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The Categorical Imperative: Securities Analysts and the Illegitimacy Discount¹

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This article explores the social processes that produce penalties for illegitimate role performance. It is proposed that such penalties are illuminated in markets that are significantly mediated by product critics. In particular, it is argued that failure to gain reviews by the critics who specialize in a product's intended category reflects confusion over the product's identity and that such illegitimacy should depress demand. The validity of this assertion is tested among public American firms in the stock market over the years 1985–94. It is shown that the stock price of an American firm was discounted to the extent that the firm was not covered by the securities analysts who specialized in its industries. This analysis holds implications for the study of role conformity in both market and nonmarket settings and adds sociological insight to the recent “behavioral” critique of the prevailing “efficient-market” perspective on capital markets.

Consider how an impostor is exposed. (White 1970, p. 5)

INTRODUCTION

A circular dynamic governs much of social life. Actors interpret one another's actions by comparing them with accepted role performances. Similarly, social objects are evaluated via legitimate categories. To confer meaning and give order, such systems of classification must have integrity. Thus, new roles and types emerge with difficulty as actors face pressure to

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demonstrate that they and the objects they produce conform to recognized types. In general, actors accede to this categorical imperative. Existing structures are thereby reproduced.

These ideas are familiar from observations of premodern cultures (e.g., Durkheim 1915; Douglas 1966; Berger and Luckman 1966) and are responsible for the image of stasis that we frequently ascribe to such societies. It is thus interesting to note that the idea that actors are constrained by accepted models represents an important but underrecognized thread that runs through much thinking on modern organizations and markets.

This insight is clearly at the heart of the neoinstitutional perspective on organizations (Meyer and Rowan 1977; DiMaggio and Powell 1983). The answer to the question of "Why there is such . . . homogeneity to organizational forms and practices?" (DiMaggio and Powell 1983, p. 148) is that organizations that do not meet institutionalized expectations for how they should look and act are viewed as illegitimate. The threat of being denied legitimate standing in turn induces organizations to adopt accepted procedures. Organizational variety decreases accordingly.

While generally not described in such language, this process forms a central feature of market behavior as well. In particular, White's image of production markets as self-reproducing role structures (White 1981*a*, 1981*b*, 1988; Leifer 1985; Leifer and White 1987) hinges on producers' continuing conformity with recognized "schedules" of cost-quality niches. Attempts to deviate from a niche invite sharp discipline as they threaten the acts of cross-product comparison that sustain the market. The quite different intellectual tradition of marketing theory focuses on similar issues using the framework of product categories. This literature suggests that a seller must offer products that conform to accepted types lest such offerings be screened out of consideration as incomparable to others (e.g., Shocker et al. 1991; Urban, Weinberg, and Hauser 1996). Thus, in interorganizational relations, and in markets more generally, unclassifiable actors and objects suffer social penalties because they threaten reigning interpretive frameworks.

While the constraining impact of accepted role structures on individual behavior seems quite evident, two important deficiencies in previous research limit our understanding of the processes involved. First, rather than demonstrate that defying classification invites penalties, scholars tend to point to the homogeneity of practice and take this as evidence that defection is punished. Researchers have described processes of conformity with legitimate models in a wide variety of market (e.g., Leifer and White 1987; Davis 1991; Burt 1992, chap. 6; Haunschild 1993, 1994; Han 1994; Greve 1995, 1996) and nonmarket (e.g., Tolbert and Zucker 1983; Galaskiewicz and Burt 1991; Edelman 1992; Dobbin et al. 1993; Sutton

et al. 1994) settings. However, evidence of negative consequences caused by illegitimacy is scant.²

A related weakness in existing theory concerns an inattention to the audience responsible for conferring legitimacy on actors and objects. The expectations of critical interactants and observers discipline actors to play accepted roles. However, such expectations are typically thought to be either inaccessible or irrelevant. For example, neoinstitutionalists study the adoption of legitimate models but rarely examine the actors who hold such models. Similarly, consumer expectations in mass markets are generally thought to be unobservable. Thus, White stresses that the central dynamic in production markets consists of mutual monitoring among sellers rather than reaction to an amorphous mass of buyers (e.g., White 1981*b*). Feedback from the audience is indeed indirect in many contexts; however, as audience expectations are at least partially responsible for illegitimacy costs, they must be included in our understanding of how such penalties emerge.

The present analysis addresses these weaknesses by examining a “mediated market,” one in which third parties act as critics as they shape market patterns through product recommendations and endorsements. In industries where they exert significant influence, such critics, who may not even take part in the flow of exchange, replace consumers as the primary audience that determines the fate of products (Hirsch 1972, 1975). Indeed, relative to markets dominated by anonymous and fleeting transactions with consumers, durable and concrete relations with critics increase seller sensitivity to audience response. Further, the relative visibility and stability of seller-critic relations make mediated markets particularly useful settings for studying the social processes that underlie illegitimacy costs.

In particular, two observations about such markets motivate the present analysis. First, encoded in a critical review is an acknowledgment on the part of the reviewer that the product is legitimate. Second, critics often specialize by product category. In the context of such a division of labor, a critical review confers a very specific kind of legitimacy. It signals membership in an accepted product category. Thus, in the aggregate, a product’s position in the network of reviews linking critics to the products they critique indicates its degree of legitimacy. For a product that is pro-

² An exception is Hannan and Carroll’s (1992) theory of density dependence. However, measurement of legitimacy in such studies is indirect and aggregated such that penalties suffered by individual firms are unobservable (Zucker 1989). Other notable studies have shown harmful effects of nonconformity (e.g., Miller and Chen 1996) and failure to gain accreditation by government agencies (Singh, Tucker, and House 1986; Baum and Oliver 1991, 1992). However, such research cannot distinguish between the impact of the legitimacy and the efficiency of the organizations in question.

moted within a particular category, the degree to which it fails in attracting reviews from relevant critics indicates its susceptibility to illegitimacy costs. When the pattern of reviews suggests a mismatch between a seller's view of its offering and the identity attributed to it by critics, demand for the product should be weak. All other factors being equal, such a product should command a lower price.

This article presents a general approach to understanding illegitimacy costs and proposes that mediated markets afford a useful context in which to study such penalties. In addition, the present research aims to extend sociological theories of economic markets by testing for illegitimacy costs in the stock market. The stock market displays the described features of mediated markets in the sense that firms correspond to products, industries to product categories, and securities analysts to product critics. Based on the theoretical framework sketched above, I claim that failure to attract coverage from the analysts who specialize in a firm's industries causes the firm's equity to trade at a discount. This argument runs counter to the predominant scholarly approach to financial markets, which rejects the possibility of such discrepancies between price and value. By contrast, I contend that the considerable uncertainty inherent in valuation, which is compounded by the social nature of investing, gives special urgency to the need for legitimacy. Thus, the present analysis constitutes a joint test of two claims: that illegitimacy is costly and that financial markets are sensitive to the pressures for legitimate role performance characteristic of other market and nonmarket settings.

THE CANDIDATE-AUDIENCE INTERFACE

Consider a very simple social situation: an interface between two classes of actors (cf. White 1981*b*). The first set of actors, whom I term "candidates," seeks entry into relations with members of the second class, whom I call "the audience." Candidates present the audience with different "offers" in an attempt to win their favor. There is a fundamental asymmetry in the interface. Candidates seek relations with audience members, and the latter select those to whom they will grant these privileges.

Figure 1 explicates the two-stage process by which candidates compete to form relations with the audience members. The latter seek to assess the relative worth of the offers presented by the former. However, evaluation requires calibration of offers against one another. Offers that do not exhibit certain common characteristics may not be readily compared to others and are thus difficult to evaluate. Such offers stand outside the field of comparison and are ignored as so many oranges in a competition among apples. It is this inattention that constitutes the cost of illegitimacy. Fur-

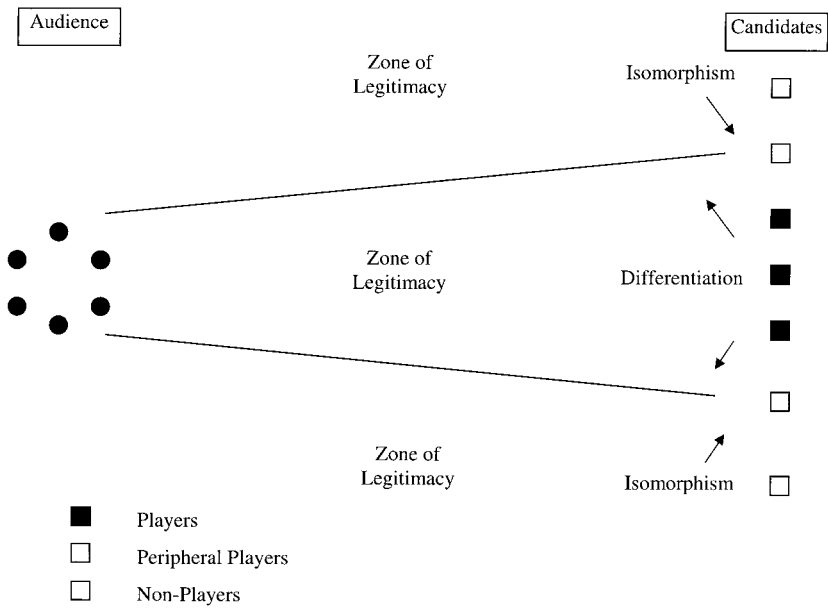


FIG. 1.—The candidate-audience interface

ther, the prospect of such illegitimacy leads candidates to demonstrate their comparability with standard offerings. The aggregate result is that all players share certain basic characteristics.

The second stage of competition is more familiar. Audiences observe the offers made by legitimate players and choose the one that seems most attractive. Players, in turn, vie with one another to promote their offers to audiences. Each player tries to differentiate its offer from those advanced by its peers and establish its relative desirability. Thus, differentiation works hand in hand with isomorphism (cf. Porac and Thomas 1990; Baum and Haveman 1997). Gaining the favor of an audience requires conformity with the audience's minimal criteria for what offers should look like and differentiation from all other legitimate offers.

Note that two assumptions underlie this discussion. First, candidates depend on positive response from the audience. To the extent that candidates are insensitive to such reaction, illegitimacy is irrelevant and there should be no tendency toward conformity. Indeed, when the tables are turned, that is, when audience members depend on a candidate, it may in fact be advantageous to present an incoherent, rather than a coherent identity (Padgett and Ansell 1993). Second, while conforming to audience expectations is generally wise, the greatest returns likely flow to those

who innovate by creating new categories and corresponding interfaces (Schumpeter [1934] 1983). Nevertheless, the vast majority of innovations fail in part because of the difficulties they face in achieving legitimacy (Stinchcombe 1965; Hannan and Carroll 1992).

LINKS TO EXISTING THEORY

The proposed framework bridges seemingly disparate bodies of theory. In particular, the first stage of competition reflects the need for legitimacy described by neoinstitutionalists (Meyer and Rowan 1977; DiMaggio and Powell 1983) and the sharp discipline faced by niche defectors in White's market model (see esp. White 1981*b*, 524 n. 4). In both theories, conformity at the microlevel ensures coherence at the macrolevel. Further, the present perspective highlights two aspects of these theories that are generally left implicit: the presence of an audience confronting focal actors and the competition among such actors for the favor of this audience. Without an audience, legitimacy loses its value and, indeed, its meaning. Similarly, when the audience does not select among alternative candidates, this eliminates competitive tensions among focal actors, and any pressure for conformity dissolves.

The proposed perspective suggests connections between sociological models of organizations and markets and the models of consumer decision making and market structure that prevail in the marketing literature. Drawing on cognitive psychological models of decision making, marketing theorists see consumers as selecting products in two phases (see Shocker et al. 1991; Urban et al. 1996 for review). First, they eliminate all options that do not meet minimal criteria of acceptability (cf. Payne 1976). Next, consumers compare among members of their "consideration sets" and select a final choice. The implications for sellers are clear. "First, the (product) must be positioned so that consumers do not eliminate it through outright categorization. Second, it must have the attributes that lead to its being . . . preferred, given that it is not eliminated" in the first stage (Urban et al. 1996, p. 57). That is, sellers must engage in isomorphism so as to gain membership in a recognized product category and differentiation from other members in that category.

Note that consideration sets impose significant constraints on sellers because, rather than originating in individual tastes, they are generally extracted from publicly discussed product categories (Urban et al. 1993; Bronnenberg and Vanhonacker 1996). Indeed, while the proposed framework bears surface resemblance to economic models that portray actors as laboring to reduce the cost of gathering information (e.g., Stigler 1961; Williamson 1975; Raff and Temin 1991; Aghion and Tirole 1995), it differs from such models in two critical respects (but see Zwiebel 1995). First,

deviation from idealized rational choice is not simply a matter of compensating for a lack of full information but the enactment of two distinct stages of choice—categorization and comparison. Consumers first screen out illegitimate options, and only then do they perform something akin to rational choice among legitimate alternatives. Second, the screen is a *social screen*, not designed by the actor but external to her, given in the categories that comprise market structure. Products that deviate from accepted categories are penalized not simply because they raise information costs for consumers but because the social boundaries that divide product classes limit the consideration of such offerings.

Thus, the proposed framework understands illegitimacy costs and tendencies toward role conformity as twin aspects of a general situation of social confusion. Audience members employ categories to interpret the offers set before them. The threat of illegitimacy consists in the possibility that a candidate will not be readily classified and will therefore be ignored as unintelligible. Conformity ensues. Indeed, the categorical imperative is operative wherever there are meaningful categories. Whether candidate-audience interaction consists of suitors vying for potential mates, parties appealing to voters, or firms seeking investors, offerings that do not fit existing categories are pressured to conform.

THE REVIEW NETWORK

A focus on mediated markets helps illuminate such pressures. As described above, a weakness of previous research on organizational and product isomorphism lies in its failure to account for the audience whose expectations drive such conformity. Whereas interested observers are thought to hold certain models of form and practice and to discipline those who do not adhere to them, these audiences are missing from analysis and are largely ignored in theory. In particular, consumers are generally considered an unobservable mass whose role in product classification is effectively irrelevant (e.g., Porac and Thomas 1990; Reger and Huff 1993; Lant and Baum 1995). Indeed, some scholars make the irrelevance of consumers a central feature of analysis. “Rather than dream about buyers,” writes White, “firms watch their competitors” (White 1988, p. 238). Similarly, Burt argues that social contagion consists primarily of mutual monitoring among structurally equivalent rivals rather than exposure to similar sets of third parties (Burt 1987). In sum, existing theory supposes that audience influence on isomorphism is either negligible or unobservable.

However, such a perspective is less tenable where buyer-seller transactions are significantly mediated by a visible and enduring public of critics who act as the primary audience for product offerings. In such markets, the vast array of consumer reactions to a product becomes concentrated

in a relatively small set of reviews, whose great influence commands seller attention. Rather than projecting broad appeals to consumers, sellers in such markets promote their wares directly to critics and employ a wide variety of tactics to co-opt their power (Hirsch 1975; cf. Porter 1976, chap. 2; Shrum 1996).

Indeed, the behavior of critics is visible not only to sellers but to scholars as well. Critical reviews form a two-mode network (Wasserman and Faust 1994, pp. 291–343) in which critics send reviews to product offerings. This network structure has important implications where critics specialize by product type. In the aggregate, analysis of the network may reveal the market's product categories and the degree of proximity among them. Further, the egocentric network of reviews to any individual product registers its degree of legitimacy as a member of a category. That is, the decision by a critic to review a product implies a judgment regarding how that offering should be classified. The egocentric network of reviews that a product attracts—and does not attract—indicates the general perception of its market identity.

The analysis of such egocentric networks provides a basis for assessing the harm suffered by illegitimate offerings. When promoting a product, sellers generally appeal to a given product category. A product that does not gain legitimacy via reviews by the critics who specialize in its intended category should face greater difficulty generating demand. As a general proposition, I expect that:

PROPOSITION.—Ceteris paribus, a product experiences weaker demand to the extent that it does not attract reviews from the critics who specialize in the category in which it is marketed. The crux of the challenge for sellers lies in a tension between self-concept and social identity. As with any social role, occupancy depends less on the actor's beliefs about his own identity than on a relevant audience's attributions (Baker and Faulkner 1991). Sellers may become players only when recognized as such by critics. Thus, sellers must gain acceptance for their view of their product's identity. Failure to gain recognition as a player lowers a product's chance of success.

THEORETICAL SCOPE

It is important to recognize that the stated proposition should be operative only in markets with two basic characteristics. First, the market must possess certain structural features: a recognized set of product categories and an influential class of critics who specialize by category. While certain markets—for example, pharmaceuticals or academic publishing—may display these characteristics, others—for example, the paper clip industry—may not.

Second, the present perspective applies only to markets where consumers face significant difficulty evaluating products. Indeed, this feature relates to the first in that valuation problems are a necessary—though insufficient—condition for the emergence of the described structures.³ If the worth of a product is clear, questions of classification, the behavior of critics (cf. Hirsch 1972; Biglaiser 1993), and the nature of marketing activity should all be irrelevant (cf. Nelson 1974). Such ambiguity is greatest in the case of “social” goods, those for which the value to a given consumer depends heavily on their worth to other consumers. Products that are consumed largely for their role as social markers are the most familiar examples (Veblen [1899] 1953; Douglas and Isherwood [1979] 1996). Other markets for social goods include real estate or education, where the benefit derived depends on others’ consumption of similar resources (cf. Hirsch 1976), or technology, where the need for compatibility generates “network externalities” (e.g., Farrell and Saloner 1985). Critics play a crucial role in such markets by providing guides to current and future tastes. Indeed, the preliminary stage of critical evaluation involves reaching a consensus on proper product classification (DiMaggio 1982; Smith 1989, pp. 28–31).

Thus, the stated proposition should be valid only where audiences face significant valuation challenges. Indeed, the structural features relevant to the present perspective—a well-defined product category system and an influential set of critics who specialize by product category—should not emerge where value is clear. Therefore, an analysis of the proposition posed above—that products suffer when they are not certified by critics as members of their intended product categories—serves both to test its general validity and to indicate the nature of the market under study. If products are indeed penalized in the described fashion, then the market must be one in which value is ambiguous.

APPLICATION: THE STOCK MARKET

In light of these scope conditions, the contemporary American corporate equity or stock market recommends itself as a compelling context in which to apply the present perspective. First, this market possesses the structural characteristics relevant to the stated hypothesis. In particular, industries are the product categories by which corporate equity shares are classified and securities analysts, who divide their labor by industry, are the relevant product critics. Second, the applicability of the proposed theory to a financial market has important implications for our understanding of how

³ Other important conditions are that purchases be relatively large and infrequent and that the market be of significant scale.

such markets work. Evidence that analyst certification of a firm's membership in an industry influences its value would imply that value is unclear in financial markets, a claim that challenges prevailing academic wisdom regarding the nature of financial valuation.

Structural Features

The product categories of the stock market are quite clear. While there are many ways to classify equities (e.g., large vs. small capitalization; domestic vs. foreign), the principal categorization groups firms by industry. This classificatory scheme runs through public discussion of the stock market and is evident in newspaper tables, academic research (King 1963; Boudoukh, Richardson, and Whitelaw 1994; Firth 1996), and corporate self-presentations (e.g., Pfizer 1994, n. 20; McDonnell Douglas 1994, n. 14). Indeed, the principal standards of value, ratios of price to performance variables, are generally treated as industry-specific measures (e.g., Waxler 1997; King 1963; see below).

Further, as represented by the "sell-side" securities analysts who work for investment houses and research firms, corporate securities markets possess a well-established field of product critics.⁴ Certain analysts follow general trends in financial markets and the economy. Most analysts, however, track the performance of specific sets of firms and produce two principal products: forecasts of these firms' future earnings and advice that clients buy, sell, or hold their shares in the stocks of these firms (Kleinfeld 1985; Balog 1991). Indeed, while securities analysts are by no means the only sources of influence on share prices, such public and semipublic pronouncements on the value of firms distinguish analysts as critics of corporate equity in a manner akin to critics in other industries.

The analyst's unique status as market critic may be seen in three principal ways. First, along with large institutional investors, analysts represent the principal target for investor relations campaigns, whereby firms attempt actively to shape investor opinion (Useem 1993, 1996). Thus, Rao and Sivakumar (1999) demonstrate that increased attention from securities analysts brings about an intensification of such marketing activity. Further evidence that analysts represent the front line for investor relations efforts may be seen in the frequent visits by managers to analyst associations (Francis, Philbrick, and Hanna 1996) and in the conference calls and meetings with analysts in which significant corporate announcements are generally made. In such settings, the generally diffuse and anon-

⁴ Such analysts are also known as stock analysts, equity analysts, or equity researchers. See Burk (1988, chap. 2) and Zuckerman (1997, chap. 4) for discussions of the history of this quasi profession.

ymous relationship between a corporation and its investors becomes a more concrete and enduring affair (Useem 1996, pp. 72–77). Such sessions reflect the belief among managers—often borne out (Francis et al. 1996)—that actively promoting a firm to analysts is critical in ensuring that the market interprets corporate actions in a favorable manner.

Second, analysts serve as “surrogate investors” (cf. Hirsch 1972) in that their recommendations and forecasts significantly affect investor appetite for a firm’s shares.⁵ Indeed, while analysts often disagree amongst themselves on a firm’s prospects (Kandel and Pearson 1995), certain currents of opinion, especially when voiced by prominent analysts, significantly influence prices (e.g., Stickel 1985, 1992; Womack 1996). Analysts’ earnings forecasts are perhaps even more consequential than their stock picks. The primary question posed when a firm releases its quarterly earnings is whether it met analyst projections (see e.g., Marcial 1995; Blanton 1996). Consequently, a major focus of investor relations activity is the management of analyst expectations, so that the firm does not suffer the consequences of “negative earnings surprises” (e.g., Ip 1997; Lowenstein 1997).

Finally, securities analysts’ industry-based division of labor distinguishes analysts from other influential actors in financial markets. Just as physicians serve as gatekeepers for the drugs designed to treat their specialties, analysts tend to specialize by industry (see e.g., *Nelson’s Directory of Investment Research* 1998). Thus, in addition to indicating position in the economy, industry boundaries reflect divisions among stock market product categories as well as the professional specialties of securities analysts. Divisions among industry specialties are reinforced by public rankings, which evaluate analysts within industries. (See, e.g., “All-Star Analysts 1997 Survey,” *Wall Street Journal*, June 19, 1997, sec. R, p. 1, col. 1; and “25th All-American Research Team,” *Institutional Investor*, November 1996, p. 121.) Analysts compete intensely for position in such rankings both for intraprofessional status and for the increases in compensation granted to analysts of high rank (Eccles and Crane 1988, pp. 152–53). In sum, analysts act as stock market critics, and the analysts who specialize in a particular industry represent the principal critics for the stock issued by firms in that industry.

⁵ Like most critics, analysts are often charged with softening their views because of their dependence on corporate managers for access to information and their desire not to damage the house’s investment banking relationships (Hayward and Boeker 1998). Nevertheless, in their bid to satisfy their “buy-side” clients, analysts engage in an array of rhetorical subtleties to indicate more or less positive views on a firm and, in some instances, voice explicitly negative opinions (e.g., Lyons 1969).

Valuation in Financial Markets

As argued above, the structural characteristics associated with the corporate equity market should prevail only where investors face significant valuation difficulties. In particular, such structures are especially likely to emerge in markets for social goods—that is, where desire for a product depends on others' demand for the same good.

Note, however, that the dominant academic perspective on capital markets, “efficient-markets” theory, views the value of financial assets to be quite certain.⁶ According to the most prominent form of this position, a financial asset's price incorporates all past and future public information and is therefore the best estimate of its value.⁷ In particular, a price represents the future stream of dividends that will flow from a share of stock adjusted by discounts for time (dividends received far into the future are worth less) and risk (high-risk investments must yield higher return since investors must be compensated for taking on that risk).⁸ Future events are thought to generate current prices through the practice of what may be called “value arbitrage,” profiting by exploiting the discrepancy between an asset's price and its true value. Efficient-market theorists conjecture that, while many investors are poorly informed or ill-equipped to interpret the information at their disposal, the great rewards available to those who collect and correctly interpret present clues to future events guarantee that certain investors will undertake such efforts and succeed at them. These investors will value assets correctly and earn a profit by buying them when they are undervalued and selling them when they are overvalued. Moreover, the success of such “smart-money” investors should attract imitators, and the process should continue until the gap

⁶ Following Knight (1921), uncertainty should here be distinguished from risk—the assignment of known probabilities to outcomes. Note as well the interplay between uncertainty and ambiguity in the current context. March (1994, pp. 178–79) defines ambiguity as confusion over classification while uncertainty refers to the opacity of future events. The two issues become intertwined in the present context where classification is the first step in anticipating financial returns.

⁷ This represents the “semi-strong” version of the efficient-markets hypothesis (see Fama 1976). The “weak” version states that prices incorporate only past public information, and the “strong” version states that prices include all public information as well as all private information.

⁸ Note that dividends are considered to be theoretical—those earnings that a firm *could* disperse—rather than actual dividends. Indeed, given the taxation on dividends, investors are thought to prefer to receive yield in the form of capital gains—that is, the firm should use profits to buy back its own shares, lowering their supply and thereby raising their price (Miller and Modigliani 1961). The fact that investors have historically placed higher value on shares with greater dividend yield (Baskin and Miranti 1997) and continue to do so in contemporary markets (Shefrin and Statman [1984] 1993) challenges this aspect of efficient-markets theory.

between price and value is eliminated. Indeed, the constant search for such price-value discrepancies ensures that such gaps are competed out of existence (Friedman 1953; Modigliani and Miller 1958; Fama 1965*a*, 1965*b*; Samuelson 1965).

Thus, efficient-markets theory portrays financial products as unaffected by the uncertainty characteristic of the goods to which the present argument should apply. Indeed, this perspective predicts the disappearance of securities analysts (e.g., Fama 1965*b*) and the failure of managerial attempts to influence the value of their firms (e.g., Modigliani and Miller 1958; Miller and Modigliani 1961).⁹ That is, the stock market should not display the structures typical of markets in which value is unclear. Indeed, an implication of this perspective is that the current thesis is inapplicable to financial markets. As price is the best estimate of value in such markets, success in gaining acceptance as a member of a financial market category should have no impact on its price.

However, recent advances in finance theory suggest a more limited sense of efficiency. Two developments are particularly relevant to present concerns. First, a stream of research known as “behavioral finance” has documented the existence of “anomalies” in which stock prices have been shown to follow predictable patterns that should theoretically be arbitrated away (see Thaler [1993] for review). In particular, several researchers have shown that prices reflect certain cognitive biases such as short-term underreaction and long-term overreaction to information (see e.g., DeBondt and Thaler 1990; Jegadeesh and Titman 1993). Second, important limitations to arbitrage are now widely accepted. Empirically, such limits have been suggested by the failure of risk-based explanations of the excess returns associated with certain firm characteristics (see e.g., Fama and French 1992, 1996). Theoretically, several scholars have pointed out that, even if they are able to discern the correct price, arbitrageurs are often unable to bear the uncertainty inherent in deviating from prevailing investor opinion and not knowing how soon it will be “corrected” (De

⁹ Jensen and Meckling (1976, pp. 354–55) explain the anomalous existence of securities analysts by arguing that their direct monitoring of managers helps reduce the agency costs inherent in public corporations. While this explanation is not inconsistent with the present perspective, it ignores the analysts’ provision of investment advice, which, though seemingly adding nothing to public information, has been shown to predict stock prices (e.g., Stickel 1985, 1992; Womack 1996). Furthermore, note that certain analysts perform no monitoring function whatsoever. In particular, the continued presence of “chartists” and technical analysts, who predict future prices from past price movements and market conditions, stands as a glaring challenge even to the “weak” version of efficient-markets theory, which contends that prices incorporate all information about past price movements and that price trends are thus a “random walk” (Bachelier [1900] 1964; Cowles 1933; Working 1934; Kendall 1953; Osborne 1959; Roberts 1959).

Long et al. [1990] 1993; Shleifer and Vishny 1997; cf. Keynes [1936] 1960, p. 157). Together, this work suggests that markets are largely efficient but that such efficiency is limited by the existence of certain cognitive conditions coupled with the inability of arbitrageurs to close the gaps between price and value that such conditions produce.

The limitations on market efficiency run deeper still. In particular, note that underlying the hypothesis of efficient markets is a selection process whereby correct methods of valuation outperform and thereby drive out incorrect ones. This assumes a closed system whereby investors repeatedly encounter the same or highly similar problems of valuation and can thereby adjudicate among competing techniques by observing their relative performance (cf. Winter 1986; Spotton 1997). However, this assumption appears suspect when we consider the fact that the economy continuously undergoes a vast amount of change along a wide variety of dimensions—for example, the introduction of new products, the proliferation of new competitive strategies, or the heightening of foreign competition. That is, financial valuation takes place not in a closed system but in one that sustains repeated exogenous shocks that resist easy interpretation. Investors must repeatedly manage the uncertainty generated by events that defy the categories of existing models (cf. Baker 1984; Podolny 1993, 1994; Haunschild 1994). Indeed, the very question of whether a new era or “paradigm” has been reached is a perennial issue in the financial community (e.g., Fisher 1996, p. 196; Henry 1997), a question about which every investor must theorize.

Further, such uncertainty is exacerbated by the fact that, like other social products, the value of an asset to a given investor depends to a great extent on how others view that asset. In particular, to the extent that an investor is sensitive to capital gains and losses rather than yield, she bases her purchases and sales at least implicitly on her belief that other investors will follow suit (Keynes 1960). As a result, financial market participants must closely monitor changes in prevailing theories of valuation regardless of their own views (Shiller [1984] 1993, 1990). Indeed, as professional investors are typically evaluated by their short-term relative performance, they may be especially responsive to one another’s beliefs (Keynes 1960; Scharfstein and Stein 1990; Friedman [1984] 1993).

These considerations do not suggest that markets are inefficient in the sense that available information is not incorporated in prices. Rather, the upshot of recent advances in finance research and the sociological approach advanced here is that access to information is insufficient for price to equal its theoretical value. Regardless of its availability, information must be decoded. However, the various cognitive limits on information processing as well as the inherent unpredictability of the economic future hinder interpretative projects. That such interpretation is a social enter-

prise, carried out with an eye to how others will come to view the same information, complicates matters further. Finally, that arbitrageurs face these and additional limitations suggests that their participation does not ensure market efficiency in the classical sense.

Indeed, as argued above, it is telling that the stock market possesses the structural trappings of markets in which value is unclear. In particular, a successful application of the proposition posed above to the corporate equities market would validate the view that financial-market efficiency is limited by the uncertainty—and, in particular, the social uncertainty—that inheres in efforts at valuation.

Application of the Proposition

Thus, the application of the stated proposition to the stock market is straightforward. In particular, a firm's position in the network of analyst coverage establishes its market identity. When this identity fails to match the firm's self-definition, the firm's stock performance should be impaired. In particular, define "coverage mismatch" as obtaining to the extent that a firm that does business in industry i is not covered by the analysts who specialize in i . Such a condition indicates that the firm has failed in its efforts to manage its market identity. In particular, its claim that it merits comparison with the full-fledged members of i has been rejected. Such illegitimacy increases investor reluctance to purchase the firm's shares. Thus, we may say the following:

HYPOTHESIS.—Ceteris paribus, the greater the coverage mismatch suffered by a firm, the lower its stock price.

DATA

I use three data sources: *Standard & Poors Compustat Industrial Annual* and *Industry Segment* files, *Zacks Historical Database*, and the *Center for the Study of Security Prices (CRSP)* database. Each of these data sets covers virtually every public corporation listed on American stock exchanges, including firms that ceased existence during or after this period, and may be linked to one another through common identifying variables. *Compustat* data include a large amount of financial information on publicly traded companies compiled primarily from quarterly and annual reports filed with the Securities and Exchange Commission (SEC). The *Industrial Annual* data set covers firm-level information, while the *Industry Segment* files include data on key variables for up to 10 industry segments or aggregated business lines (see, e.g., Davis, Dickmann, and Tinsley 1994). The *CRSP* database is an archive of daily stock market prices.

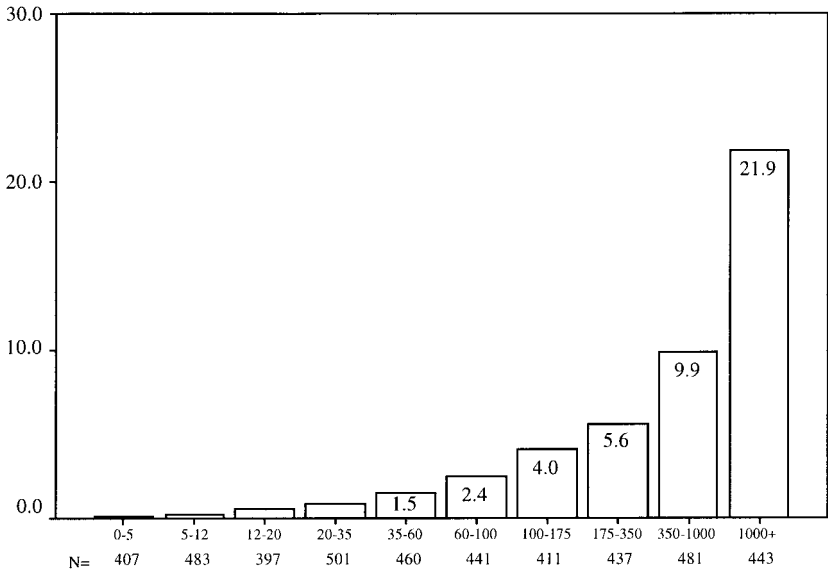
Finally, the *Zacks* data consist of dated earnings forecasts made by securities analysts. As the last database is less familiar, I describe it in detail.

Since the 1970s, several firms including *Zacks* have been collecting analysts' forecasts of corporate earnings. These data are useful for present purposes because every published earnings forecast registers a relationship between an analyst and a firm. Thus, ignoring the content of these forecasts and merely documenting their existence, one can trace the network of reviews between products and critics in the stock market. In particular, comparing the nature of coverage obtained by a firm and its industrial participation allows for the measurement of a firm's degree of mismatch with its stock market identity.

Zacks data do not contain the full set of earnings estimates made by sell-side analysts. However, there are strong reasons to consider these data as "missing at random" (Little and Rubin 1987) in that the pattern of missing data is unrelated to firm characteristics. First, as they are used in rankings for which analysts and their employers compete intensely, brokerage firms are highly motivated to publicize these forecasts. Second, as these forecasts are published by brokerage houses rather than the corporations being analyzed, there seems to be no basis for concern that the firms influence the pattern of missing data. Largely as a result of these considerations, financial economists and accounting researchers tend to treat these data as if the published forecasts reflect the complete range of information available to market participants at a particular point in time (see Givoly and Lakonishok 1984; Schipper 1991).

Furthermore, these data are largely complete in terms of the most prominent analysts, those who constitute the most significant element of the audience for corporate behavior. Of the 361 analysts who were ranked in 1985 by *Institutional Investor* as either first, second, third, or a runner-up in their coverage of particular industries, 292 or 81% are included among the 1,803 analysts whose forecasts were included in the *Zacks* data for that year. Further, 56 of the 69 missing analysts work for two large brokerage firms, each of which had a policy of not publishing their analysts' forecasts. Excluding analysts who work for these firms, forecasts made by almost 98% of these high-ranking analysts appear in the 1985 data.

Finally, the level of coverage in the *Zacks* data follows expected patterns. In particular, the number of analysts that follow a firm is highly correlated with its size, as indicated in figure 2 (cf. Bhushan 1989). In addition, analyst specialization by industry is evident in the *Zacks* data, as illustrated by figure 3. This graph shows the standard deviation above and below the mean proportion of firms covered by an analyst for the top



Market Value

FIG. 2.—Mean analyst coverage by market value, 1985

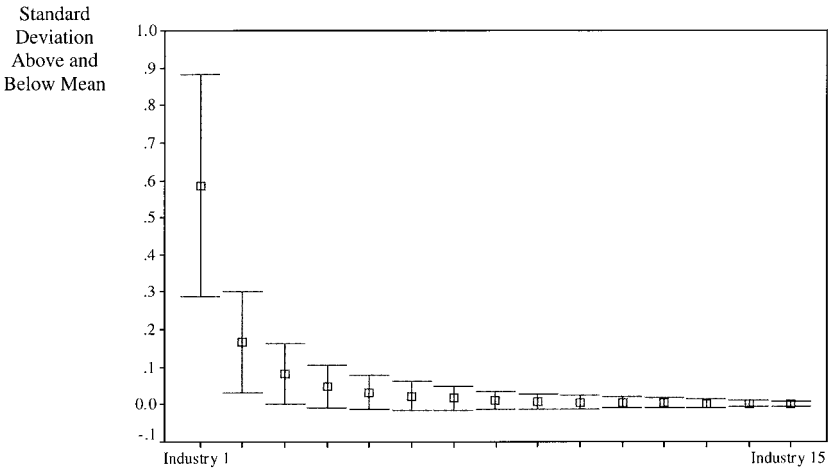


FIG. 3.—Analyst specialization by industry, 1985: proportion of analyst attention given to top 15 three-digit industries.

15 three-digit industries that included any firms followed by that analyst.¹⁰ We see that, on average, analysts devoted 57% of their coverage to a single three-digit industry and that these proportions drop steeply such that very few analysts follow firms in more than a handful of industries.

ANALYTICAL FRAMEWORK

I test for the presence of an “illegitimacy discount” using an approach pioneered by Berger and Ofek in their study of the impact of diversification on firm value (Berger and Ofek 1995; cf. LeBaron and Speidell 1987; see also Berger and Ofek 1996; Denis, Denis, and Sarin. 1997). Three measures of “excess value” or the discrepancy between an imputed value of a firm and its actual value are constructed (Berger and Ofek 1995, pp. 60–61). The basis for such imputations begins with a calculation, for every single-segment firm, of its ratio of total capital (the market value of a firm’s common stock—the number of shares outstanding multiplied by the share price at year’s end—plus the book value of its debt) to its sales, assets, and EBIT (earnings before interest and taxes).¹¹ Next, median ratios by industry are computed, using the most detailed SIC class that has at least five firms with valid data and at least \$20 million in sales. An imputed value for the firm is then:

$$I(V) = \sum_{i=1}^n AI_i^* (Ind_i(V/AI)_{mf}), \quad (1)$$

where $I(V)$ is the estimated value of the firm; AI_i is segment i ’s sales, assets, or EBIT; $Ind_i(V/AI)_{mf}$ is the median ratio of total firm capital to sales, assets, or EBIT in segment i ’s corresponding industry; V is total capital; and n is the number of segments reported by the firm.

This formulation applies valuation standards from single-segment firms to the full set of firms, which do business in one or more industry segments. For a given segment, the imputed value reflects its sales, assets, or profits multiplied by the median ratio of total capital to that variable for the corresponding industry. The predicted value for a diversified firm is the sum of these segment values. *Ceteris paribus*, a given firm should match these ratios for each of the industries in which it does business. Thus,

¹⁰ As below, an analyst is coded as covering a firm when he publishes at least one forecast for a firm in the relevant year.

¹¹ While the present argument concerns firms’ stock prices, corporate debt is included in such calculations because the worth of a firm should reflect its value to all claimants—lenders and bondholders, as well as shareholders. However, virtually the same results obtain when debt is removed from such calculations.

when a firm's participation in its full profile of segments is viewed favorably by investors, the firm's market value will exceed the sum of the segment-level imputed values. This discrepancy or "excess value" is measured as a log ratio: $\ln(V/I(V))$. Note that, as public firms follow different fiscal calendars, excess value is computed at the end of a firm's fiscal year. Relevant share price data come from the *CRSP* database.

Calculation of excess value assumes that summed segment-level data on sales, assets, and EBIT equal firm-level data on such variables. However, discrepancies may occur due to accounting decisions left to managerial discretion (see Lichtenberg 1991). As do Berger and Ofek (1995, pp. 60–61), I correct these discrepancies in the following manner. First, the 5% of firms for which the sales-based discrepancy is greater than 1% are treated as missing on excess value variables. Discrepancies are more common in the case of assets (72% of cases) and profits (93%). To correct for this, the 5% of cases where the assets-based discrepancy and the 13% of cases where the EBIT-based discrepancy exceeds 25% are treated as missing on the respective variables. For the 67% of the assets-based and 80% of the EBIT-based discrepancies that are within 25% of the total, the segment variables for each are recalculated by multiplying the segment's proportion of the segment sum for that variable by the firm's total. A final correction is performed for firms with negative EBIT. To avoid giving such segments negative values, the EBIT plus depreciation is used (EBITD). When EBITD is negative as well, the sales ratio is used instead (Berger and Ofek 1995, pp. 61–62).

VARIABLES IN THE ANALYSIS

Coverage Mismatch

The stated hypothesis concerns the relative frequency with which the analysts who specialize in a given industry follow the firms who participate in that industry. Calculation of "coverage mismatch" requires three kinds of information: the industry or industries with which a firm claims affiliation, the identities of the analysts who cover the firm, and analyst industry specialties. Measurement of the first and second issues is straightforward. SEC filings represented in the *Industry Segment* file indicate the SIC codes of the industries in which firms claim participation. An analyst is coded as covering a firm when he publishes at least one earnings forecast for that firm during the relevant fiscal year. The identification of analyst industry specialties is somewhat more complicated due to the fact that such specialties are not given in the *Zacks* data. Furthermore, while such publications as *Nelson's Directory of Investment Research*, a professional directory, give industry specialties, industries are not assigned in terms of the SIC

TABLE 1

MINIMAL PROPORTIONS FOR ESTABLISHING ANALYST COVERAGE OF AN INDUSTRY

No. of Firms with Highest Proportion of Sales in the Industry	Minimal Proportion for Analyst Coverage	No. of Relevant Three-Digit Industries, 1986
1-3	1	165
4-5 .....	.80	30
6-10 .....	.60	36
11-15 .....	.50	9
16-20 .....	.40	9
21-25 .....	.30	5
26+ .....	.20	3

codes given in firms' SEC filings. However, firms' identity claims and analyst attributions of identity must be comparable for coverage mismatch to be meaningful.

Thus, industry specialism must be defined on the basis of an analyst's observed tendency to cover firms that affiliate with a particular SIC code.¹² In particular, an analyst is coded as specializing in an industry when he follows at least a minimal proportion of all industry-based firms that receive any analyst coverage.¹³ To control for industry size, this proportion varies based on the number of covered firms in the industry, as shown in table 1. Note that each of these conditions has been submitted to sensitivity tests, which indicate that the measurement of coverage mismatch is robust across alternative criteria for establishing analyst industry specialization. In addition, informal comparisons of the industry specialties generated by this procedure with those listed in *Nelson's Directory of Investment Research* reveal broad agreement.

Having designated industry specialists, I calculate coverage mismatch as follows. First, define c_{fi} for a firm that participates in industry i as the

¹² For these calculations, multisegment firms are assigned to their primary industry on the basis of sales. Absent this assumption, the pattern of diversification would influence the observed pattern of analyst specialization. However, this assumption proves to have little impact in that assignment of analysts to industry specialties is substantially the same when multisegment firms are removed from these calculations. Note further that this assumption is not applied to the calculation of coverage mismatch.

¹³ Using the number of firms in an industry that receive coverage as the denominator controls for interindustry differences in the likelihood of attracting coverage. An alternative denominator would be the number of firms covered by the analyst in question. Results change little when such a measure is used.

number of specialists in industry i who follow the firm. Then, coverage mismatch is measured:

$$cm_{fi} = 1 - (c_{fi}/\max(c_{gi})), \quad (2)$$

where c_{gi} is the number of industry specialists in industry i covering firm g and $\max(c_{gi})$ is the maximum taken over all firms in industry i . While a score of zero indicates that the firm has attracted the greatest number of analysts who specialize in industry i to cover the firm, a score of 1 means that it has attracted none of these industry specialists. Using the maximum, rather than the total, number of industry specialists as the denominator standardizes the criterion across industries.

For single-segment firms, coverage mismatch is as above. For diversified firms, a firm-level measure of coverage mismatch may be generated by taking the average of the segment-level scores weighted by the size of the segments:

$$cm_f = \sum_{s=1}^S w_s^* cm_{fs}, \quad (3)$$

where S refers to the number of segments reported by firm f and w_{fs} refers to the proportion of total sales—or assets, if sales data are unavailable—that the segment represents.

A final issue in making such calculations concerns the appropriate level of industry aggregation. In the analyses presented below, I consider industries at the three-digit SIC level. The three-digit level is chosen largely because this middle range of aggregation gives a more useful rendering of the analyst coverage structure. By contrast, aggregation at the two-digit level produces a highly skewed distribution in that a small number of industries are associated with a disproportionate share of firms and analysts. Conversely, aggregation at the four-digit level generates many industries, each of which tends to have a small number of firms and analysts associated with it. The three-digit level provides a useful middle ground between these extremes. Nevertheless, analyses performed at the two- and four-digit levels generate results that, while slightly weaker, are highly consistent with those that emerge at the three-digit level.

An Illustration: Restaurants and Diversification

Table 2 illustrates the calculation of coverage mismatch in SIC code 581, “eating and drinking places” or restaurants, in 1985. The 20 public American operating companies with the greatest amount of sales in this industry are presented. In addition, summary statistics are presented on these firms, the 37 industry participants that received any analyst following, and the

TABLE 2

COVERAGE MISMATCH FOR 20 LARGEST PARTICIPANTS IN RESTAURANT INDUSTRY, 1985*

Company	Sales, Restaurant Industry†	Total Firm Sales†	No. of Industry Segments	Analysts Covering Firm	Restaurant Specialists		Segment-Level		Firm-Level	
					Covering Firm	Covering Firm	Coverage Mismatch	Coverage Mismatch	Coverage Mismatch	Coverage Mismatch
TGI Friday's, Inc.	311.82	311.82	1	8	6	6	.6	.60	.60	.60
El Torito Restaurants, Inc.	318.85	318.85	1	6	2	2	.87	.87	.87	.87
Karcher Carl Enterprises, Inc.	322.75	322.75	1	12	6	6	.60	.60	.60	.60
Collins Foods Intl., Inc.	345.39	535.67	2	8	2	2	.87	.87	.90	.90
Vicorp Restaurants, Inc.	379.90	379.90	1	10	7	7	.53	.53	.53	.53
Carson Pirie Scott & Co.	444.85	1,301.89	3	1	0	0	1.00	1.00	1.00	1.00
Hershey Foods Corp.	471.49	1,996.15	3	13	0	0	1.00	1.00	.37	.37
Ponderosa, Inc.	480.77	480.77	1	8	4	4	.73	.73	.73	.73
Jerrico, Inc.	516.48	516.48	1	9	7	7	.53	.53	.53	.53
Shoney's, Inc.	540.57	540.57	1	18	10	10	.33	.33	.33	.33
Church's Fried Chicken, Inc.	543.68	543.68	1	15	10	10	.33	.33	.33	.33
Ralston Purina Co.	564.50	5,863.90	4	29	2	2	.87	.87	.75	.75
General Mills, Inc.	1,051.00	4,586.60	3	30	0	0	1.00	1.00	.36	.36
Wendy's International, Inc.	1,100.11	1,127.50	1	23	14	14	.07	.07	.07	.07
Saga Corp.	1,254.80	1,254.83	1	9	6	6	.60	.60	.60	.60
Transworld Corp.	1,448.63	2,151.55	2	11	2	2	.87	.87	.59	.59
Pepsico, Inc.	2,081.10	8,056.65	3	29	2	2	.87	.87	.51	.51
Marriott Corp.	2,343.30	4,241.70	2	14	7	7	.53	.53	.24	.24
Pillsbury Co.	2,663.20	5,847.89	2	28	4	4	.73	.73	.43	.43
McDonalds Corp.	3,694.75	3,694.75	1	30	14	14	.07	.07	.07	.07
Averages for 20 largest industry participants	1,043.90	2,203.70	1.75	15.55	5.25	5.25	.65	.65	.53	.53
Averages for 54 smaller firms with any coverage	73.49	139.58	1.42	4.98	2.87	2.87	.81	.81	.76	.76
Averages for 51 smaller firms with no coverage	25.90	54.245	1.55	0	0	0	1.00	1.00	1.00	1.00

* Twenty largest public American operating companies in terms of their reported sales in SIC code 581, "eating and drinking places."

† Numbers are given in millions.

36 firms that received no analyst attention. On the basis of the calculations described above, 10 analysts were identified as specializing in this industry in that they published earnings forecasts for at least 20% of the 57 firms that received any coverage. Among all participants in restaurants, Chi-Chi's, Inc., which ranked twenty-first in industry sales, was followed by all industry specialists, resulting in a coverage mismatch score of 0.0. By contrast, Pepsico, a company that participated in this industry at a level nearly 20 times that of Chi-Chi's, was followed by only two industry specialists. That its firm-level coverage mismatch score was as high as 0.51 stems from the fact that it was followed by the maximum number of beverage industry specialists.

The contrast between these firms illustrates an important feature of the analyst division of labor. While analysts specialize by industry, they are responsible for individual firms. As a result, diversified firms present a classificatory challenge. By their very nature, such corporations embody the issues raised by any product that deviates from an existing competitive frame: "To which industry does such a firm belong?" "Which analyst should cover it?" "To what should it be compared?" Indeed, the tension between diversification and analyst coverage patterns suggests an alternative explanation for the "diversification discount," the penalty suffered by firms that do business in multiple industries. Conventional accounts suggest that this discount, which led to a significant wave of "dediversification" during the 1980s and 1990s (Davis et al. 1994; Lang and Stultz 1994), reflects the inefficiency of the conglomerate form (e.g., Porter 1987; Jensen 1988, 1993; Berger and Ofek 1995). However, while such firms may indeed be less efficient, the newspaper excerpt presented in figure 4 illustrates the very different problem that, by straddling multiple industries and corresponding analyst specialties, diversified firms hinder efforts at cross-product comparison. Indeed, diversified firms are significantly more likely to divest segments with high coverage mismatch (Zuckerman 1998).

Control Variables

I include in analysis the four variables considered by Berger and Ofek (1995, pp. 50–51) to affect firm value: the log of the firm's assets, a measure of firm size; the EBIT to sales ratio, an indicator of firm profitability; the ratio of capital expenditure to sales, which represents growth opportunities; and the extent of a firm's diversification. I measure the latter with a sales-based Herfindahl index, which tends toward zero as a firm's sales are spread out among many segments. However, note that other measures of diversification, such as the number of segments and a measure of intersegment similarity, display substantially the same patterns of association with excess value (Zuckerman 1997, chap. 5). In addition, following

Why Is Indresco's Stock Lagging?

It's not that Indresco is a financial loser. It's just difficult to describe what Indresco does.

The hodgepodge of businesses it owns bothers Wall Street.
Financial analysts can't categorize Indresco.

"Indresco's crisis is defining what it is: Are they an underground mining equipment manufacturer? A refractories company?" says [Tobias] Levkovich, [a] Smith Barney analyst.

Some analysts are calling for Indresco to narrow its focus by shedding businesses, such as the air tools and mining equipment units.

J. L. Jackson, CEO: "We're not going to get out of some business *so we can make some analyst happy, so he can compare us* with just the steel business or just the refractories business."

Dallas Morning News March 14, 1995

FIG. 4.—Newspaper excerpt illustrating the valuation challenges faced by diversified firms (emphasis added).

Denis et al. (1997), I include the R&D expenditure to sales ratio as an additional measure of growth prospects.¹⁴

The number of analysts who follow the firm represents an important control factor as well. First, as has been shown in the case of critics in other markets (Shrum 1996; Eliashberg and Shugan 1997), it may be that the sheer magnitude of analyst attention, rather than the specialization of their coverage, affects firm value. In addition, several scholars suggest that the opposite pattern may occur: analysts respond to increases (decreases) in a firm's stock price by increasing (decreasing) their coverage (Bhushan 1989; McNichols and O'Brien 1997). Thus, to the extent that low coverage mismatch reflects a large analyst following and the latter is

¹⁴ They also consider a firm's advertising/sales and its debt/equity ratios and show them to be unrelated to excess value.

generated by a low market value, including the number of analysts takes this reciprocal effect into account.

ANALYSIS

I explore the relationship between coverage mismatch and excess value over the years 1985–94. As do Berger and Ofek (1995, p. 43), I exclude firms that had any segments in financial services industries (SIC codes between 6,000 and 6,999) because many such corporations do not report their earnings before interest and taxes (EBIT). In addition, I restrict the study population to American operating companies that are listed on major exchanges. This excludes foreign firms that are listed in American stock markets—and which thus file data with the SEC—as well as subsidiaries, LBOs, and private or rarely traded firms, which sometimes appear in *Compustat* as well.¹⁵

Table 3 gives descriptive statistics and a correlation matrix for the variables used in analysis. Several patterns are worthy of note. First, while the sales and assets-based excess value scores are highly correlated, the EBIT-based measure is only moderately correlated with the others. This corresponds with generally weaker associations between EBIT-based excess value and all other variables (Berger and Ofek 1995, pp. 48, 51) and may reflect the measurement difficulties described above. Accordingly, Denis et al. (1997) disregard the EBIT-based measure. Finally, note that the R&D intensity measure is missing for many firm years. Accordingly, I compare models that include this variable with those that exclude it.

As I consider multiple observations of the same firms, I model this association using fixed-effects regression analyses (e.g., Hannan and Young 1977).¹⁶ Thus, coefficients represent within-firm differences across years. Random-effects models, which make more liberal assumptions about the nature of serial correlation, produce virtually the same results. Tables 5–6 present the fixed-effects results for the sales, assets, and EBIT-based measures respectively.

Models 1 and 2 assess the impact of the control variables. We see that the patterns differ little across tables. However, somewhat discrepant re-

¹⁵ Note as well that, unlike Berger and Ofek (1995, p. 61), I include firms with extreme values on the excess value scores—those for which the imputed value is more than four times greater or smaller than its actual market value. Berger and Ofek do not explain this exclusion. Indeed, that there seem to be no clear breaks in the distribution of the excess value variables, and that the variance explained actually increases slightly when firms with extreme values are included, suggests that the method works equally well for these cases.

¹⁶ In particular, I estimate the models using the “xtreg” procedure in *Stata 5.0* (Stata Corporation, College Station, Tex.).

TABLE 3
SUMMARY STATISTICS AND CORRELATIONS

ID	Variable	Valid <i>N</i> (Firm-Years)	Mean	SD	Minimum	Maximum	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
[1]	Excess value— <i>sales based</i>	27,597	-.13	1.04	-16.31	4.20	...								
[2]	Excess value— <i>assets based</i>	26,346	-.12	.96	-16.16	3.71	.90								
[3]	Excess value— <i>EBIT based</i>	24,652	.12	1.02	-16.27	9.70	.61	.59							
[4]	Log of assets	31,602	5.12	1.69	.06	11.43	.14	.04	.00						
[5]	EBIT/Sales	31,602	.07	.14	-3.92	.78	.25	.26	-.02	.21					
[6]	Capital expenditure/Sales	31,116	.09	.19	.00	8.31	.13	.05	.10	.12	.03				
[7]	Diversification (Herfindahl)	31,600	.92	.14	.34	1.00	.13	.15	.15	-.31	.00	.03			
[8]	R&D/Sales	15,945	.05	.09	.00	3.41	.13	.07	.14	-.06	-.35	.16	.13		
[9]	No. of analysts	31,602	6.26	8.33	0	62	.26	.22	.09	.71	.20	.07	-.16	.13	...
[10]	Coverage mismatch	31,526	.73	.35	.00	1.00	-.22	-.19	-.07	.50	-.16	-.06	-.02	.00	-.59

sults appear in table 6. In particular, while the log of analyst coverage has a strong negative association with the sales and assets-based excess value, its impact with the EBIT-based measure is much weaker. Further, while profitability (EBIT/sales) has the expected large positive effect on excess value in tables 4 and 5, this variable has no effect in the case of the EBIT-based measure of excess value. These surprising results suggest that we treat results based on this dependent variable with some caution.

Models 3 and 4 introduce coverage mismatch as a covariate. The results from each table strongly support the stated hypothesis. That is, corporations that succeed in attracting recognition from the analysts who specialize in their industries enjoy greater financial market success. Firms that fail to reduce their level of coverage mismatch trade at a discount. This effect is significant even when controlling for a host of factors that affect valuations, including the sheer size of a firm's analyst following.

It is useful to get a sense of the magnitude of this effect. Consider once again the case of Pepsico in 1985, a diversified firm that received little or no coverage from analysts who specialized in its non-core-industry segments. Pepsico's total capital in 1985 was \$6.57 billion and its sales-based imputed value was \$4.3 billion, generating a sales-based excess value of .42. According to model 2 in table 4, were Pepsico to lower its coverage mismatch from 0.51 to 0—the level attained in its core segment of "Beverages," its excess value score would increase by $(.51) * (.136)$ or .07 to .49. Exponentiating this number and multiplying it by the imputed value generates a potential total capital of \$7.04 billion, indicating that Pepsico's heightened level of coverage mismatch reduces its value by \$472 million, a discount of 7.2%. Slightly smaller but quite large estimates of the discount are obtained for the assets and EBIT-based measures respectively. It seems clear then that changes in coverage mismatch can amount to vast sums of money. Indeed, arbitrageurs compete to find price discrepancies that are much smaller than this one. In sum, a firm that does not succeed in cultivating an analyst review network befitting the desired corporate identity suffers a significant devaluation on Wall Street.

Possible Spuriousness

Two challenges may be raised to this conclusion. First, perhaps the set of control variables included does not exhaust the range of possible factors that underlie the association between coverage mismatch and excess value. In particular, efficient-markets theory would insist that there must be information about the firms' future prospects that impacts both analyst coverage patterns and excess value, resulting in a spurious association between these variables.

It seems doubtful that information about firm's future earnings could

TABLE 4

MODELS OF EXCESS VALUE BASED ON SALES-RATIO, 1985-94

VARIABLE	CONTROL VARIABLES			INCLUDING COVERAGE MISMATCH			INCLUDING EBIT/ SALES ($t + 1$) (Model 5)	CHANGE MODEL: INCLUDING EXCESS VALUE ($t - 1$) (Model 6)
	Model 1	Model 2	Model 3	Model 4	Model 5			
Log of assets	-1.05 (.016)**	-.101 (.012)**	-.108 (.016)**	-.105 (.012)**	-.121 (.012)**	-.072 (.013)		
EBIT/sales	1.955 (.083)**	1.296 (.049)**	1.951 (.083)**	1.286 (.049)**		1.185 (.052)**		
Capital expenditure/sales	1.633 (.111)**	.595 (.025)**	1.612 (.110)**	.593 (.034)**	.553 (.036)**	.873 (.087)**		
Diversification (Herfindahl)	1.173 (.127)**	1.154 (.088)**	1.141 (.128)**	1.119 (.088)**	1.172 (.088)**	.460 (.064)**		
Number of analysts .....	.016 (.002)**	.022 (.002)**	.013 (.002)**	.019 (.002)**	.021 (.002)**	.011 (.002)*	
R&D expenditure/sales	1.433 (.163)**		1.430 (.163)**					
Coverage mismatch								
EBIT/sales ($t + 1$)			-1.153 (.034)**	-1.136 (.025)**	-1.129 (.025)**	-.093 (.024)**		
Excess value ($t - 1$) .....					.493 (.049)**		
Intercept	-1.053 (.142)**	-.954 (.104)**	-.874 (.147)**	-.782 (.108)**	-.681 (.109)**	.339 (.007)**		
Firm differences (F -statistic)	6.91**	6.74**	6.82**	6.70**	7.21**	2.20**		
No. of firms	2,921	5,479	2,918	5,470	5,024	4,687		
Total N	14,006	27,217	13,937	27,144	25,230	23,170		
Model DF	11,079	21,733	11,048	21,668	20,200	18,476		
R^2 .....	.145	.111	.152	.115	.082	.512	

NOTE.—SEs are in parentheses.

* $P \leq .05$.** $P \leq .01$.

TABLE 5

MODELS OF EXCESS VALUE BASED ON ASSETS-RATIO, 1985-94

VARIABLE	CONTROL VARIABLES			INCLUDING COVERAGE MISMATCH			INCLUDING EBIT/ SALES ($t + 1$)		CHANGE MODEL: INCLUDING EXCESS VALUE ($t - 1$)	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 5	Model 6		
Log of assets	-.249 (.015)***	-.270 (.012)***	-.251 (.075)***	-.274 (.012)***	-.277 (.012)***	-.211 (.012)***				
EBIT/sales	2.313 (.079)***	1.506 (.047)***	2.308 (.079)***	1.498 (.047)***		1.311 (.050)***				
Capital expenditure/sales .....	.821 (.100)***	.322 (.032)***	.809 (.100)***	.320 (.032)***	.265 (.034)***	.106 (.037)***			
Diversification (Herfindahl)	1.025 (.131)***	1.040 (.091)***	.997 (.132)*	1.009 (.091)***	1.030 (.091)***	.656 (.093)***				
Number of analysts .....	.020 (.002)***	.027 (.002)***	.018 (.002)***	.025 (.002)***	.027 (.002)***	.015 (.002)**			
R&D expenditure/sales	1.051 (.1553)***		1.049 (.153)***							
Coverage mismatch			-.110 (.032)***	-.121 (.023)***	-.112 (.024)***	-.093 (.024)***				
EBIT/sales ($t + 1$) .....					.647 (.047)***			
Excess value ($t - 1$)										
Intercept	-.197 (.145)	-.020 (.106)	-.066 (.150)	.133 (.110)***	.210 (.110)*	.229 (.113)**				
Firm differences (F -statistic)	6.47***	6.15***	6.36***	6.09***	6.50***	2.24***				
No. of firms	2,858	5,405	2,855	5,396	4,952	4,577				
Total N	13,274	25,981	13,241	25,908	24,060	21,656				
Model DF	10,410	20,571	10,379	20,506	19,102	17,092				
R^2 .....	.096	.064	.101	.067	.048	.366			

NOTE.—SEs are in parentheses.

* $P \leq .10$.** $P \leq .05$.*** $P \leq .01$.

TABLE 6

MODELS OF EXCESS VALUE BASED ON EBIT-RATIO, 1985-94

VARIABLE	CONTROL VARIABLES			INCLUDING COVERAGE MISMATCH			INCLUDING EBIT/ SALES ($t + 1$)		CHANGE MODEL: INCLUDING EXCESS VALUE ($t - 1$)	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 5	Model 6		
Log of assets	-.027 (.023)	-.007 (.017)	-.029 (.023)	-.009 (.017)	-.055 (.017)***	.014 (.019)				
EBIT/sales	-.014 (.144)	.092 (.065)	-.010 (.014)	.088 (.065)		.129 (.078)*				
Capital expenditure/sales	1.158 (.145)***	.643 (.049)***	1.153 (.145)***	.642 (.049)***	.525 (.052)***	.705 (.066)***				
Diversification (Herfindahl)	1.058 (.252)**	1.214 (.153)***	1.039 (.253)***	1.195 (.153)***	1.183 (.151)***	.923 (.182)***				
Number of analysts .....	.007 (.003)**	.010 (.002)***	.005 (.003)	.009 (.002)***	.010 (.002)***	.010 (.002)***			
R&D expenditure/sales .....	.417 (.230)*		.418 (.230)*						
Coverage mismatch			-.105 (.050)**	-.068 (.033)**	-.054 (.033)*	-.077 (.036)**				
EBIT/sales ($t + 1$)					-.341 (.065)***					
Excess value ($t - 1$)										
Intercept	-.853 (.255)***	-1.127 (.170)***	-.734 (.273)***	-1.038 (.175)***	-.752 (.174)***	-.938 (.206)***				
Firm differences (F -statistic)	2.64***	2.93***	2.64***	2.93***	3.07***	1.94***				
No. of firms	2,758	5,220	2,755	5,211	4,777	4,306				
Total N	12,494	24,321	12,461	24,248	22,540	19,864				
Model DF	9,730	19,096	9,699	19,039	17,757	15,551				
R^2 .....	.049	.034	.050	.034	.041	.073			

NOTE.—SEs are in parentheses.

* $P \leq .10$

** $P \leq .05$

*** $P \leq .01$

affect coverage mismatch net of its impact on the size of analyst coverage. Nevertheless, in an attempt to address this possibility, model 5 in tables 4–6 replaces EBIT/sales with EBIT/sales of the following year. If information about earnings prospects is governing analyst coverage, inclusion of this variable should attenuate the effect of coverage mismatch. However, we see that there is little difference in the effect of coverage mismatch across models 4 and 5. Indeed, EBIT/sales at year $t + 1$ has a *weaker* effect on excess value than does EBIT/sales at year t . This finding supports the notion that stock prices reflect not a firm's earnings prospects but the prevailing interpretation of such prospects based on past profits and other factors.

A second objection represents the opposite concern. Rather than reflections of future profits, perhaps analyst coverage patterns represent past price movements. That is, as has been found for the magnitude of analyst coverage (Bhushan 1989; McNichols and O'Brien 1997), stock prices may influence coverage mismatch rather than vice versa. Again, this conjecture seems doubtful as it is highly unlikely that excess value could influence coverage mismatch net of its association with the size of a firm's analyst following. This would require that, as a result of poor financial market performance, the analysts who cover a firm's industries are replaced by analysts who follow other industries. It is difficult to explain how and why such a process would occur, especially on a systematic basis.

Nevertheless, to explore the possibility of reciprocity, model 2 is reestimated as a change model, which is presented in model 6. For this equation, excess value in the prior year is included as an additional predictor of excess value in a given year. With lagged excess value variable as a regressor, the other variables now predict yearly change in excess value rather than its level in a given year. Note that this framework makes the very conservative assumption that coverage mismatch and the various control variables have no impact on excess value except on a year-to-year basis. Nevertheless, results from model 6 in each table indicate that coverage mismatch has a strong effect on excess value even when reciprocity is taken into account in the described fashion. For all three dependent variables, the lagged variable has a strong association with the subsequent year's excess value. However, the coefficient for coverage mismatch—as well as the other covariates—remains quite significant. It would seem that the impact of coverage mismatch on excess value is strong and is not due to reverse causation.

CONCLUSIONS

The preceding analysis demonstrates clear support for the proposed theory. For a product to compete in any market, it must be viewed by the

relevant buying public as a player in the product categories in which it seeks to compete. In the case of mediated markets, this requires reviews from the critics who follow those categories. In the specific instance of the stock market, a firm seeks coverage from the analysts who follow the industries in which it participates. I have shown that success or failure at gaining such recognition has a significant impact on a firm's fate in financial markets. All other things held equal, firms that cultivate an ego-centric network of reviews to securities analysts that reflects its industrial participation are more highly valued than those that do not.

This analysis offers lessons for several fields of study: research on role and product conformity, the social structure of markets, network theory, and theories of capital markets. I discuss implications for each of these areas in turn.

Pressures toward "Offer" Conformity

I address two weaknesses in previous research: a failure to validate the presumption that actors are punished for deviating from accepted roles and a neglect of the audience that metes out such punishment. The proposed framework fills in these holes in a manner that facilitates the integration of several seemingly disconnected lines of theory. It allows for an understanding of homogenous practice in a wide variety of settings, collapsing the wall thought to separate market and nonmarket isomorphism. As illustrated above, perspectives as seemingly diverse as marketing theory, neoinstitutionalism, and White's market model emerge as commentaries on the same social dynamic. Further, by highlighting what these theories leave implicit or ignore—the role of the audience in disciplining deviation from accepted roles—the proposed framework lends itself to an analysis of effects that had previously been merely assumed or even ignored.

The Significance of Market Mediation

A focus on the audience pays great dividends when we shift our view of market structure from buyer-seller to critic-seller interaction. Apart from the work of a few scholars (Hirsch 1972, 1975; Shrum 1996; Eliashberg and Shugan 1997; see also Rao 1998), the role of critics and other third parties in shaping consumption patterns has been overlooked. However, appreciating the significance of such intermediaries is necessary for moving beyond the neoclassical image of market transactions as diffuse, ephemeral, and anonymous and thereby appreciating the enduring relationships that frequently govern such exchange. Indeed, Granovetter's (1985) analysis of the social embeddedness of market exchange attends to

the social context for such transactions but ignores their structure. Further, his framework would seem inapplicable to mass markets, which do appear to consist of arms-length encounters between anonymous actors. Accordingly, even structural sociologists such as White concede that consumers are essentially unobservable and irrelevant to sellers.

The present analysis joins with such sociologists as Burt (1982, 1983, 1992; cf. Burt, Christman, and Kilburn 1980), Baker (1984), Gerlach (1992), and Podolny (1993, 1994) in attending to the structure of economic relationships in addition to the manner of their embeddedness. By focusing on seller-critic relationships, I provide insight into the structuration of mass markets, which may be missed by looking at seller-buyer relationships alone. In markets where seller-buyer relations would seem to be fleeting and anonymous, fixing analytic attention on seller-critic relationships reveals highly structured and enduring patterns of interaction between actors who are acutely aware of one another's existence. These relationships do more than embed market transactions; they shape such exchange and give a market its character.

Network Theory

A distinctive aspect of the analysis presented here is that I derive network effects not from an actor's structural position but from how that position relates to the ideal-typical one implied by a desired identity. The prevailing stress of research on the effects of networks on individual experience concerns either the advantages that are derived from occupancy of a particular social position (e.g., Burt 1992; Podolny 1993) or the role of networks in the diffusion of attitudes and behavior (e.g., Laumann 1973; Burt 1987). In each of these modes of analysis, networks are taken as given, and an actor's network position confers her social identity.

By contrast, I focus on the mismatch between actual and idealized networks. I argue that an actor may hold a self-concept that differs from that given in a network of attributions and that this disjuncture has implications for future behavior. What most distinguishes the analyst coverage structure from the networks generally studied by network analysts is that it is possible to specify from the outset what the structure should look like. In particular, knowing a firm's industrial participation generates clear expectations for how the firm should relate to analysts. Accordingly, rather than the content or structure of an actor's ties, the causal spark in my analysis lies in actor's deviation from expected tie patterns.

The Uncertainty of Financial Valuation

Finally, the application of the present perspective to a financial market speaks to the very nature of such markets. As argued above, failure to

gain certification by the critics who cover a product category can matter only in contexts where the relevant structural features are in place and where the value of products is subject to significant uncertainty. Indeed, such structures exist only where products are of uncertain value and, in particular, where buyers are sensitive to the purchasing decisions of others.

Armies of interpreters and prognosticators are present on Wall Street because they fill an important social purpose: they help investors make sense of the dizzying array of possible investments. No such investment has a clear value, and the struggle to anticipate future prices never ends. Similarly, such an environment spawns investor relations, the marketing of corporate equity. Corporate executives promote their financial products to investors and the intermediaries who influence investor opinion. Indeed, this particular product-critic interface lends itself to the dynamics explored in the present analysis; as in other product markets, firms that do not gain membership in accepted categories are punished.

Thus, the present article builds on recent research in behavioral finance, which suggests that cognitive limitations can induce a gap between price and value and that the risks of arbitrage keeps such gaps open. I have added to this critique, arguing that, as the value of a financial asset is inherently uncertain, valuation is necessarily an interpretive exercise. Further, while responses to uncertain conditions generally induce processes of social comparison (Festinger 1954), social contagion is especially likely where, as with financial assets, such conditions are determined by others' actions. Thus, share prices reflect the theories of value that have gained currency among prevalent market players, and their constant flux reflects continuing theoretical debate (Shiller [1990] 1993). Indeed, rather than discontinuous breaks in the normal workings of financial markets, the bubbles and crashes that periodically occur indicate that a particular theory of valuation has gained widespread acceptance.¹⁷

Further, note that the very industry-based category structure analyzed in this article is itself contingent on the prevalence of a particular theory of value. There is nothing inherent or timeless about this structure. Rather, it reflects the dominance of the "pragmatic" theory of valuation (Burk 1988; cf. Babson 1967), which has dominated since the 1930s and which spawned the profession of security analysis, whose specialization by industry reflects the timing of its birth. While earlier theories tended to value stocks on a firm's assets (see Burk 1988) or its dividend disbursements

¹⁷ Frankel and Froot's (1990) argument that the dollar bubble of the mid-1980s reflected a shift in the prevalent theory of valuation from a "fundamentalist" to a "chart-ist" perspective illustrates this nicely.

(see Baskin and Miranti 1997), the pragmatic perspective prices firms on their earnings power and stresses that industries discriminate firms on this basis (e.g., Graham and Dodd [1934] 1940). However, the possibility of alternative theories of value and rival classificatory schemes persists, as indicated by the initial welcome received by the conglomerate firm in the 1960s (e.g., Shleifer and Vishny 1991). Such challenges to prevailing theories of value illustrate the fact that financial markets are necessarily open, rather than closed systems, and that value is fundamentally indeterminate.

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