' real price ( $S_i$ ), they act on the basis of two considerations. First, they determine their degree of trust in the firm's disclosure and in the managing underwriter's due diligence in assessing the information and presenting it properly in the draft prospectus. Second, they rely on estimates by analysts, brokers, and other financial intermediaries (who represent the public and act as agents translating the analysts' assessments and marketing offerings). One can assume that these in-

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<sup>91</sup> The managing underwriter's expected profits depend on its forecasted market demand curve, and may be represented by the following equation:

$$(1) E[\pi] = \underbrace{\alpha \times q_0}_{i} + \underbrace{(q_0 - E[Q(x)])(S - x)}_{ii}$$

When the whole issue is sold ( $E[Q(x)] \geq q_0$ ), the first expression (i) represents the underwriter's profits from the underwriting differential  $\alpha$ , while the second (ii) represents the added value the managing underwriter may obtain by overselling the offering. The managing underwriter can satisfy the extra demand by buying securities in the secondary market (or by using the over-allotment option, which is not discussed here). If the managing underwriter chooses to oversell the issue, he will profit if the secondary market price drops ( $S < x$ ) and lose if the issue is underpriced ( $S > x$ ).

Theoretical and empirical studies on IPO underpricing used a variety of modeling approaches, including diverse managing underwriter target functions. In the present model, the managing underwriter's profits are presented in a way similar to Fische's presentation. See generally Fische, *supra* note 81 (presenting a new model for why IPOs are underpriced). On the other hand, most assumptions and limitations of the present model differ from Fische's.

A simplifying assumption of our model, which has no bearing on the results, is that the managing underwriter allots: (1) a constant amount of securities ( $q_m$ ) to each of the  $m$  ordinary (uninformed) investors whose bids it accepts; (2) another constant amount of securities ( $q_h$ ) to each of the  $h$  regular and informed investors in its clientele who have submitted accepted bids with complete information; and (3) a final constant amount of securities ( $q_j$ ) to each of the  $j$  regular and uninformed investors in its clientele who've submitted accepted bids with partial information. Accordingly,

$$(2) h q_h + j q_j + m q_m = Q(x)$$

termediaries do not create a significant bias in the IPO price.

Regular investors differ from ordinary ones in that they are in constant contact with potential underwriters who involve them in the bookbuilding process. Not all investors have the privilege of being approached by managing underwriters in the bookbuilding process. To be included in that coveted list, the investor has to be: (1) a financial intermediary of some kind (such as a mutual fund) or an important customer of the managing underwriter; (2) financially capable; and (3) able to assess the value of firms for the purpose of issuing their securities.<sup>92</sup> Those who meet those three conditions will offer themselves to participate in the bookbuilding process if this is included in their investment policy. Note that all regular investors can become informed investors if they invest in collecting and assessing the information.

A regular investor bears a constant cost ( $c_j$ ) even if he or she does not invest in checking and assessing the information. This cost derives from the need to maintain the due diligence system.

A regular investor wishing to become an informed investor and participate in the bookbuilding process bears three main costs ( $c_h = c_j + c_{h,1} + c_{h,2}$ ): (1) the constant cost of maintaining the system ( $c_j$ ); (2) the cost of checking any information received (by lawyers, accountants, and experts in the company's areas of activity) ( $c_{h,1}$ ); and (3) the cost of assessing the securities by analysts, based on the information provided ( $c_{h,2}$ ). We will assume that the maintenance cost ( $c_j$ ) and the due diligence costs ( $c_{h,1}$  and  $c_{h,2}$ ) are identical for all regular investors.

I will further assume that the managing underwriter assesses public demand data based on orders from regular investors, which state the maximum price at which they are interested in ordering securities in the IPO. According to Cornelli and Goldreich's typology, two types of bids meet this condition: step bids and limit bids.<sup>93</sup> The maximum price informs the managing underwriter about the expected price of the securities offered. This is the most important data gleaned out of those two types of bids, which are,

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<sup>92</sup> For description of regular investors' structure and methods of operation in IPOs, see, Benveniste & Spindt, *supra* note 17; Cornelli & Goldreich, *supra* note 17; Sherman & Titman, *supra* note 17; Boehmer & Fishe, *Underwriting Short Covering*, *supra* note 81.

<sup>93</sup> See Cornelli & Goldreich, *supra* note 17, at 2351.



therefore, of similar value from the leader's point of view. I will also assume that the third type, strike bids, informs the managing underwriter about the regular investors' demand curve.

The research departments of regular investor firms select the issuing firms to be assessed according to their areas of expertise, their own customers' interests, or at random. According to an informal agreement between the managing underwriter and the regular investors selected, the regular investors will maintain a research department so that it will be worthwhile to invest time and resources into the analysis of a certain proportion of the offerings suggested. Maintaining this proportion is not only crucial for the managing underwriter, but is also efficient from the research departments' perspective. It allows the regular investors to maintain a certain ratio between the effort exerted by the investment department and the effort exerted between the research teams.

In fact, the managing underwriter selects its regular investors in sufficient quantity and quality to ensure that a certain number of investors will conduct the required analysis for each IPO. On the one hand, this number must be high enough to allow it to conduct a precise assessment of the IPO price. On the other hand, it must not be too high because of the costs involved. Too many informed investors will constrain the leader's maneuverability in distributing the securities.

#### 2.2.4.2. *The players' strategy set and the payoffs*

It is assumed that regular investors approached by the managing underwriter may adopt the following strategies:

First, the investors may choose whether or not to participate in the IPO. I assume that refusing to participate carries with it serious sanctions by the managing underwriter, to the point of removing the investor from the list of regular investors. Therefore, I believe this strategy is irrational from the point of view of a regular investor trying to maintain its standing in the market.

Second, before examining whether investors will choose to invest in information analysis, one must determine whether investors actually chose to invest at all.

Third, after deciding whether to invest in analyzing the information, they may select one of the following options. The first option is if they do invest in analyzing the information, they may participate in the IPO as informed investors. This means sharing all their information about the securities' expected IPO value with the

managing underwriter. Alternatively, they may choose not to participate as informed investors, but as regular, uninformed investors. This means sharing only some of their expected demand data with the managing underwriter. A second option is if they do not invest in analyzing the information, they may participate as uninformed regular investors. This means sharing only partial information about the expected demand. I will assume that investors communicate demand data by submitting an order for a certain amount (P). This amount is assumed to be valid as long as the price of securities offered will be within the managing underwriter's predetermined price range. Alternatively, they may participate as informed investors, although they are not strictly so, by submitting an order of the type submitted by informed investors (which means communicating a guess about the expected value of the securities offered to the managing underwriter). Such a strategy may have dire consequences because the managing underwriter may punish them severely should it find out that the information has not been analyzed.

As opposed to withholding existing information, non-investment is easily revealed through the lack of demand for information and the inability to conduct a meaningful discussion about the IPO data with the underwriter. Moreover, if the regular investor behavior with his customers indicates investment in information analysis (so that the managing underwriter does not expose any malpractice), his reputation may suffer and he might lose both his status as a regular investor and his customer base. Therefore, in practice, like the non-participation strategy, this strategy (non-investment but communicating price data as if an investment had been made) is irrational from the point of view of a regular investor wishing to maintain his status in the market.

Fourth, in conjunction with each of the above strategies, the regular investors may choose between reporting their true data (on price or demand) and reporting false data.

Regular investors receive a set of informal commitments from the managing underwriter that guarantee them participation in the IPO, whether as informed or uninformed investors. Most importantly, the informal set of commitments ensures normal profits in the IPO in three ways:

First, the managing underwriter guarantees the informed investors' normal profit. In fact, this is a pseudo-commitment by the managing underwriter to underprice the securities and choose a

price and amount for the informed investors that balances their costs. In return, the informed investors are required to report their price data reliably. The informed investors are constantly under threat of being removed from the managing underwriter's privileged list of regular investors if they do not report data reliably or if they fail to buy the amount at the price to which they have informally committed.

Second, the managing underwriter guarantees normal profit to the uninformed regular investors, at a level which will cover the cost of maintaining the analysis system without actually operating it at that certain IPO. In return, the uninformed investors will report their demand data and keep their informal commitments to the managing underwriter.

Finally, the managing underwriter also assures its regular investors that the amount allotted to them will be greater than that allotted to non-regular investors (the public) participating in the IPO. Otherwise, the regular investors may, at least in theory, prefer to participate in IPOs as part of the general public and thus benefit from the same underpricing discount without bearing the costs of participating as regular investors.

### 2.2.5. *The equilibrium: How the securities' price and allotment are determined*

The managing underwriter acts so as to maximize its expected profits. It receives informal orders from the informed investors, which are used to determine the IPO price ( $x$ ), the number of regular, informed investors ( $h$ ), the number of uninformed regular investors ( $j$ ), and the number of ordinary investors ( $m$ ) who will participate in the offering. The managing underwriter also determines how the securities are to be allotted amongst the three groups ( $qh$ ,  $qj$ ,  $qm$ ), subject to various constraints, including its commitment to the informed investors to ensure profit by underpricing and a relatively large allotment, as well as its commitment to the uninformed investors to ensure profit and an allotment larger than the public's.

The equilibrium is determined to ensure underpricing. At equilibrium, only some of the regular investors assess the value of the offered securities, ensuring efficiency in plotting the market demand curve. On the other hand, the managing underwriter's strategic behavior prevents, at equilibrium, the creation of prohibitively high costs of information analysis by regular investors. The underwriter's ability to create an efficient equilibrium is dependent

on its ability to reward informed investors by underpricing and by allotting a large amount as compared to other regular investors.

The managing underwriter's ability to efficiently create an equilibrium while minimizing analysis costs is achieved through the process of plotting the market demand curve. This process has two stages. First, the managing underwriter collects the informed, regular investors' demand and price data (see Diagram 1.1). At the same time, the uninformed regular investors report their demand data, which are plotted as the uninformed investors' demand curve (see Diagram 1.2). Combining the two curves produces the regular investors' demand curve (see Diagram 1.3). Second, in order to obtain the market demand curve, the managing underwriter extrapolates the regular investors' demand curve, based on its experienced judgment regarding the ratio between the regular investors' and the ordinary investors' demand (see Diagram 1.4).

At equilibrium, both informed and uninformed investors report their true collected data to the managing underwriter. An informed investor, one who's invested in analyzing the information, will report his price data and will not report demand data without price data. That is, he will not present himself as an uninformed investor, because if he does the managing underwriter will not compensate him for all his costs. Such an investor also will not report an incorrect (estimated) price. If he reports a lower price, the effect on the IPO price will be negligent but will reduce his chances to participate in the offering. He will also avoid reporting a higher price, because independent of his chances to participate, no investor will buy offered securities at a price higher than their true (estimated) value.

The uninformed investors will report their demand data but will not report price data. This is because a strategy of not investing in analysis but still participating in an IPO as informed investors entails a very high cost—greater than any potential profit. Finally, uninformed investors report true demand data, for reasons similar to those of their informed counterparts.

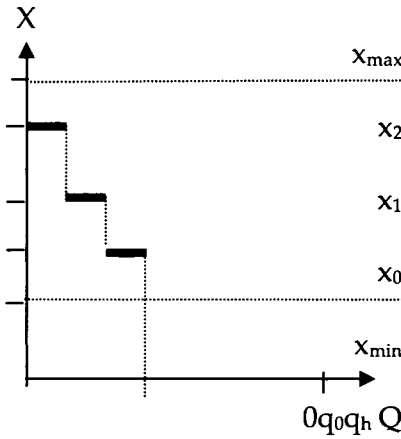


Diagram 1.1: The informed investors' demand curve

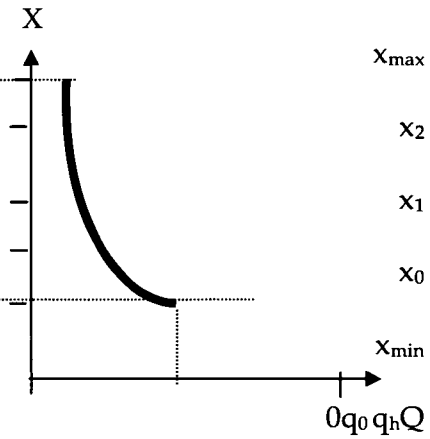


Diagram 1.2: The uninformed investor's demand curve

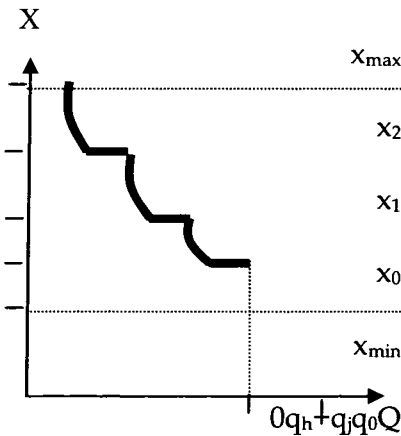


Diagram 1.3: The regular investors' demand curve

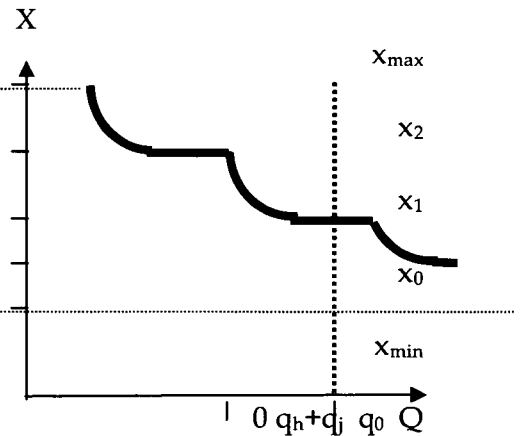


Diagram 1.4: The market demand curve

Diagram 1: These diagrams illustrate the process of plotting the regular investors' and the market's demand curve by the managing underwriter.

### 2.2.6. *The role of the law*

My description of the issuing process indicates that the most important condition for the regular investors' participation in IPOs is the managing underwriter's commitment to underprice so as to compensate them for their participation costs. Moreover, the bookbuilding mechanism creates an equilibrium at which the regular investors, having received appropriate participation incentives, report true information. Here, the managing underwriter pays no additional price to create incentives to be truthful. That such equilibrium exists allows the managing underwriter to maintain an optimal investment rate using a strategy of keeping the regular investors' profits at a level constituting a disincentive for "defection," so that investors who are supposed to invest in collecting and assessing information will prefer doing so, and vice versa. The price paid by the managing underwriter is that needed to ensure a certain ratio between the allotment to informed and uninformed regular investors. In certain cases, predetermining a certain ratio might constrain the ability to ensure higher personal profits.

The cost structure described, which plays a critical role in the model, depends on the applicable law. As mentioned before, the primary market is characterized by high information costs. These costs are reflected in a double hidden action problem, creating a managing underwriter's moral hazard problem. The argument presented in the first model, is that the law can play a role in solving this double problem by allowing the players to reveal how the managing underwriter and company managers have conducted themselves and by identifying the efficient market equilibrium (in conjunction with its deterrence role).

Regular investors also deal with the twin problems of hidden action and strategic behavior by the managing underwriter and company managers. Regular investors adapt their organizational structure and their process of assessing the value of securities offered in the primary market to the intensity of this problem, which is present in all IPOs. An institutional investor's reputation depends on the accuracy of analyst publications and on his success record. His profits also depend on his ability to form an accurate assessment and to buy securities for himself and on behalf of his clients at a price which is not higher than the real price.

Therefore, it is expected that without a liability rule allowing ordinary investors to expose the managing underwriter's conduct, regular investors will have to bear higher maintenance costs ( $c_j$ ). In

addition, it is expected that in this case, the cost of analyzing the information reported to the institutional investor ( $c_{h,1}$ ) will also be higher. Since the lack of a legal rule limits the investors' ability to monitor the managing underwriter's conduct, institutional investors will also react by reducing their demand somewhat to reflect higher risk.

The model suggest several improvements in efficiency to the market allotment mechanism's as a result of applying a legal rule that holds the managing underwriter liable for the existence of misleading information in the IPO prospectus.

#### 2.2.6.1. *Lower costs of maintaining a due diligence system*

When the legal rule holding the managing underwriter liable for the existence of misleading information in the IPO prospectus is applied, regular investors may rely on the firm's road show presentations, thereby reducing the costs of maintaining their due diligence system. Having the managing underwriter perform due diligence is efficient from the primary market's point of view. The managing underwriter will perform due diligence at the optimal level required, ensuring optimal investment in information analysis and avoiding redundant investment. Significantly, information concerning the optimal degree of investment is held by the managing underwriter rather than by the regular investors. It is, therefore, reasonable to assume that the managing underwriter will be the one to determine the optimal level of investment in due diligence (and also carry it through).

#### 2.2.6.2. *Real demand*

Regular investors will adjust their demand according to the highest level of certainty once the legal rule is applied. Therefore, in extrapolating the regular investors' demand curve from the market demand curve, the managing underwriter will be able to calculate a higher level of demand. This is due to increased demand by the informed investors and to the fact that the extrapolation coefficients (the multipliers used in moving from the regular investors' to the estimated market demand curve) will be higher. All these lead to an equilibrium in which a higher price is systematically ensured for the offered securities, reflecting its complete estimated value more accurately and thus reducing efficiency losses in the primary market allotment mechanism.

### 2.2.6.3 Possible reduction of indirect primary market costs

Given the liability rule, should the costs of maintaining the information analysis or due diligence system indeed be reduced (lower  $c_j$  or  $c_h$ ), the managing underwriter will be better able to meet the participation limits of the regular investors. However, the managing underwriter will have to reduce the amount of securities allotted both to informed and to uninformed investors ( $q_j$ ,  $q_h$ ), and have a reduced underpricing rate. Thus, the legal rule is a potential means of reducing the underpricing rate in IPOs and, therefore, of reducing the indirect costs of the market allotment mechanism (even if the underpricing rate does not necessarily shrink). This result is dependent on actual reduction of the costs of maintaining the information analysis or due diligence systems as a result of applying the liability rule.

### 2.3. *The Law's Effect on the Managing Underwriter's Strategic Post-IPO Market Behavior*

In the post-IPO market, the managing underwriter's strategic behavior affects the security trade in terms of the support it provides to maintain the offered securities' price.<sup>94</sup> The managing underwriter's expected conduct in the secondary market also has an effect, *ex ante*, on the conduct of the various players in the offering stages.

The managing underwriter's policy of supporting the IPO price is an important factor in the success of IPOs. It is believed that a declared stabilization policy, acquiring the overallotment option and stating a penalization policy, are vital tools in reducing the investors' perceived risk. But the managing underwriter uses these tools to maximize its own profits; numerous scholars have found that a considerable portion of the managing underwriter's profits stems from its various activities in the post-IPO market (including

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<sup>94</sup> In this market, the managing underwriter can use various tools to reduce the risk entailed in the offering, such as: (1) stabilization activities, (2) overselling of offered securities (being in a short position) and covering the difference by exercising its right to overallot or by buying securities in the secondary market, and (3) penalty bids. See *supra* text accompanying notes 60-64 (detailing the various scenarios and options the leader may possess).



its market maker role).<sup>95</sup>

Several studies have found that stabilization is not used in IPOs to support the price.<sup>96</sup> Instead, the managing underwriter prefers the two other tools—overselling securities and penalizing selling group members.<sup>97</sup> Penalizing selling group members is limited to cases of weak offerings in which the price drops after the initiation of trade. Notably, an alternative to penalizing is withholding information about fast sales. Studies have also found that the managing underwriter often oversells the offering. If the post-IPO price goes up, the managing underwriter exercises the overallocation option (and earns additional underwriting commissions). The rest of the demand is met through buying securities in the open market. If the price goes down, the managing underwriter may choose between exercising the option and buying in the market. It is worthwhile to exercise the option so long as the marginal commission profits outweigh the loss attributed to buying at the offering price, which is higher than the current market price.

Although various aspects of the offering process and the post-IPO market are not fully explained, the models presented here elucidate several major consequences of the managing underwriter's strategic behavior.<sup>98</sup> The managing underwriter acts according to a calculation combining its IPO and post-IPO estimated profits. The result can be a different equilibrium than that which would have been obtained had it only considered maximizing its IPO profits. One of the results of this combined consideration is that the man-

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<sup>95</sup> See generally Boehmer & Fische, *Underwriting Short Covering*, *supra* note 81, at 2–4 (discussing the effects of underpricing on disclosure obligations); Ellis et al., *supra* note 80, at 2–4 (conducting a study illustrating how the leader can act as a market maker); Fische, *supra* note 81 (explaining the underpricing of IPOs).

<sup>96</sup> See Aggarwal, *supra* note 81, at 1076 (arguing that overselling issues is preferred by leaders since it is a less dangerous tool from their point of view). Another important point is that in the case of overselling, as opposed to stabilization, there is no comprehensive regulation, and the law even does not mandate prior disclosure of that option in the prospectus. See also Ellis et al., *supra* note 80, at 1072–73 (examining the implications of when an underwriter is a market maker).

<sup>97</sup> See generally Ellis et al., *supra* note 80, at 1053–62 (examining aftermarket trading of underwriters in the two-month period after an IPO).

<sup>98</sup> Other aspects of the offering process and the post-IPO market not covered in detail include the bookbuilding process, determining issue price and securities allotment, price support in the post-IPO market, and the effect of all these factors on the underpricing rate.

aging underwriter is not always capable of using underpricing to optimally invest in collecting and evaluating information (as shown in our model) in conjunction with an optimal rate of price support activities. If a certain rate of underpricing is required to ensure optimal investment in information analysis, it may be that at equilibrium, the managing underwriter may find it worthwhile, for example, to use a different rate in order to change the number of "flippers" expected to participate in the IPO.

The effect of a law holding the managing underwriter liable for disseminating misleading information is mainly relevant to monitoring subsequent conduct during the offering stages. Assuming such a law reduces underpricing, we can see that it has a moderating effect when combined with the managing underwriter's secondary market considerations. In other words, the law can reduce efficiency losses due to the managing underwriter's strategic behavior, because it constrains the ability to profit by further increasing the underpricing rate.

The managing underwriter's strategic behavior in the post-IPO market is a basic indication of the possibility that part of the losses in the market allotment mechanism are due to information gaps about the managing underwriter's expected behavior. It is, therefore, advisable to carefully investigate the various costs entailed in the managing underwriter's secondary market behavior, including those derived from information gaps, and to consider ways of reducing these costs by means of various rules, including disclosure rules.<sup>99</sup>

#### 2.4. *Overseeing Company Managers*

Managing underwriter liability may reinforce company managers' oversight mechanisms. In performing due diligence, the managing underwriter scrutinizes various aspects of the company's activity that are sensitive to conflict of interests with the executives in charge of the IPO process. These include the way executives are appointed and discharged, compensation packages, special personal interest agreements, executive power, etc. In addi-

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<sup>99</sup> For seminal research in this area, see Jonathan A. Shayne & Larry D. Soderquist, *Inefficiency in the Market for Initial Public Offerings*, 48 VAND. L. REV. 965, 976-86 (1995) (analyzing the effects of underpricing on pricing inefficiency).

tion to addressing these issues in detail in the IPO prospectus, the managing underwriter demands to adjust the compensation packages and the methods of approval. Moreover, it demands adjusting the managers' powers and conduct in standard capital market practices.

Since the company's interests conflict with those of the managers in charge of the IPO process, there is a need for a mechanism that allows the managing underwriter to oversee managerial conduct in these matters. The due diligence process empowers the managing underwriter to enforce standard practices. This power only increases under a liability regime.<sup>100</sup>

### 2.5. Other Efficiency Considerations

In a study on imposing mandatory disclosure duties, Coffee focused on lowering the costs of collecting, verifying, and presenting information to investors.<sup>101</sup> He believes that a single system of publicizing information minimizes the potential costs of several overlapping information systems. It seems that managing underwriter liability serves to reduce those overlapping costs by giving the managing underwriter an incentive to carry out all activities itself—for example, to perform due diligence on behalf of the other underwriters and to provide them with “comfort letters” attesting to that fact.<sup>102</sup>

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<sup>100</sup> This argument is consistent with Coffee and Mahoney's justifications for mandatory disclosure. See, e.g., Coffee, *supra* note 27, at 737–47 (showing how the absence of mandatory disclosure duties permits executives to report false information or provide only partial information about positive projects in order to win the added value in LBO transactions). According to Mahoney, the main objective of the New Deal legislation is solving the agency problems resulting from conflict of interests between the entrepreneurs and executives, on the one hand, and the investors on the other. See Paul G. Mahoney, *Mandatory Disclosure as a Solution to Agency Problems*, 62 U. CHI. L. REV. 1047, 1048 (1995) (presenting an “agency cost model” as an alternative justification for mandatory disclosure requirements).

<sup>101</sup> Coffee, *supra* note 27, at 723–37.

<sup>102</sup> Comfort letters are used by the leader, the lawyers, and the accountants who have carried out due diligence confirming that the various examinations required have been completed. These letters list those examinations and include the authors' statements of findings. For different rules regarding comfort letter practice, see John S. D'Alimonte, *Underwriting Arrangements and Documents (with Exhibits)*, in SECURITIES OFFERINGS 2005: WHAT ISSUES & UNDERWRITERS' COUNSEL NEED TO KNOW NOW, at 773, 782 (PLI, Course Handbook Series No. 6361, 2005); Norman D. Slonaker, *Auditor Comfort Letters: Participation in Underwriter Due Dili-*

### 3. THE QUESTION OF DIRECTING BEHAVIOR: WELFARE DISTRIBUTION ASPECTS

The two models presented here show that the law manages to reduce the cost of the security allocation mechanism. It is hard to point to an unequivocal standard which will show how the various players benefit from the increased efficiency from holding underwriters liable. The above analysis shows that liability increases efficiency, and that the managing underwriter can enjoy IPO profits by strategically selecting its sequence of activities. It is also reasonable to assume that the company – and even certain investors – benefit from some of the resulting efficiencies.

As previously mentioned, the existence of liability rules and its modeled effects on the primary market players, involves welfare shifts between these players.<sup>103</sup> Thus, the company's benefit resulting from streamlining the executive oversight mechanisms (required due to conflicts of interests) increases in proportion to the executives' reduced power, as a consequence of the managing underwriter's empowerment. Thus, when selecting investors, the company's interests may conflict with those of its executives. It may be in the company's interest to ensure investment by a large group of major institutional investors who tend to diversify their holdings.<sup>104</sup> The management, on the other hand, may prefer other investors; for example, investment through wide public distribution and investment by a few affiliated institutional investors. This is reminiscent of a managers' buyout deal ("MBO"), and thwarting it is clearly in the company's interest.<sup>105</sup> Allowing the managing

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gence, in 37<sup>TH</sup> ANNUAL INSTITUTE ON SECURITIES REGULATION, at 1219, 1222–28 (PLI, Course Handbook Series No. 6063, 2005); Jeanne M. Campanelli & Peter Castellon, *The Mechanics of Rule 144a/Regulation S Underwritings*, in NUTS & BOLTS OF FINANCIAL PRODUCTS 2006, at 88–91 (PLI, Course Handbook Series No. 8392, 2006).

<sup>103</sup> For references on welfare distribution and distributive justice and their role in economic analysis of law, see *supra* note 26 and the accompanying text. For a further discussion and analysis of the possible welfare shifts between participants in the primary market, see Sean J. Griffith, *Spinning and Underpricing*, 69 BROOK. L. REV. 583, 600 (2004). See also Benveniste & Spindt, *supra* note 17; Sherman, *supra* note 19; Cornelli & Goldreich, *supra* note 17; Fishe, *supra* note 81; Boehmer & Fishe, *Underwriting Short Covering*, *supra* note 81.

<sup>104</sup> For basic theory of portfolio diversification, see Romano, *infra* note 120 the accompanying text.

<sup>105</sup> For a description of the study that investigated management buyouts us-

underwriter to select the investors, supported by the liability rule, changes the resulting holdings structure and makes it difficult for executives to adopt this course of action. Yet, delegating executive powers to the managing underwriter also means introducing another interested party, with additional conflicts of interest.

Aspects of welfare shifts are also noticeable in the relationships between the managing underwriter and the various types of investors.<sup>106</sup> Specifically, managing underwriters were criticized and investigated for preferring their regular investors and discriminating against the public, especially in "hot offerings".<sup>107</sup> In late 2002, the SEC, the National Association of Securities Dealers ("NASD"), and Elliot Spitzer, the New York State Attorney General, reached a settlement agreement with ten big investment banks. Under this agreement the investment banks must separate the security allotment transactions from investment banking activities.<sup>108</sup> It is doubtful, however, that this constitutes the appropriate settlement of the "hot offerings" issue. The SEC, aware of this concern, requested that the security exchanges appoint a committee to review IPO procedures, including the practice of security allocation and the roles played by issuers and underwriters in determining the price of an IPO and bidding procedures.<sup>109</sup>

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ing initial public offerings ("MBO-IPO") to perform the deal, see B. S. Saadouni et al., *Unseasoned Equity Offerings MBO-IPOs vs. Non-MBO-IPOs*, 23 J. BUS., FIN. & ACCT. 47 (1996).

<sup>106</sup> See *supra* note 27 for information on welfare distribution and shifts.

<sup>107</sup> For a description of those cases, see, for example, Diane Hess, *N.Y. Attorney General Requires More Disclosure From Merrill Lynch* (Aug. 4, 2002), <http://www.thestreet.com/markets/taleofthestreet/10016329.html>; Tamara Loomis, *Merrill Lynch Probe: Attorney General Claims Investors Were Misled*, N.Y. L.J., Apr. 18, 2002, at 5.

<sup>108</sup> Press Release, Securities and Exchange Commission, *Ten of Nation's Top Investment Firms Settle Enforcement Actions Involving Conflicts of Interest Between Research and Investment Banking* (Apr. 28, 2003), available at <http://www.sec.gov/news/press/2003-54.htm>.

<sup>109</sup> See, e.g., Press Release, Securities and Exchange Commission, *Chairman Pitt Seeks Review of Initial Public Offering Process* (Aug. 22, 2002), available at <http://www.sec.gov/news/press/2002-127.htm>. For further tasks made by regulators to control different kinds of costs and market failures in the IPO's securities allocation mechanism, see, for example, Stephen J. Choi, *A Framework for the Regulation of Securities Market Intermediaries*, 1 BERKELEY BUS. L.J. 45 (2004); Stephen J. Choi & Jill E. Fisch, *How to Fix Wall Street: A Voucher Financing Proposal*, 113 YALE L.J. 269 (2003); Ely R. Levy, *The Law and Economics of IPO Favoritism and Regulatory*

The second model suggests that investors are not selected arbitrarily. From the distributive justice perspective, this has both advantages and disadvantages.<sup>110</sup> Determining the number of regular investors to participate in the IPO (and in offerings in general) is a function of the information they are required to produce and the cost of information production. Among these regular investors, the managing underwriter selects a certain number of informed investors in order to perfect the strategy of producing optimal amounts of information. It does so by allotting a certain amount of securities and determining the underpricing rate to compensate them for their services (analyzing the information and maintaining the information system). Therefore, the bookbuilding allocation mechanism should not be viewed as discriminatory. Regular investors are rewarded for their services, and managing underwriters have no incentive to pay more than what is necessary to maintain the mechanism. Furthermore, the institutional investors, who purport to profit more than their ordinary counterparts, are investing the public's money. Thus, the public profits from the institutional investors' success.

#### 4. THE QUESTION OF DIRECTING BEHAVIOR: COMBINED EFFICIENCY AND WELFARE DISTRIBUTION ASPECTS

As mentioned previously, a managing underwriter liability regime serves to reduce allocation costs in several ways. Combining distributive justice considerations is not an easy task. My discussion's starting point requires an investigation of how the various market players are affected by such a regime, but this suffers from the lack of an unequivocal standard. An unequivocal standard could show that market players profit from the increased efficiency resulting from this process. However, if the conclusion presented here is accepted, it is reasonable to assume that the company, the managing underwriter, and the various investors all benefit from this increased efficiency.

These results show that holding the managing underwriter liable is an appropriate course of action when the law's objective of

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*Spin*, 33 Sw. U. L. REV. 185 (2004).

<sup>110</sup> For references on welfare distribution and distributive justice and their role in the economic analysis of law, see *supra* note 26 and accompanying text.

directing behavior is considered together with combined efficiency and welfare distribution aspects.

## 5. THE QUESTION OF DAMAGE DISTRIBUTION AND INSURANCE

### 5.1. *Efficiency Aspects*

#### 5.1.1. *Factual description*

In this section, I discuss efficiency and welfare distribution aspects related to the question of damage distribution and insurance (risk spreading). This section begins by discussing the efficiency aspects of imposing liability in order to distribute damages.

The primary market is characterized by a complex system of distributing the harm inherent to the existence of misleading information in the IPO prospectus. It includes legally imposed liability,<sup>111</sup> contractual liability based on agreements between the various participants in the offering process,<sup>112</sup> insurance liability, and market mechanisms. Insurance distributes risk by transferring it to insurers and reinsurers for a premium. One of the most important market mechanisms is portfolio diversification.<sup>113</sup>

The liability circle of those participating in the offering process includes all those contributing any details to the prospectus. These include various experts who usually make sure they are protected against the threat of legal liability by a professional liability policy.

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<sup>111</sup> See *supra* note 2.

<sup>112</sup> In IPOs in the United States, underwriting agreements include standard indemnification clauses comprising two major stipulations: (1) the company's (or the selling shareholder's) commitment to indemnify underwriters for losses or expenses due to misleading information in the registration statement; and (2) the company's (or the selling shareholder's) exemption from this commitment in case this misleading information has been included in the registration statement based on written information reported by the underwriters to the company. In the United States there is some controversy over the validity of defendant indemnification and contractual contribution arrangements concerning lawsuits involving securities regulation infringements. For discussions of these issues, see COX ET AL., *supra* note 27, at 617–18; FUNDAMENTALS, *supra* note 1, at 1324–31; SECURITIES REGULATION, *supra* note 1, at 4685–4701; Helen S. Scott, *Resurrecting Indemnification: Contribution Clauses in Underwriting Agreements*, 61 N.Y.U. L. REV. 223 (1986).

<sup>113</sup> For basic theory of portfolio diversification, see references, Romano, *infra* note 120 and accompanying text.

Thus, the company representatives in charge of producing the prospectus (usually those trusted with its daily management, such as an active board member, CEO, and CFO) are covered by an officer liability insurance policy. This policy is usually purchased for the IPO, since no such legal exposure existed beforehand. Sometimes the company also has a policy of indemnification in case of misleading information in the prospectus, but this is implemented only under unusual circumstances and is subject to strict legal limitations. The company's lawyers, accountants, and those who write the various opinions included in the prospectus, have separate professional liability insurance policies. Directors are usually covered in the officers' insurance policy purchased by the company's executives. The board as a whole, or individual directors who edit the various drafts as part of their responsibilities, may add or omit certain details. Such details may be included or excluded subject to demands by the underwriters and their lawyers, accountants, and various consultants. Details may even be requested by interest holders who are not company officers. Underwriters may also have a professional liability insurance policy. However, directors and underwriters rarely contribute details to the prospectus and are covered by separate liability insurance policies. Interest holders who are not company officers, much like other shareholders, are not insured against a situation where they may be held liable for the inclusion of misleading information in the prospectus.

In the United States, the issuing firm may be held strictly liable for damages to investors due to misleading information in the prospectus.<sup>114</sup> In the standard indemnification clause of underwriting agreements, the firm indemnifies the underwriters for damages caused by such misleading information. It also acquires an insurance policy which will indemnify them against any expense or loss included within the firm's indemnification commitment.

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<sup>114</sup> See *supra* note 2.



### 5.1.2. *Added efficiency through managing underwriter liability*

#### 5.1.2.1. *The managing underwriter as the least expensive insurer and the underinsurance problem*

The managing underwriter has an advantage relative to the other IPO participants in that it is able to secure the best insurance policy. Its substantial economy of scale and the fact that it is a repeat player in the market ensures its ability to reduce insurance costs. It has the knowledge and ability to secure the best insurance agreement with a potential insurer. Compared to most other participants, the underwriter is not risk-averse, thanks to its large capital base and the large number of offerings in which it participates. In addition, it has better bargaining capability with potential insurers and a reputation that can be relied on to reduce premiums.

If the managing underwriter cannot be held liable, it will have no incentive to insure against damages from including misleading information in the IPO prospectus. Without liability, all the benefits of insuring relevant professional risks will be reduced. From the insurers' point of view, the risk management process is cheaper when it is the managing underwriter, rather than the issuing firm and its executives, that needs to be monitored.

#### 5.1.2.2. *High voluntary damage distribution costs*

In order to make the most of the efficiency advantage involved in voluntary contractual acceptance of liability, the managing underwriter has to simultaneously conclude three complex and costly transactions. This task may seem virtually impossible. The first two tasks involve agreements with the investors and the insurance company.<sup>115</sup> In this agreement system, the managing underwriter

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<sup>115</sup> Here the discussion focuses on the possibility that the managing underwriter purchases professional liability insurance for itself, independently of its right to indemnification by the firm. Alternatively, the managing underwriter could choose to self-insure the offering. However, I believe this argument is partly relevant to the company's policy to guarantee its indemnification commitment according to the standard underwriting agreement. This is because it is reasonable to assume that the managing underwriter will actually conduct the transaction.

must create an efficient contractual arrangement defining its professional liability. This agreement must define what is to be counted as a breach, how it is to be proven, and how liability is to be distributed among the underwriter, the company, its managers, and those who've composed various opinions in the prospectus. In fact, the managing underwriter is required to create a contractual system mimicking the law. In particular, in order to deal with the impossibility of evaluating, *ex post*, how the managing underwriter has actually performed, the agreement system envisioned here must ensure an efficient process of discovering, clarifying, and interpreting the facts. The managing underwriter must also include an agreement system that clarifies whether a breach has indeed occurred. Moreover, the extent of damage caused will have to be ascertained. Such a system cannot be established by private organizations, since its costs are immense. Each interested party, therefore, has an incentive to wait until the system is established by others. Furthermore, it seems that establishing the system requires large-scale coordination among the managing underwriters in the market. Disclosure rules mandate a standard disclosure format, and each managing underwriter will have to consider the chance that, without coordination, its whole investment will be lost due to a successful rule system created by a competitor. Such coordination is, in fact, the role of the law. Finally, self-regulation would not work in this area, as it would entail the high costs of constraining competition and the negative externalities on market operation.

The third transaction required by the managing underwriter in such a case is with the issuing firm. The problem is that if a transaction in which the firm pays the managing underwriter a substantial part of its additional expenses cannot be concluded, the managing underwriter will not buy liability insurance or undertake to insure the investors.<sup>116</sup>

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<sup>116</sup> The following is a simplified numerical illustration of the argument:

### 5.1.2.3. *Damage distribution by the consortium*

Although the law holds all underwriters in the consortium liable for the existence of misleading information in the prospectus, due diligence is performed by the managing underwriter alone. Historically, this practice was not legally mandated, but had simply predated legal liability because of various efficiency considerations, such as the managing underwriter's economic risk, which obliged the managing underwriter to perform due diligence. Other underwriters do not perform due diligence themselves, but rather rely on the managing underwriter to do so. Thus, holding ordinary underwriters liable will not significantly change their incentive system or contribute to the efficiency of the due diligence process; in fact, their involvement therein may be counterproductive. However, the law does create a mechanism of overseeing the managing underwriter's hidden actions.<sup>117</sup>

Holding consortium members liable is also used to distribute damage more efficiently. Because the managing underwriter is a large institutional investor who is simultaneously involved in mul-

<i>Liability Regime</i>	<i>Issuing Firm's Insurance Cost</i>	<i>Leader's Insurance Cost</i>	<i>Added Return on Issue</i>	<i>Added Social Utility</i>	<i>Added Leader Profit</i>
Firm and executives only	4	0	5	$5-1 = 4$	$\frac{1}{2}$
Leader liability as well	3	2	10	$10-2-3 = 5$	$1-2 = -1$

In this example, when the managing underwriter is liable, the firm saves on the premium, the underwriters enjoy an increased income thanks to the improved share value as a consequence of insurance, and the underwriters bear additional policy costs. The managing underwriter buys insurance which is less expensive than the firm's. While the overall cost of the insurance premium rises somewhat, the price added to the share is substantial (due to managing underwriter liability), and increases from a return of 5 to a return of 10 on the issue (the share price rises from  $x+5$  to  $x+10$ ). Although the social utility of insurance increases significantly (from 1 to 5), the managing underwriter's profits drop (since it receives 10% of the issue profits but the cost of its own policy).

<sup>117</sup> The standard practice, following the imposition of underwriter liability, is for the managing underwriter to send comfort letters to the ordinary underwriters. As a condition for protection against liability for the existence of misleading information in the prospectus, the ordinary underwriters must show that the managing underwriter has complied with this standard practice.

multiple IPOs, and because the market is centralized, there is a risk (albeit low) that a financial collapse of one managing underwriter might severely damage the whole market.

5.1.2.4. *Damage distribution by the managing underwriter's deep pocket*

Holding the managing underwriter liable also solves the underinsurance problem that might be caused by a failure on the part of the company and its managers to obtain adequate insurance. If the policy is inapplicable for any reason, it is possible for the managing underwriter to carry the liability burden. Importantly, the managing underwriter is also a "deep pocket", so that holding it liable increases the investors' chances of being fully compensated for their damages.

5.1.2.5. *Insurance premium level*

Multiple factors result from managing underwriter liability that impair the efficiency of the damage distribution mechanism through the damage distribution and insurance system described herein. One such factor is the increase in issuing costs following increased underwriters' premiums. Holding the managing underwriter liable increases insurance expenses, and there is also an added premium to indemnify the managing underwriter.

I believe, however, that together with this potential increase in premium payments, there is also a chance to reduce them. As previously mentioned, the premium paid by the company to cover its executives may be reduced thanks to risk sharing with the managing underwriter and its insurance coverage. But even more significant is cost reduction created by the managing underwriter's incentives to monitor company executives and to avoid liability.

5.1.2.6. *The overinsurance problem and the advantage of using reinsurers*

Overinsurance results from overlapping and uncoordinated insurance systems. The main difficulty in this context is insuring the liability of the various parties liable for details in the IPO prospectus. Usually, there are two such policies: 1) the policy insuring the company's active executives and directors, and 2) the policy insuring the managing underwriter. In contrast, the liability of those who have created any expert portions is focused on the details in

those specific portions and not on the whole prospectus.<sup>118</sup> When insurance is needed to cover the existence of misleading information in the prospectus as a whole, the overlap between policies creates high costs. When the policies are of the same kind (that is, professional liability policies, which exist when the law holds all parties liable, including the managing underwriter), it is possible to achieve some savings by buying the two policies from the same insurer or by selling them to reinsurers.

### 5.1.3. *Are the investors the best distributors of IPO risk?*

#### 5.1.3.1. *Risk distribution in the insurance markets and the securitization trend.*

According to Banoff, in security issuances in an efficient market, the cost of due diligence required should underwriters be held liable outweighs its benefits.<sup>119</sup> In her opinion, liability provides additional insurance to the investors, which does not increase their welfare, except perhaps when issuing new securities. This occurs because investors diversify their portfolios, reducing the specific risk involved in their securities, including the risk that their underwriters would neglect to find misleading information in the IPO prospectus. This argument was offered by Romano in the context of IPOs.<sup>120</sup> The question remains whether the argument and its presentation are valid in general, and for IPOs in particular.<sup>121</sup>

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<sup>118</sup> For general discussion on the section 11 liability of experts undersigned on opinions attached to the prospectus see *supra* note 2. For a discussion of the limitations on the expert liability for their specific opinions, see SECURITIES REGULATION *supra* note 1, at 4256-57, note 146 and the references therein.

<sup>119</sup> Barbara Ann Banoff, *Regulatory Subsidies, Efficient Markets, and Shelf Registration: An Analysis of Rule 415*, 70 VA. L. REV. 135, 158-60 (1984) (analyzing due diligence in the issuing of securities).

<sup>120</sup> Roberta Romano, *Empowering Investors: A Market Approach to Securities Regulation*, 107 YALE L. J. 2359, 2368 (1998) (describing investor diversification).

<sup>121</sup> The assumption here is that the market is efficient enough to bring about a reduction in specific risk similar to its reduction in the secondary market, but not with the same degree of efficiency. In this context, "efficiency" means efficiency of the semi-strong version, which is relative and more difficult to achieve than in the secondary market. For empirical studies on the primary market's relative efficiency, see, for example, Michelle H. Yetman, *Accounting-Based Value Metrics and the Informational Efficiency of IPO Early Market Prices 19-26* (Working Paper, 2001), available at <http://www.ssrn.com/abstract=296686>.

A recent phenomenon is the expanding circle of the insured in liability insurance, especially in terms of professional liability products.<sup>122</sup> These policies are becoming increasingly specific. One of the recently observed tendencies is that of avoiding financial intermediaries, with a concomitant trend of securities development as substitutes for other instruments, known as securitization, so that these are used, among other things, as substitutes for insurance contracts.<sup>123</sup>

However, there are, as of yet, no financial instruments that can be used as permanent substitutes for issuing risk insurance in general, or for the insurance against misleading information in IPO prospectuses in particular. Jenkinson and Ljungqvist view the creation of securities, which play a role in the issuing mechanism, as a potential future development in the issuing markets.<sup>124</sup> They believe that the beginnings of this development can be seen both in academic studies and in practice. To illustrate their point, they describe the IPO of Shuttlesoft AG in Germany in 1999. There the investors were promised a refund of 50% of the issue price in case of insolvency within five years of the issuing date.<sup>125</sup> This commitment was guaranteed by a state-owned bank.

Doherty and Schlesinger investigated the parameters affecting efficient use of securities as a substitute for insurance contracts and suggested that the optimal distribution of risk is based on distinguishing between specific and systematic risks.<sup>126</sup> For instance, if these risk types could indeed be separated, the insured's efficient strategy would be to insure the first component (specific) with an ordinary insurance policy and the last component (systematic) using futures.<sup>127</sup>

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<sup>122</sup> For a description of the phenomenon, see Mark A. Hofmann, *Insurers are Trying Harder to Develop Specialized Professional Liability Products*, 30 BUS. INS. 13 (1996), and Neil A. Doherty & Harris Schlesinger, *Insurance Contracts and Securitization*, 69 J. RISK & INS. 45, 55-57 (2002).

<sup>123</sup> See Doherty & Schlesinger, *supra* note 122, at 45. For a description of the general trend of securitization, see, for example, THE NEW PALGRAVE DICTIONARY OF MONEY AND FINANCE, *supra* note 8, at 433-35.

<sup>124</sup> JENKINSON & LJUNGQVIST, *supra* note 54, at 204-06.

<sup>125</sup> *Id.*

<sup>126</sup> Doherty & Schlesinger, *supra* note 122, at 45-47.

<sup>127</sup> *Id.*

Insuring systematic losses may be impracticable in the insurance market since the scope of this risk is tantamount to an important portion of the whole market. Insurance through the stock markets has the advantage of economy of size, particularly while constituting a very small portion of the trade volume in capital markets.<sup>128</sup>

When the insured cannot separate the two risk types, it is possible to secure optimal insurance through the insurer. Doherty and Schlesinger demonstrated that in this case, optimal damage distribution may be achieved by pooling individuals' systematic risk components by shifting the risk to the insurance company and having the insurance company insure the systematic risk by using financial instruments in the capital markets.<sup>129</sup>

#### 5.1.3.2. Risk distribution in capital markets

The question of how risks are distributed in capital markets produced several different answers in financing theory literature. One model suggested was the capital asset pricing model ("CAPM").<sup>130</sup> Although heavily criticized, its basic insight that adding a security to the market portfolio facilitates the distribution of the new asset's specific risk but not that of the systematic risk, is generally accepted.<sup>131</sup>

According to this model, when dealing with a specific risk inherent in the new security, it will be better distributed by the investors. This kind of risk involves the difficulty of assessing the executives' management skills or reliability. However, the systematic risk inherent in the new security cannot be distributed by diversifying the investors' portfolio. This type of risk can be distributed

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<sup>128</sup> For a description of this advantage of substitute insurance by means of securities, see *id.* and J. David Cummins et al., *Can Insurers Pay for "The Big One?" Measuring the Capacity of the Insurance Market to Respond to Catastrophic Losses*, 26 J. BANKING & FIN. 557, 558 (2002) (describing potential losses to insurers).

<sup>129</sup> Doherty & Schlesinger, *supra* note 122, at 49–55.

<sup>130</sup> For a presentation of the model and its various developments, see, for example, ROBERT A. HAUGEN, *MODERN INVESTMENT THEORY* 201–35 (5<sup>th</sup> ed. 2001); WILLIAM F. SHARPE ET AL., *INVESTMENTS* 227–55 (6<sup>th</sup> ed. 1999).

<sup>131</sup> For empirical findings examining the validity of the model and its various developments, see, for example, HAUGEN, *supra* note 130, at 236–54, and Stephen C. Fan, *Have We Misinterpreted CAPM for 40 years? A Theoretical Proof* (Working Paper, 2004), available at <http://www.ssrn.com/abstract=592167>.

by holding legally liable the player best able to internalize and shift the risk. Such a risk is created when misleading information is included in the prospectus as a consequence of inefficient prospectus formulation or of an inefficient due diligence performance by the managing underwriter. The law deals with this systematic risk by imposing underwriter liability. The legal mechanism allows for continuous review of prospectus formats and due diligence methods. Moreover, holding the managing underwriter liable obliges it to carefully assess the risks entailed by liability from a strictly economic point of view and to see whether and how to distribute these risks.

It seems that the systematic risk cannot be insured by the investors even with the option of risk distribution through insurance. No single investor has the information needed for proper risk assessments. The company and its executives are also only partially informed. Only the managing underwriter can perform this task efficiently. Theoretically, the underwriter is able to choose to distribute the risk either through the stock market or through the insurance market. This article has suggested the potential benefits of the first option; however, such financial instruments do not yet exist.

Assuming the specific and systematic risks cannot be fully separated, and assuming it is indeed efficient to distribute specific risk through investors and systemic risks through the managing underwriter's liability insurance (including self-insurance), it is preferable to hold the managing underwriter, rather than the investors, legally liable. This ensures optimal risk distribution since the managing underwriter is best positioned to identify risks as either specific or systematic and to distribute them separately. The managing underwriter can also choose to insure the specific risk or contractually assign it to the firm. Even if the law limits the managing underwriter's ability to shift the risk back to the investors, risk distribution by the managing underwriter will still offer a substantial advantage (despite efficiency losses by both the investors and the managing underwriter, due to the twin specific risk distribution mechanisms), because systematic risk distribution is only possible if the managing underwriter is made liable. Therefore, it is reasonable to assume that only the managing underwriter would be able to insure all risks. In addition, there are various efficiency advantages in terms of the managing underwriter's economy of scale, the resolution of underinsurance problems, the high costs of



contractual risk distribution and insurance, and the benefits of employing an underwriter consortium.

In light of the discussion above, it is clear that imposing an additional cost of insurance against the specific risk is not unreasonable.

### *5.2. Distribution of Welfare Aspects*

As suggested in Section 4, it is true in the damage distribution and insurance context that improving efficiency can be expected to increase the managing underwriter's, company's, and executives' welfare.<sup>132</sup> More efficient risk distribution by assigning risk partially to the managing underwriter at lower costs, in addition to the other advantages of such a liability regime, will likely benefit the company and its executives. The greater certainty created by insuring against liability, in the event that misleading information is found in the prospectus, the relative efficiency of insurance by the managing underwriter, and the added insurance against systematic risks, will all be considered by investors as factors contributing to a given security's value. Moreover, the managing underwriter will receive a premium for performing its new legal role.

It is also reasonable to assume that if the managing underwriter's risk distribution and insurance mechanism is more efficient than a non-liability mechanism, it will improve the investors' chances to be fully indemnified for their damages through the insurance mechanism (including the managing underwriter's self-insurance). It will also increase their welfare (even though, as mentioned earlier, it is difficult to determine how the additional utility is divided by the various players). Ordinary investors benefit from risk distribution even more than their regular counterparts, simply because they are more in need of the managing underwriter's risk distribution services.<sup>133</sup>

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<sup>132</sup> For an investigation of insurance's effects on social welfare, see, for example, STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* 186–281 (1987).

<sup>133</sup> I assume that institutional investors are not as risk averse as ordinary investors, that their portfolios are more diversified, and that they have a lower cost of changing portfolio structure.

### 5.3. Combined Efficiency and Welfare Distribution Aspects

As previously mentioned, a law holding the managing underwriter liable is advantageous because the managing underwriter is the least expensive insurer, particularly in distributing systematic risks. It seems that, in reality, systematic and specific prospectus risks cannot be completely separated. It is, therefore, the managing underwriter alone who has the expertise, information, and economy of scale needed for efficient risk separation and distribution. Moreover, managing underwriter liability will facilitate the resolution of underinsurance and the high costs of damages. Furthermore, risk distribution by way of agreement will enable utilization of the managing underwriter's deep pockets, which, in turn, will maximize the advantages of employing an underwriter consortium.

As suggested in Section 4, a managing underwriter liability regime offers efficiency advantages in the damages distribution and insurance context, and it is reasonable to assume that the company, the managing underwriter, and the various types of investors all benefit from this added efficiency.<sup>134</sup>

Based on this analysis, it seems that holding the managing underwriter legally liable is an appropriate course of action.

## 6. THE INTERACTION BETWEEN THE DIRECTING BEHAVIOR AND THE DAMAGE DISTRIBUTION AND INSURANCE ARRANGEMENTS

The legal objectives of deterrence and damage distribution sometimes conflict. In the context of managing underwriter liability and damage distribution and insurance, if the specific and systemic risks cannot be completely separated (as seems to be the case), no such conflict emerges. I believe that holding the managing underwriter liable for both risk types is preferable in order to optimally direct its behavior. One of the justifications for this system is the lack of a mechanism separating specific and systemic risk.

Another important aspect of the effect of damage distribution through managing underwriter insurance has to do with the broad issue of directing the managing underwriter's behavior. Adding

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<sup>134</sup> See discussion *supra* Section 5.2.

an insurance company to cover its professional liability, and another to issue the policy to the company so that it may meet its obligation to indemnify the managing underwriter, actually adds an agency to oversee the latter's conduct. These insurance companies are expected to be large organizations, specializing in IPO due diligence, and their actions can play a significant role in directing managing underwriter behavior. They are able to develop expertise in the area of assessing the appropriateness because of their size and the fact that they are able to compare the practices of the same managing underwriter or of several managing underwriters in multiple IPOs simultaneously. This is, in fact, the most effective oversight since it is performed during the IPO process. This ability allows the insurance companies to create their own databases and make use of professional risk management, which improves the due diligence performance mechanism.

Even if the law constrains the managing underwriter in assigning the risk to the investors, there are still considerable efficiency advantages in using the managing underwriter to diversify risks. Among other reasons, if the managing underwriter is held liable, the systematic risk is diversified. In such a case, in which the law constrains risk assignment, the interaction between the means of achieving the various objectives of tort law will change. Mainly, insurer oversight of the managing underwriter will increase, while the potential efficiency losses due to decreased deterrence incentives (if such losses actually exist) will decrease.

## 7. CONCLUSION

The conclusions of both models presented in this article and the various arguments raised have referred to various, hitherto unexamined, justifications for managing underwriter liability within the torts economic analysis framework. The arguments raised herein have two primary characteristics. First, they are derived from the assumption that it is better for the law to support a market mechanism and to intervene only to a degree necessary for refinement without substituting market mechanisms. This applies equally to the reliance on managing underwriter reputation, in view of its various roles in the models presented herein, and also to the reliance on the bookbuilding mechanism, which is the major security issuing mechanism in the United States and is receiving growing global popularity. Second, the arguments encourage the notion that the managing underwriter acts strategically, within a complex

set of options, in order to maximize its utility.

In sum, the conclusion derived from the various considerations examined in this article is that holding the managing underwriter liable in various IPO contexts will maximize economic welfare.