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# The Structural Origins of Unearned Status: How Arbitrary Changes in Categories Affect Status Position and Market Impact

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**Abstract**

Focusing on the categorical nature of many status orderings, we examine the relationship among status, actors' quality, and market outcomes. As markets evolve, the number of categories that structure them can increase, creating opportunities for new actors to be bestowed status, or it can decrease, dethroning certain actors from their superior standing. In both cases, gains and losses of status may occur without changes in actors' quality. Because audiences rely on status signals to infer the value of market actors, these exogenously generated status shifts can translate into changes in how audiences perceive actors, resulting in benefits for unearned status gains and costs for unearned status losses. We find support for our hypotheses in a sample of equity analysts at U.S. brokerage firms. Using data on the coveted *Institutional Investor* magazine All-Star award, we find that analysts whose status increases because of a category addition see corresponding increases in the stock market's response to their earnings estimates, while those who lose status see corresponding reductions. Our results suggest that the greater weight accorded to high-status actors may be misguided if that status occurs for structural reasons such as category changes rather than because of an actor's own quality.

**Keywords:** status, markets, stratification

Status is an important signal in markets. Audiences often attend to status—an actor's ranking position in a social system—and base decisions on it. Audiences perceive high-status actors and the products they create to be of higher quality than others (Podolny, 1993), and so high-status actors enjoy many benefits (Sauder, Lynn, and Podolny, 2012; Piazza and Castellucci, 2014).

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In addition to greater market opportunities, high-status actors are given more leeway for illegitimate behavior (Podolny and Phillips, 1996; Kim and King, 2014; Sharkey, 2014), and their achievements are given more credit (Bowman and Bastedo, 2009; Simcoe and Waguespack, 2011; Kim and King, 2014). For these reasons, actors take specific steps in hopes of gaining and maintaining status (Rider and Tan, 2011; Roberts, Khaire, and Rider, 2011; Rider and Negro, 2015; Askin and Bothner, 2016), such as striving to establish ties with high-status alters (Podolny, 1994; Ertug and Castellucci, 2010), making bolder choices (Phillips and Zuckerman, 2001; Bowers et al., 2014), and adapting their offerings to critical audiences' valuation systems (Espeland and Sauder, 2007).

Despite such efforts, whether actors have high status is not determined in absolute terms but is defined via competition and comparison with others (Bowers, 2015; Askin and Bothner, 2016). Specifically, an actor's status is determined relative to the other actors classified in the same category at the same time (Sauder, 2006; Sorenson, 2014). Categories lump together similar producers in the eyes of an audience, while splitting them from others (Zerubavel, 1996), and thus they define the comparison set within which status can be judged. Investment banks, for example, compete for status within categories such as leveraged buyouts, initial public offerings, or merger activity (Podolny, 1994). Restaurants compete for status in the different categories listed in the *Michelin Guide*, such as classic cuisine, nouvelle cuisine, and gastropub (e.g., Rao, Monin, and Durand, 2003; Clare, 2014). In each period, the set of categories used creates the structure underlying status positions.

But categories are subject to change (Rao, Monin, and Durand, 2003; Navis and Glynn, 2010; Delmestri and Greenwood, 2016), sometimes sharply. Despite the fundamental importance of categories in defining the boundaries of status competition, we still know very little of how, if at all, these changes affect status. Studying category changes and their role on status dynamics is particularly important because with each category change in a market, the boundaries of status competition are redesigned. When more categories are added in a market, certain actors face more opportunities, and hence reduced competition, for status recognition. When categories are removed, instead, opportunities to gain status are reduced, and competition is accordingly increased. Thus category changes will cause certain actors to gain or lose status in a market independently from the actor's quality or behavior. Extant literature has not explored yet the role that categories might have in decoupling the status bestowed to actors from their quality.

More importantly, by arbitrarily changing actors' status, category changes also play a role in shaping actors' market power and the market relevance of their opinions and products. Because audiences rely on status signals to infer actors' market value, these exogenously generated status shifts may translate into changes in how audiences perceive actors. What appears to be a mere category change in status might have broader consequences in the market: affected actors may see a shift in their market impact not because their own actions lead to a status change but because of category changes in the market. A category approach to status offers a novel structural perspective to study the impact of unearned status gains (Neeley and Dumas, 2016) and losses in markets (Neeley, 2013) that contribute to the decoupling between status and quality (Malter, 2014) by providing insight on a structural, rather than individual or relational, determinant of status gains and losses.

## HIERARCHICAL AND CATEGORICAL DIMENSIONS OF STATUS

Status, which occurs when an actor has increased social standing over others, can be achieved through mechanisms such as superior performance (Phillips and Podolny, 1996; Washington and Zajac, 2005), affiliation with high-status others (Podolny, 1993), and receipt of third-party awards (Kovács and Sharkey, 2014; Askin and Bothner, 2016). Audiences value status regardless of the mechanism by which it occurs (Sauder, Lynn, and Podolny, 2012; Sorenson, 2014). Even in settings in which quality can be disentangled from status, status provides a meaningful benefit in and of itself (Kim and King, 2014; Malter, 2014). Once actors attain high status, audience members respond to their superior position and greater visibility in the marketplace. For instance, audiences prefer to trade with high-status actors more than with lower-status actors (Podolny, 1994). Audiences are also willing to pay higher prices for the goods of high-status actors (Benjamin and Podolny, 1999) and less likely to respond negatively if they engage in certain types of deviant behavior (Phillips, Turco, and Zuckerman, 2013). Finally, even if—despite their numerous advantages—high-status actors achieve only the same level of performance as their low-status counterparts, audiences give them more social credit (Merton, 1968) and place greater weight on their opinions (Bowman and Bastedo, 2009; Simcoe and Waguespack, 2011).

These distinct advantages of status are predicated on its hierarchical nature: benefits to status accrue because audiences perceive and respond to some actors as superior to others. Yet underlying each status hierarchy is a specific categorical dimension. Categories draw the boundaries of status competition: actors do not compete with every possible actor but only with those in their same category. Each category creates status positions for the best in its class, while removing the possibility that less-related actors are forcibly compared. For example, the higher education field is segmented into categories such as "private university" and "liberal arts" (Askin and Bothner, 2016). Thus when Harvard and Wellesley are ranked as best by the *U.S. News and World Report*, they are considered so within their particular category—without competing directly against each other.

Because the primary importance of status lies in the privilege and visibility that come from having it, studies have centered on the antecedents and consequences of status while controlling for the categories underlying it, rather than examining them directly. For example, studies of the impact of performing arts awards combine all categories when examining the impact of receiving a high-status award (e.g., Rossman and Schilke, 2014; Jensen and Kim, 2015). Similarly, studies of how status affects organizational choice in higher education combine the multiple categories of institutions into a single analysis (Espeland and Sauder, 2007; Askin and Bothner, 2016). Though the impact of categories is not the focus of these studies, they establish an important baseline: in markets in which status operates in multiple categories, status is beneficial across all categories.[1]

[1] Sharkey (2014) found that the status of the category itself can also provide benefits in a setting in which categories themselves have prestige. We do not examine here whether actors enjoy benefits from being in a high- or low-status category (i.e., differences across categories) but whether actors enjoy benefits from unearned changes in their status due to a category change.

Our approach builds on the combinatorial approach to studying status systems but provides an important extension. A combinatorial approach to status categories by design must treat categories as fixed rather than evolving and as collateral rather than meaningful in and of themselves. Our approach specifically addresses the issue of category change and thus allows a dynamic approach to understanding status processes. We illustrate the impact of category changes on market outcomes focusing on status bestowed via third parties' rankings and awards. Many status systems are explicitly maintained by third parties, such as the American Institute of Architecture, the *Michelin Guide* and James Beard Foundation in cuisine, and the Man Booker Prize in literature (Rao, Monin, and Durand, 2003; Kovács and Sharkey, 2014). Third parties, and the awards and rankings they give, help audiences navigate the performance of market actors in credence goods and consumption markets, in which quality is difficult to observe ex ante (Sauder, 2006). A principal part of their role is to map the market of actors according to their own interpretation via a self-created system of categories (Elsbach and Kramer, 1996; Espeland and Sauder, 2007). Third parties can crisply introduce and retire individual categories.

## Category Changes and Status Changes

Although categories that underlie status systems are often treated as stable, empirical evidence suggests that they are in flux more often than not. For example, studies of industry categories in financial research typically re-measure category positions over time as industries disappear and others evolve or appear (Lounsbury and Rao, 2004). Annual rankings, such as *U.S. News and World Report*'s Best Hospital Rankings, constantly create new sub-rankings based on specialties, geographic region, and customer interests. Additionally, actors themselves can engage in specific acts to alter both category boundaries and the relative standing of particular members within them (Delmestri and Greenwood, 2016).

Each category change creates the potential for status changes. When a category system expands through the addition of new categories, the opportunities to gain status also increase. Because status accrues within a category, more categories mean less competition within each of them to become the best in class. The reverse is also true. The category system can contract through the removal of categories, which can lead to status loss because competition for restricted status positions becomes stiffer. Importantly, category changes can affect status positions without actors changing their quality. The process of conferring status elaborated by Merton (1968: 56) illustrates this:

> In science as in other institutional realms, a special problem in the workings of the reward system turns up when individuals or organizations take on the job of gauging and suitably rewarding lofty performance on behalf of a large community. Thus, that ultimate accolade in 20th-century science, the Nobel Prize, is often assumed to mark off its recipients from all the other scientists of the time. Yet this assumption is at odds with the well-known fact that a good number of scientists who have not received the prize and will not receive it have contributed as much to the advancement of science as some of the recipients, or more.

This phenomenon, known as "the 41st chair" in reference to the French Academy's selection of a cohort of just 40 academics who could qualify as immortal, makes "inevitable, of course, the exclusion through the centuries of many talented individuals" Merton (1968: 56).

Underlying this exclusion process, however, is the set of categories used by the Nobel Prize committee or by third parties more generally. Each category bounds a specific set of actors who should be compared when awarding status. For example, because the Nobel Prize awarded in economics is the sole category for all social sciences, the boundaries of competition for the award are particularly large.[2] The category encompasses all areas of economics (e.g., behavioral economics, labor economics, and macro-economics), as well as other potentially related disciplines such as political science and economic sociology. For actors in the latter fields, the barrier to be awarded the Nobel Prize is almost insurmountable. Given that actors from several subdisciplines compete for the same award, even among economists themselves an omni-comprehensive category erects significantly high barriers. But had the Nobel committee decided either to introduce a new category for non-economics social sciences or to split the economics category into two subcategories, such as behavioral economics and macro-economics, both types of expansions in the categorical system would enlarge the number of status slots (Nobel Prizes) available in the overarching scientific field, and in so doing, they would lower the threshold to receive high status.

Which actor will receive the coveted prize will depend on the committee's specific category choice. If the committee introduced a new category for non-economics social sciences, the actor gaining high status would be different than the actor whose status would be raised had the committee decided to split economics into two subcategories. Additionally, the prize committee may make changes to multiple categories rather than just one. In all cases, the newly elevated actor would have been ignored under the previous category system. Thus the attainment of status does not depend on an actor's own actions but instead on the choice of which category is added.

The number of categories may also be reduced, of course, thus intensifying competition for status positions. Categories can be removed through deletion or through the merging of formerly separate categories. If two formerly separate categories merge, competition is necessarily increased as more actors are now competing against each other. If a category is eliminated outright, the former members of the category may have no viable means for recognition, even though they continue to exist. Regardless of how it occurs, the removal of a category can affect actors' status without a corresponding change in their own actions. More generally, status orderings can shift based on relatively arbitrary changes in the underlying categories.

## Market Impact of Category Changes

Status is interpreted as a signal of quality and prestige regardless of its origin (Sauder, Lynn, and Podolny, 2012; Sorenson, 2014), including whether or not

[2] Technically, there is no Nobel Prize in economics, and the award is properly called "The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel." We appreciate an anonymous reviewer prompting us to clarify this.

the status arises from an actor's actions (Neeley and Dumas, 2016). Thus changes in status that result from a structural change such as a change in category should affect an actor's market impact. When actors receive status from a structural change, they gain an exogenous boost in visibility and credibility, and their actions and opinions become perceived as more valuable than before simply because of their inclusion among those designated as high status. Thus gaining status because of a category addition will likely lead to greater impact than if the change had not occurred. For example, Environmental Finance is an organization that tracks companies that facilitate trade in environmental issues, such as carbon offsets and weather risk. In its 2016 awards, it created a new set of ranking categories related to renewable identification numbers, which are "tradable certificates that track the compliance of fuel refineries" in the United States (Ali, 2016). The three companies that received mention, Element Markets, Bluesource, and Baker & McKenzie, are all long-standing participants in the industry, but by being named in this category they have increased visibility in this market space. As the only firms named in the category, their profile is increased compared with other unnamed firms that also offer this service. The attention of any environmentally conscious investors seeking responsible investing opportunities is likely directed to those companies, and investors' attitude toward them is likely positively affected by the public recognition they receive. More generally, a category addition leads to increased market impact:

**Hypothesis 1a (H1a):** Actors who gain status because of a category addition will increase their impact in the market.

The loss of status from a category removal is also likely to affect actors' impact. If high-status actors lose status when their category is removed, their visibility is correspondingly reduced by the lack of recognition, and the quality of their actions and opinions might be questioned by the audience that attends to them. Without high status, their actions and opinions likely will be perceived as less valuable than they were before (Bowman and Bastedo, 2009; Simcoe and Waguespack, 2011; Kim and King, 2014), because attention is focused on the most visible market actors at any point in time, and because audiences give more credit to those in high-status positions. For example, the magazine *Decanter* recognizes a retailer of the year in a number of specialist wine categories. In 2015, it listed a winner for specialist retailer in each of three categories (South Africa, USA, and Australia/New Zealand), which were merged the next year into an "Other New World Specialist of the Year" category. Roberson, which won the USA category in 2015, was listed as the Specialist of the Year in 2016 in the new category, but the other two 2015 winners—Handford wines (South Africa) and The New Zealand Wine Cellar (Australia/New Zealand)—each lost the status that came with the award (Mercer, 2015; Decanter, 2016). Their visibility correspondingly diminished, as did the association with quality that being listed as the specialist retailer of the year entails. Anyone searching for the best specialist retailers would see only the existing categories and would allocate their attention accordingly to those featured. Even those who were aware of the prior year's ranking could perceive the other two wineries to be of lower status, as it might now appear that they compare poorly with respect to Roberson. Thus losing status because of a category removal will likely lead to more reduced impact than if the change had not occurred:

**Hypothesis 1b (H1b):** Actors who lose status because of a category removal will decrease their impact in the market.

# METHOD

## Setting

Our setting is the market for financial information provided by equity analysts employed by brokerage firms. We examine the effect of category changes in shaping audiences' perception of status using *Institutional Investor* (*II*) magazine's All-American Analyst Awards, commonly called the ''All-Stars.'' The All-Star designation was first awarded in 1972 and continues to the present day (Groysberg, 2010).

The stock market is sufficiently vast that investors cannot easily identify all possible investment opportunities. Equity analysts provide investment guidance to investors through earnings forecasts, ratings, and industry reports on publicly traded firms, all of which are frequently revised (Bradshaw, 2004). These help investors make trading decisions on particular stocks. The potential for diverging opinions across the many analysts who may issue reports in any particular industry, and the time commitment required to build a relationship with a particular analyst, mean it can be difficult to know which analysts are most worth listening to (Giorgi and Weber, 2015). This is compounded by the fact that analysts can appear very skilled simply by mimicking the behavior of other analysts (Hong, Kubik, and Solomon, 2000; Rao, Greve, and Davis, 2001). Investors seek analysts with significant skill but also those who will be particularly responsive to any specific follow-up inquiries they may have. As in many other settings in which the quality of actors is difficult to assess objectively given the number of actors and the amount of information they generate, a shortcut to knowing whose information is worthwhile is extremely valuable to investors.

The All-Star rankings were implemented to provide such a shortcut. Each spring, surveys are sent to thousands of institutional investors throughout the U.S. to help determine the top analysts in a series of industry categories, and the rankings are released in the fall. All-Stars are the top three analysts in each industry category, as well as a set of runners-up. Although other competing rankings have been created, such as the *Wall Street Journal* rankings and the Thomson Reuters StarMine Analyst ranking, the All-Star ranking has long been seen as the most critical ranking in the field (Phillips and Zuckerman, 2001; Rao, Greve, and Davis, 2001; Reingold, 2006; Bowers et al., 2014), in part because of its longevity but also because investors themselves are surveyed. With respect to other rankings, which are more closely linked to performance, the All-Star ranking has been shown to be more of a ''popularity contest'' among analysts (Emery and Li, 2009) with significant consequences for analysts' employment outcomes and salaries, and it is an important point of leverage in the industry (Groysberg, Healey, and Maber, 2011).

A key feature of the All-Star ranking is that only the winners' names are released. Non-winners remain unnamed, creating a gulf between being ranked (and thus named) and being unranked (and thus anonymous). As Fred Fraenkel, a research director at Shearson Lehman Brothers (the precursor to Lehman Brothers), noted, ''Before *II*, you didn't know who the best analysts were. . . . *II* had an unbelievable effect. It started knighting people as *the* experts. . . . You could be seventh best in the United States and you're nothing. It's either one, two, three, runner-up or nothing'' (as quoted in Groysberg, 2010: 44).

To study whether status changes resulting from category changes in the All-Star ranking affect the impact of individual analysts in the market, we focused on market reactions to analysts' forecast revisions, as evidenced by investors' response. Extensive literature in both finance and accounting has suggested that investors form their expectations about firms' future earnings around analysts' forecasts. For example, investors respond to the firm's actual earnings announcement on the basis of its ''surprise'' with respect to the consensus forecast, which is the average of all analysts' estimates (e.g., Bernard and Thomas, 1990). Investors also rely on individual forecast revisions issued throughout the year (Williams, Moyes, and Park, 1996; Hodge, 2003). As Gleason and Lee (2003: 194) pointed out, ''because of their frequency and timeliness, these revisions have become a vital source of information for many users of corporate financial reports'' and are therefore associated with significant immediate market movements at the time of their release.[3]

The literature has shown, however, that not all analysts are the same; certain analysts elicit stronger reactions from investors than others (e.g., Stickel, 1992; Park and Stice, 2000). Forecast revisions by high-quality analysts—those who have issued or are expected to issue more-accurate forecasts—have been shown to provoke greater response from investors (e.g., Stickel, 1992; Clement and Tse, 2003; Fang and Yasuda, 2005). Investors also react more strongly to celebrity analysts, such as those who appear more frequently in the media (Bonner, Hugon, and Walther, 2007) or who are awarded All-Star awards (Gleason and Lee, 2003).[4]

In testing hypotheses, we closely followed the research design adopted by the studies examining investors' response to individual analyst forecast revisions (e.g., Bonner, Hugon, and Walther, 2007). By building on these approaches, we could specifically evaluate how arbitrary changes in qualitative assessments of the analysts—their status loss or gain due to the change in the *II* category system—affect how the market assimilates the information in their forecast revisions.

[3] Evidence that analysts' forecasts inform stock prices dates back to the 1970s (e.g., Gonedes, Dopuch, and Penman, 1976; Griffin, 1976; Givoly and Lakonishok, 1979, 1980; Imhoff and Lobo, 1984) and has been documented by a large body of empirical research (e.g., Lin and McNichols, 1998; Clement and Tse, 2003; Ivković and Jegadeesh, 2004; Frankel, Kothari, and Weber, 2006; Kirk, 2011; So, 2013). The importance of analysts' forecasts to investors is further supported by the evidence that foreknowledge of analysts' revisions is more relevant to stock values than foreknowledge of the reported earnings themselves (Elton, Gruber, and Gultekin, 1981) and that investors systematically overweight analysts' forecasts by following their estimates regardless of the predictable error component in their forecasts (So, 2013: 615). Collectively, these findings show that individual analyst forecast revisions convey new information to the market and are therefore followed by investors.

[4] More precisely, research has shown that the price adjustment process is faster and more complete for revisions issued by All-Star analysts (Gleason and Lee, 2003).

## Data and Sample

Our primary data source is *Institutional Investor* magazine's All-American Analyst ranking, released each year in October. We collected data on the ranking from its inception in 1972 until 2010. We augmented the ranking data with data from Thomson Research's IBES database on analysts, stocks, and earnings estimates. We obtained data on analysts' earnings forecasts from the IBES Unadjusted Detail File. Following standard conventions in working with analyst data (Glushkov, 2007), and to avoid a known issue with the rounding procedure implemented by IBES (Payne and Thomas, 2003), we adjusted analysts' forecasts and earnings announcements by firms on the same per-share scale by adjusting for stock splits. Information on stock splits, as well as information on stock prices and trading volume, was collected from the Center for Research on Security Prices (CRSP) database.

We used names from the IBES Analyst and Broker Name Translation File to identify individual IBES analysts, and we manually matched these names to the award winners from *II* publications. When we had doubts, we consulted several biographical sources to determine whether analysts worked for that broker that year. Our sample period begins in October 1982, the first year that IBES provides analysts' forecasts, and ends in October 2010. IBES discontinued updates to the translation file in 2008. After 2010, the matching rate decays significantly as new analysts (not identified in the translation file) begin to be ranked.

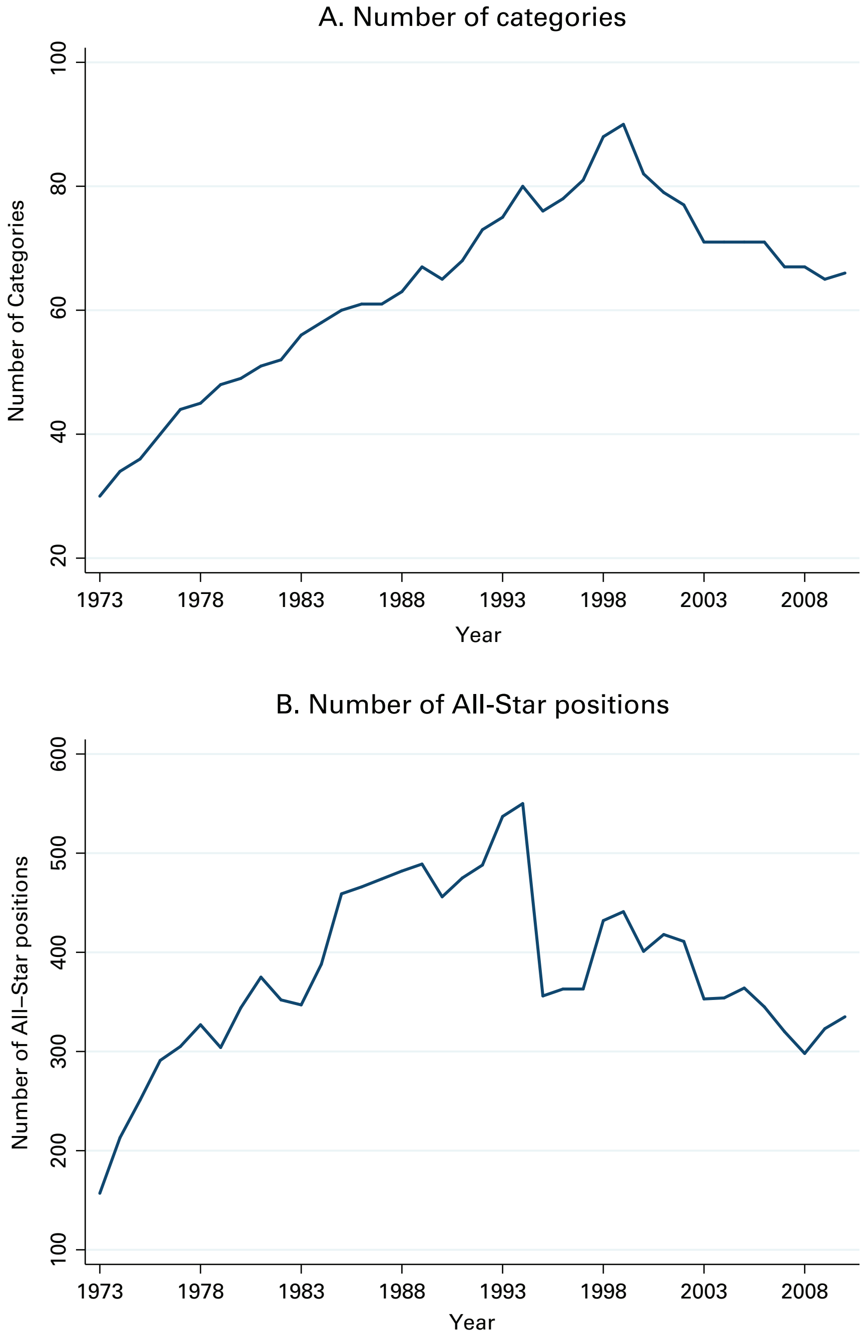
## Identifying Category Changes

*Institutional Investor* (*II*) awards All-Star status to analysts according to different industry categories. As illustrated in figure 1, the number of categories that characterize the ranking evolves over time, and thus the number of All-Stars also changes.[5] Changes in *II*'s category system in each year occur because of category additions and removals. Category additions take two forms: a category can be added as newly created and unrelated to any previous category, as in 1973 when *II* introduced the "Pollution Control" category. Category additions can also be created from an existing category that breaks into multiple parts, for example when in 1998 "Airlines" split into "Airlines" and "Airfreight." Category removals also occur in two forms: a category can disappear from the ranking completely, as when "Tires and Rubber" was removed as a category in 1994. Category removals also occur when two categories that previously existed separately are joined together, as when the 1996 category "Broadcasting and Cable" was created from those two separate categories from the prior year.

In all cases, we referenced *II*'s description of the ranking's category system each year. In most cases, the description illuminated the type of change, including whether a category was new or was simply a renaming of an existing category without any underlying changes. For example, in 1993 the category label "Chemicals/Major" appeared for the first time, but *II*'s explanation said it was simply a renaming of the existing chemicals category rather than a new

[5] The number of status slots is the same year to year, but analysts might share the same position in different categories/years. Ties are more common among runners-up, but they can also occur among the first three ranked analysts.

**Figure 1. Evolution of *Institutional Investor* rankings over time.**




category, so we did not include it as a change. To be conservative, we deferred to the *II* descriptions whenever *II* gave an explanation for that category change.

As illustrated in figure 2, it is clear that *II* regularly changed categories in our sample period, in some cases dramatically. Though some of the category changes appear to reflect *II*'s interpretation of technical changes in the stock market itself—for example, the advent of the Internet led to the creation of a category called ''E-Commerce''—other category changes are somewhat arbitrary. For example, in 2000, *II* dropped the ''Oil/Domestic'' and ''Oil/ International'' categories, leaving the ''Oil and Gas Exploration and Production'' and ''Oil Services and Equipment'' categories, which occur in both years. Both geographic origin and function are legitimate ways to categorize the oil industry, and it is not clear that the year 2000 (as opposed to a different year) represents a particular turning point in focusing only on functional categories. Nonetheless, such a shift necessarily reduces the number of categories in which oil analysts can be ranked and therefore the number of All-Star positions available for analysts who specialize in the oil industry. Thus some analysts lose their All-Star standing when their categories are removed, and other analysts gain All-Star status when *II* adds categories. In figure 3, we illustrate the sample of analysts who gained and lost status positions from category additions and category exclusions, respectively. Such analysts represent the ''treated'' sample in our analysis.

## Dependent Variable

Consistent with prior literature (Bonner, Hugon, and Walther, 2007), we captured investors' response to analysts through the cumulative size-adjusted abnormal return surrounding the release of analysts' earnings forecast revisions. We calculated the *cumulative adjusted return* (*CAR*) as the five-day firm cumulative return (from two days prior to the estimate until two days after the estimate) minus the cumulative return obtained by comparable firms' stocks in terms of market size (i.e., firms that were in the same decile of market capitalization at the beginning of the year) (see Bonner, Hugon, and Walther, 2007).[6] A CAR close to zero is indicative of a firm trading at close to what comparable firms trade for, suggesting little response from investors, while increasing positive or negative values suggest abnormal trading activity on the stock generated by investors' response to the analysts' forecast revision.

## Independent Variables

We also followed Bonner, Hugon, and Walther (2007) in measuring the impact of analysts' *forecast revisions*, which are primary ''precipitating events'' used in the finance and accounting literature (e.g., Imhoff and Lobo, 1984; Stickel, 1992; Gleason and Lee, 2003) to measure analysts' impact.[7] Forecast revisions are favored over recommendation changes because, as So (2013) argued, they offer three important benefits: they are issued in a continuous (rather than an

[6] The time window typically includes days prior to the analysts' estimate to account for the phenomenon known in the literature as ''tipping'' (Irvine, Lipson, and Puckett, 2007), whereby analysts disclose information to institutional investors before the formal announcement date.

[7] Forecast revisions are used instead of the forecast's deviance from consensus because an analyst's own ''prior forecast is a better benchmark than the firm's consensus forecast for measuring the amount of surprise in the individual forecast'' (Gleason and Lee, 2003) and is shown ''to be uniformly more informative to the market'' (Bonner, Hugon, and Walther, 2007: 488).

**Figure 2. Number of category changes over time.**

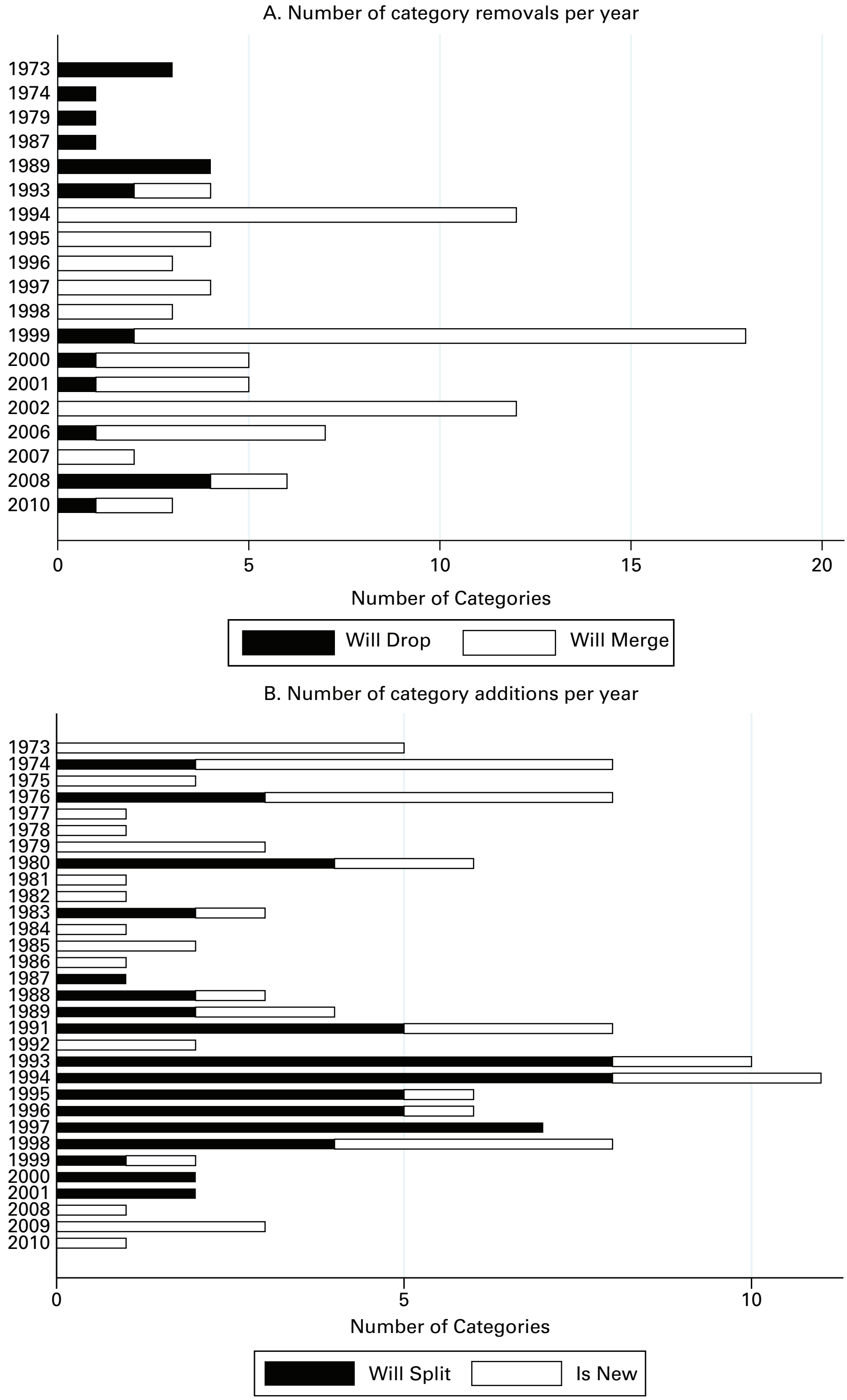
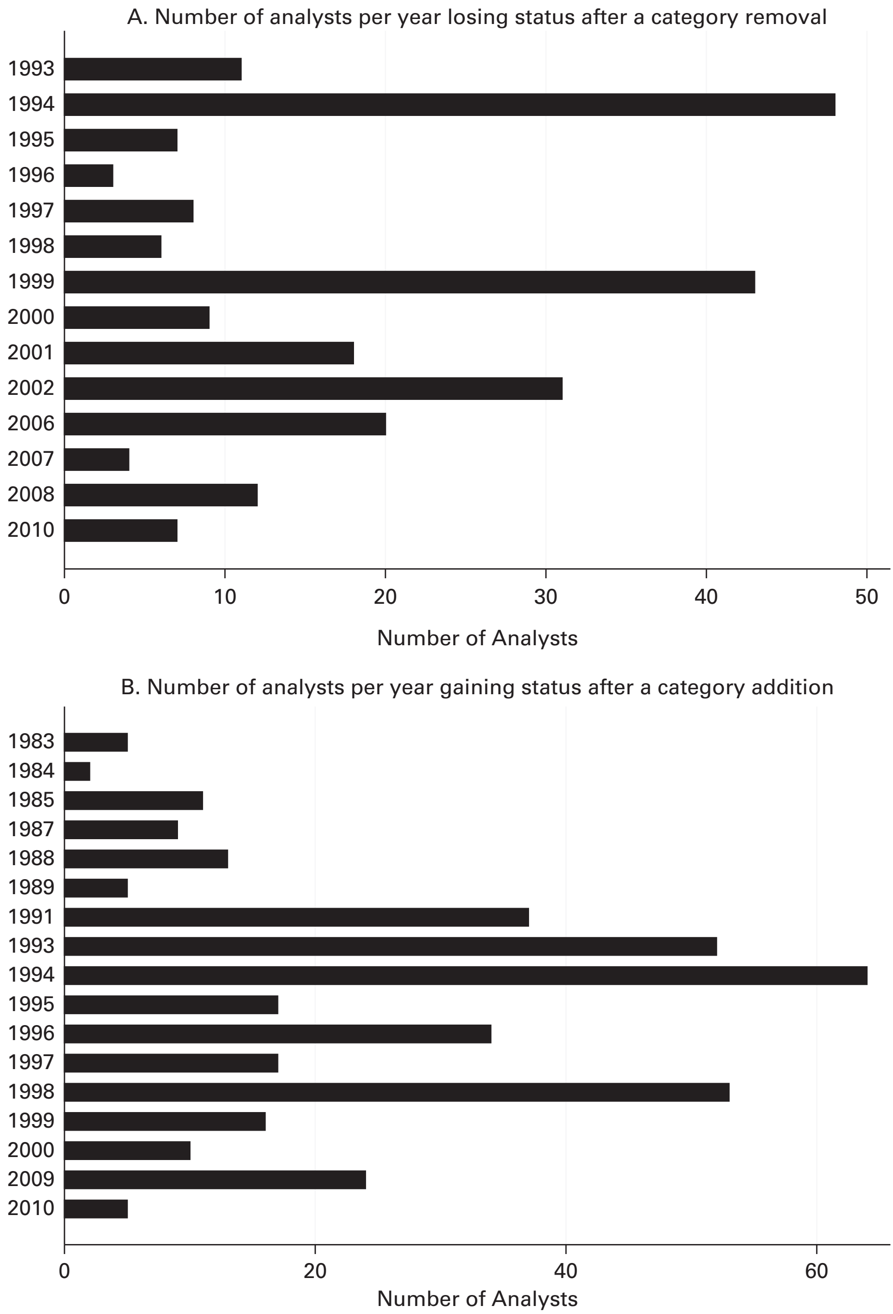


**Figure 3. Number of treated analysts over time.**




ordinal) scale; they are more widely available than recommendations, which are comprehensively available only starting in 1996; and they are ''publicly observable within a relatively short period of time,'' which reduces empirical issues such as survivorship bias (So, 2013: 619). We defined forecast revision as the current quarter's forecast minus the prior forecast, deflated by the stock price 10 trading days before the release of the revised forecast. We also adopted Bonner, Hugon, and Walther's (2007: 488) practice of using estimates only when an analyst has "[issued] both a current and a prior quarterly earnings forecast for the same firm and quarter" and the current forecast is issued "no more than 90 calendar days prior to the quarterly earnings announcement to ensure that our results are not affected by the inclusion of 'stale' forecasts." This variable therefore takes positive values when the analyst revises an estimate upward and negative ones when he or she revises an estimate downward.

To capture whether All-Star analysts' forecast revisions produce a stronger CAR (investors' response) than other forecast revisions, we created a dummy labeled *II analyst*, which takes the value of 1 when the forecast revision is issued by an analyst listed by name in that year's All-Star analyst ranking and 0 otherwise. Consistent with the differences-in-differences design that we describe below, we characterized analysts' forecast revisions by whether they are from a *treated analyst*—one who has gained All-Star status from a category addition or lost All-Star status from a category removal—or from a control group of analysts who operate in a category that did not change. We also tracked whether the forecast revision is issued *pre* or *post category change* (a category addition or removal, respectively).

## Control Variables

We controlled for several variables that might affect investors' response to analysts' forecast revisions. Because the finance literature has documented that investors respond more strongly to analysts who are expected to be more accurate in their predictions (Stickel, 1992; Park and Stice, 2000; Clement and Tse, 2003; Gleason and Lee, 2003)—as inferred from their past accuracy, experience, broker size, and the numbers of firms and industries they follow (Mikhail, Walther, and Willis, 1997; Clement, 1999; Jacob, Lys, and Sabino, 1999)—we controlled for the expected accuracy of an analyst's forecast revision by calculating the analyst's *expected error*. Doing so helped us discount the alternative hypothesis that investors follow All-Star analysts only because they have been more accurate in the past or because they share characteristics that are associated with superior expected accuracy. We constructed the expected error building on the same approach used by Bonner, Hugon, and Walther (2007) and Clement and Tse (2003), calculated as shown in the Online Appendix (http://journals.sagepub.com/doi/suppl/10.1177/0001839217727706).[8]

In addition to the variables considered by Bonner, Hugon, and Walther (2007), our calculation of the expected error accounts also for the possibility that All-Star analysts' accuracy might depend not only on a superior "ability to gather a wide variety of publicly available information, efficiently process this information, and generate research that yields superior forecasts" but also on a privileged "access

[8] As a robustness check, we also alternatively used, as Bonner, Hugon, and Walther (2007) did, the *ex-post realized accuracy*: the actual accuracy of the forecast revision as shown at the end of the year once the firm announces its earnings. By doing so, we can be more confident that the investors' response to All-Star analysts' forecast revisions is not simply based on the information that investors might extract from the analysts' estimate that is not captured by the observables we used to predict accuracy.

to inside information before it becomes public'' (Ivković and Jegadeesh, 2004: 433). This further control is particularly important in our case, because if All-Star analysts' opinions do prompt a stronger response from investors, firms' management might have a stronger incentive to establish privileged relationships with All-Stars than with other analysts. Hoping to receive reports that would enhance their firms' stock price, firms' management might offer All-Star analysts privileged access to nonpublic information, making them more accurate than other analysts. To control for this possibility, we leveraged a breakthrough regulatory change that limited analysts' access to privileged information (Bowers et al., 2014). The U.S. Securities and Exchange Commission (SEC) passed a rule concerning the fair disclosure of privileged information, popularly called Reg FD, on October 23, 2000 because of increasing anecdotal evidence that analysts could benefit from selective disclosure of material information by stock issuers.[9] This regulation stipulated that firms' management should disseminate any material information simultaneously to all market participants, thus prohibiting selective disclosure to analysts. In estimating the expected error, we accounted for this regulatory change, particularly its impact on All-Star analysts.

We also considered the possibility that the relationship between All-Star analysts' forecast revisions and investors' response might be affected not only by investors expecting All-Star analysts' forecast revisions to be more accurate but also by All-Stars' forecast revisions being more timely, i.e., being issued in closer proximity to other events and information that influence the market. If this is the case, investors might respond to the latter rather than to the analyst's forecast revision, and a positive relationship between the analyst's forecast revision and investors' response therefore might be spurious. We addressed this concern in two ways. First, we controlled for the (natural log of) *trading volume* the day prior to the focal analyst's forecast revision. Trading volume is one of the most accurate proxies for news reaching and affecting many investors (Barber and Odean, 2008). Second, as we describe below, we estimated our model in a restricted sample of forecast revisions that does not overlap with firms' actual earnings announcements.

## Research Design

We divided our analysis into three parts. First, we examined whether All-Star analysts' forecast revisions generally prompt a greater response from investors than those of unranked analysts. Second, we tested our hypotheses regarding the change in investors' response to analysts who gain All-Star status because of a category addition or lose All-Star status because of a category removal by *II*. Finally, to ensure that the observed change in investors' response is due to the category change and not to the analysts' merits, we performed a differences-in-differences estimation, comparing the change in impact of the treated analysts (for category additions, analysts who were named in the All-Star ranking, and for category removals, analysts who exited from it at time $t+1$) to the change in impact of a control group of analysts who were at time $t$

[9] ''As reflected in recent publicized reports, many issuers are disclosing important nonpublic information, such as advance warnings of earnings results, to securities analysts or selected institutional investors or both, before making full disclosure of the same information to the general public'' (U.S. Securities and Exchange Commission, 2000: 2).

similar to the treated analysts, i.e., had the same likelihood to be ranked at time $t+1$ but operated in an untreated category—one that *II* did not change.[10]

For each set of analyses, we accounted for analyst fixed effects, thus controlling for time-invariant differences across analysts that might affect investors' response, such as analysts' innate ability, personality, race, gender, and industry of specialization. Moreover, because in our sample analysts can be "treated" in different years, we also included dummies for each year of *II* election, thus controlling for temporal differences among years of treatment, such as the number of categories and positions available that year, as well as other stock market conditions.[11] To mitigate the effect of potential confounding information disclosed simultaneously as the forecast revision in the market, we followed Cooper, Day, and Lewis (2001) and also estimated our models in a restricted sample of forecast revisions, excluding all forecast revisions issued in proximity to an actual earnings announcement by the firm. Specifically, we considered only forecast revisions that had no earning announcement for the firm in the five-day return accumulation period over which we estimated our dependent variable.

To test the general effect of being included in *II*, we estimated the following equation:

$$\begin{aligned} CAR_{i,j,t} = {} & \alpha_i + \gamma_t + \beta_1 Forecast\ Revision_{i,j,t} + \beta_2 II\ Analyst_{i,j,t} \\ & + \beta_3 Forecast\ Revision_{i,j,t} * II\ Analyst_{i,j,t} + \sum Controls \\ & + \xi_{i,j,t} \end{aligned} \tag{1}$$

where $\alpha_i$ is the dummy capturing the unobserved time-invariant individual effect, $\gamma_t$ is the dummy capturing the unobserved effect in the year of election, CAR is the cumulative adjusted return as described above, *Forecast Revision* captures the magnitude of the forecast revision scaled by price as described above, and *II Analyst* is a dummy variable indicating whether the analyst is an All-Star analyst while issuing the forecast. A positive value of the coefficient associated with the interaction between the *Forecast Revision* and the *II Analyst* dummy ($\beta_3$) would suggest that the investors' response to the analyst's forecast revision will be greater if the analyst is an All-Star analyst than if he or she is not an All-Star, thus providing evidence that investors respond more to All-Star analysts even after controlling for analysts' accuracy (expected error).

After showing that the election to the All-Star ranking does affect investors' response to analysts' estimates, we tested our hypotheses concerning whether investors change their response to estimates from analysts who gain status for category additions and those who lose status for category removals. Because we expect the former to be followed more and the latter less, we separately estimated their effects.

We thus first contrasted the investors' response to forecasts from analysts who gain All-Star status because of a category addition with investors'

[10] Because our results will show a significant difference in estimates issued in proximity to an earnings announcement and those issued far from it, we also matched estimates according to their timing, i.e., whether an earnings announcement by the firm occurred in the return windows of the forecast or not.

[11] As a robustness check, we also ran the models described below with stock fixed effects and obtained the same support for our hypotheses.

response to these analysts' forecasts prior to the change. The equation we tested takes the following form:

$$\begin{aligned}\mathrm{CAR}_{i,j,t} = \alpha_i + \gamma_t + \beta_1 \text{Forecast Revision}_{i,j,t} + \beta_2 \text{Post Category Addition}_{i,j,t} \\ + \beta_3 \text{Forecast Revision}_{i,j,t} * \text{Post Category Addition}_{i,j,t} \\ + \sum \mathit{Controls} + \xi_{i,j,t}\end{aligned} \quad (2)$$

Here, we expect $\beta_3$ to be positive: analysts who gain All-Star status because a new category was added or because an existing category was split will have significantly greater response from investors. That is, their forecasts will most strongly affect investors' response after they become All-Star analysts because of the category addition.

We then tested whether analysts who lose status because of a category removal have a reduced response from investors:

$$\begin{aligned}\mathrm{CAR}_{i,j,t} = \alpha_i + \gamma_t + \beta_1 \text{Forecast Revision}_{i,j,t} + \beta_2 \text{Post Category Removal}_{i,j,t} \\ + \beta_3 \text{Forecast Revision}_{i,j,t} * \text{Post Category Removal}_{i,j,t} \\ + \sum \mathit{Controls} + \xi_{i,j,t}\end{aligned} \quad (3)$$

We expect a negative sign for $\beta_3$: analysts who lose All-Star status because of the category removal will see their impact reduced—investors' response to their estimates will be lower after they are not listed in the ranking because of a category removal.

The validity of the test provided in equations (2) and (3) hinges on the assumption that analysts receive (or lose) All-Star status exclusively because the threshold to be awarded has been lowered (or increased) by the category change, and not because of a change in the quality of their work that would have made them appear in (or disappear from) the ranking even if *II* did not change the category. Thus, as noted above, we also performed a differences-in-differences estimation, in which we compared the change in impact of the treated analysts to the change in impact of a control group.

To make such a comparison, for each forecast revision issued by the treated analysts, we identified a "twin" forecast revision issued by an analyst with similar pre-treatment characteristics. Specifically, we identified forecast revisions issued by analysts who had the same position in the All-Star ranking for the two years prior to the category change—assuming that analysts who have a similar trend of higher ranking are more likely to be ranked subsequently—and who demonstrated the same relative performance in forecast accuracy—based on the assumption that more-accurate analysts are more likely to be ranked. To make comparable the forecast performance of analysts who follow different stocks and operate in different industries, we followed the approach developed by Hong and Kubik (2003), who ranked the analyst's accuracy for each stock in his or her portfolio in relation to the accuracy of competing analysts on that security; scaled the obtained ranking by the number of analysts following the stock; and averaged the resulting scores across all stocks in the analyst's portfolio. The attained analyst's performance variable ranges from 0 to 1, where 0 indicates that the analyst has been the least accurate on all stocks he or she covered, and 1 the most accurate. We computed this variable based on the accuracy of estimates issued up to May of the year of the new *II* ranking (which occurs in October), because *II* compiles the questionnaire answered by investors in the spring.

We used the coarsened exact matching (CEM) algorithm of Iacus, King, and Porro (2012) to perform our matching, because it "possesses a wide range of statistical properties not available in most other matching methods" (Iacus, King, and Porro, 2012: 1). CEM is a monotonic imbalance bounding (MIB) matching method. Compared with other matching algorithms that require "continually checking balance, rematching, and checking again until balance is improved on all variables," CEM "guarantee[s] that the imbalance between the matched treated and control groups will not be larger than the ex ante user choice" (Iacus, King, and Porro, 2012: 2). It does so by automatically coarsening the data based on a binning algorithm that assigns observations to different strata based on the matching variables identified by the user.[12]

We employed the balanced matched sample to estimate a differences-in-differences regression and separated our analysis into category removals and category additions. For category additions, the regression equation takes the following form:

$$\begin{aligned}\mathrm{CAR}_{i,j,t} = {} & \alpha_i + \gamma_t + \beta_1 \mathrm{Forecast\ Revision}_{i,j,t} + \beta_2 \mathrm{Treated\ Analyst}_{i,j,t} \\ & + \beta_3 \mathrm{Post\ Category\ Expansion}_{i,j,t} + \beta_4 \mathrm{Forecast\ Revision}_{i,j,t} \\ & * \mathrm{Post\ Category\ Expansion}_{i,j,t} + \beta_5 \mathrm{Forecast\ Revision}_{i,j,t} \\ & * \mathrm{Treated\ Analyst}_{i,j,t} + \beta_6 \mathrm{Post\ Category\ Expansion}_{i,j,t} \\ & * \mathrm{Treated\ Analyst}_{i,j,t} + \beta_7 \mathrm{Forecast\ Revision}_{i,j,t} \\ & * \mathrm{Post\ Category\ Expansion}_{i,j,t} * \mathrm{Treated\ Analyst}_{i,j,t} \\ & + \sum \mathit{Controls} + \xi_{i,j,t}\end{aligned} \tag{4}$$

Our interest is in the three-way interaction coefficient ($\beta_7$). We expect a positive coefficient for $\beta_7$, indicating that the forecast revisions of analysts who gain All-Star status after a category was added generate a greater response from investors than the forecast revisions of analysts who were in a similar position to be ranked but operated in an unchanged category. For category removals, we tested the following equation:

$$\begin{aligned}\mathrm{CAR}_{i,j,t} = {} & \alpha_i + \gamma_t + \beta_1 \mathrm{Forecast\ Revision}_{i,j,t} + \beta_2 \mathrm{Treated\ Analyst}_{i,j,t} \\ & + \beta_3 \mathrm{Post\ Category\ Removal}_{i,j,t} + \beta_4 \mathrm{Forecast\ Revision}_{i,j,t} \\ & * \mathrm{Post\ Category\ Removal} + \beta_5 \mathrm{Forecast\ Revision}_{i,j,t} \\ & * \mathrm{Treated\ Analyst}_{i,j,t} + \beta_6 \mathrm{Post\ Category\ Removal} \\ & * \mathrm{Treated\ Analyst}_{i,j,t} + \beta_7 \mathrm{Forecast\ Revision}_{i,j,t} \\ & * \mathrm{Post\ Category\ Removal}_{i,j,t} * \mathrm{Treated\ Analyst}_{i,j,t} \\ & + \sum \mathit{Controls} + \xi_{i,j,t}\end{aligned} \tag{5}$$

[12] The algorithm eliminates "all imbalances (i.e., differences between the treated and control groups)," such as "all multivariate nonlinearities, interactions, moments, quantiles, comoments, and other distributional differences beyond the chosen level of coarsening" (Iacus, King, and Porro, 2012: 8). CEM dominates commonly used existing matching methods not only for its ability to reduce imbalance but also for the advantage of reducing "model dependence, estimation error, bias, variance, mean square error, and other criteria" (Iacus, King, and Porro, 2012: 2).

As before, our interest is in the three-way interaction coefficient ($\beta_7$). But here we expect a negative coefficient, signifying that the investors' response to forecasts of an analyst who lost All-Star status after the category removal is significantly lower than that to forecasts of a comparable analyst in an unchanged category who was similarly ranked and similarly accurate at time *t*.

## RESULTS

Table 1 reports the descriptive statistics and correlation matrix for our variables in the sample encompassing all analysts' forecast revisions appearing on IBES from 1983 to 2010.[13] Consistent with prior findings (Richardson, Teoh, and Wysocki, 2004; Bonner, Hugon, and Walther, 2007), the forecast revision variable is negative, reflecting that on average analysts revise their forecasts slightly downward throughout the period. This suggests that they tend to be more optimistic at the beginning of the year and become less so as they approach the announcement date. The value in our extended sample (–.0023) is very close to the value in the limited sample used by Bonner, Hugon, and Walther, 2007 (–.0018).

Our first analysis tests whether the forecasts of All-Star analysts prompt a greater response from investors than those of other analysts. Table 2 reports the results for equation (1) both in the full sample of forecast revisions (model 1) and in the restricted sample of forecast revisions not overlapping with an actual earnings announcement (model 2).

The positive coefficient of *forecast revision* indicates that analysts' revisions do generally provide important guidance to investors. Specifically, when an analyst revises upward his or her forecast on a given firm—issues a positive forecast revision—it is followed by greater market returns for the firm's stock compared with other, comparable firms' stocks in terms of market size (i.e., firms that were in the same decile of market capitalization at the beginning of the year). When an analyst revises his or her estimates downward—issues a negative forecast revision—it is followed by a lower return in the market. The positive and significant coefficient for the interaction between forecast revision and the *II* analyst dummy indicates that the relationship between analysts' revisions and CAR (cumulative adjusted return) is amplified for All-Star analysts, suggesting that investors respond more strongly to All-Star analysts' revisions.

**Table 1. Descriptive Statistics and Correlation Matrix**

| Variable | Mean | S.D. | 25th percentile | 75th percentile | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|
| 1. Cumulative adjusted return | –.006 | .09 | –.04 | .03 | | | | |
| 2. Forecast revision | –.002 | .08 | –.00 | .00 | .03 | | | |
| 3. *II* analyst | .154 | .36 | .00 | .00 | .01 | .00 | | |
| 4. Expected error | –.004 | .14 | –.09 | .07 | .02 | .01 | –.01 | |
| 5. Trading volume (ln) | 13.106 | 1.94 | 11.93 | 14.42 | .00 | .01 | .07 | .03 |

[13] Although our sample begins in 1982, we can test from 1983 onward because of the historical nature of some of our variables. In particular, IBES provides analysts' estimates starting only from 1983.

**Table 2. Impact of Forecast Revisions of All-Star (*II*) Analysts on CAR 1983–2010***

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Forecast revision | .027••• | .082••• | .033••• | .135••• |
| | (.002) | (.004) | (.002) | (.005) |
| *II* analyst | .001 | .001 | .001 | .001 |
| | (.001) | (.001) | (.001) | (.001) |
| Forecast revision × *II* analyst | .135••• | .627••• | .128••• | .605••• |
| | (.013) | (.038) | (.013) | (.038) |
| Expected error | | | .013••• | .003• |
| | | | (.001) | (.001) |
| Forecast revision × Expected error | | | –.133••• | –.431••• |
| | | | (.017) | (.027) |
| Trading volume (ln) | | | .000• | –.000 |
| | | | (.000) | (.000) |
| R-squared | .0287 | .0386 | .0293 | .0396 |
| N | 520,376 | 269,680 | 519,265 | 269,429 |

• $p < .05$; ••$p < .01$; •••$p < .001$.

* Standard errors are in parentheses. Analyst and year fixed effects are included in all models.

In model 3 (full sample) and in model 4 (non-overlapping sample), we tested whether this effect is robust after controlling for other signals of analysts' value that are directly associated with their accuracy, as well as other information disclosed in the market as captured by the trading volume the day prior to the revision. The coefficient associated with the interaction between forecast revision and expected error is negative and significant, suggesting as expected that investors do not follow analysts who are likely to be inaccurate as strongly as their more-accurate counterparts.

Our main interaction effect (forecast revision × *II* analyst dummy), however, remains positive and significant. This result suggests that investors might find it difficult to closely monitor each analyst and perfectly predict his or her accuracy, and therefore they base their evaluation of analysts' quality also on readily observable proxies such as that provided by the All-Star ranking. In other words, investors respond to All-Star status even if, like any other status signal, it correlates only weakly to analysts' actual performance (Emery and Li, 2009).

In table 3, we test whether category additions exogenously increase investors' response to All-Star analysts, and results support H1a: the positive interaction between forecast revision and post category addition shows that investors' response will significantly increase after an analyst is included in the All-Star ranking because of a category addition. In table 4, we test whether category removals exogenously decrease investors' response to analysts who lose their All-Star status, and results support H1b: the negative interaction between forecast revision and post category removal shows that investors' response significantly decreases after analysts lose All-Star status because of a category removal.

We performed the differences-in-differences regressions, as illustrated in equations (4) and (5), to make sure that a category change by *II* rather than a change in the actual quality of the analyst is responsible for the status shift. To determine this, we compared the change in investors' response to the

**Table 3. Impact of Forecast Revisions of Analysts Gaining All-Star (*II*) Status after a Category Addition on CAR 1983–2010***

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Forecast revision | .002 | .001 | .344••• | .788••• |
| | (.005) | (.006) | (.069) | (.134) |
| Post category addition | .006 | .011 | .005 | .010 |
| | (.006) | (.013) | (.006) | (.013) |
| Forecast revision × Post category addition | .782••• | 1.989••• | .343• | 1.421••• |
| | (.129) | (.360) | (.156) | (.369) |
| Expected error | | | .013 | .005 |
| | | | (.009) | (.021) |
| Forecast revision × Expected error | | | –1.807••• | –4.141••• |
| | | | (.364) | (.707) |
| Trading volume (ln) | | | –.001 | –.002 |
| | | | (.001) | (.002) |
| R-squared | .0776 | .0919 | .0833 | .1117 |
| N | 5,427 | 1,992 | 5,367 | 1,975 |

• $p < .05$; ••$p < .01$; •••$p < .001$.
* Standard errors are in parentheses. Analyst and year fixed effects are included in all models.

**Table 4. Impact of Forecast Revisions of Analysts Losing All-Star (*II*) Status after a Category Removal on CAR 1983–2010***

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Forecast revision | .722••• | 1.691••• | .699••• | 1.715••• |
| | (.084) | (.224) | (.084) | (.224) |
| Post category removal | .001 | –.004 | .002 | –.003 |
| | (.005) | (.009) | (.005) | (.009) |
| Forecast revision × Post category removal | –.419••• | –1.337••• | –.340••• | –.719•• |
| | (.093) | (.238) | (.093) | (.265) |
| Expected error | | | .034••• | .012 |
| | | | (.008) | (.014) |
| Forecast revision × Expected error | | | –1.166••• | –2.642••• |
| | | | (.207) | (.537) |
| Trading volume (ln) | | | .002•• | .003• |
| | | | (.001) | (.001) |
| R-squared | .0593 | .0849 | .0697 | .0956 |
| N | 6,104 | 2,940 | 6,047 | 2,926 |

• $p < .05$; ••$p < .01$; •••$p < .001$.
* Standard errors are in parentheses. Analyst and year fixed effects are included in all models.

forecasts issued by treated analysts with the change in response to the forecasts released by a control group that is similar in the most relevant pre-treatment characteristics (ranking position and accuracy) but that is not subject to a change in industry category. By doing so, we contrasted the change in investors' response to an analyst whose All-Star status was changed because of a category change with the change in investors' response that would have occurred had *II* not changed the category. Table 5 reports the results for

**Table 5. Impact of Forecast Revisions of Analysts Gaining All-Star (*II*) Status after a Category Addition on CAR (Matched Sample) 1983–2010***

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Forecast revision | .785••• | 1.292••• | .798••• | 1.314••• |
| | (.160) | (.310) | (.161) | (.311) |
| Treated analyst† | –.005 | –.025 | –.004 | –.024 |
| | (.006) | (.017) | (.006) | (.017) |
| Post category addition | .000 | –.001 | .000 | –.001 |
| | (.004) | (.009) | (.004) | (.009) |
| Forecast revision × Post category addition | –1.214••• | –1.375••• | –1.354••• | –1.576••• |
| | (.204) | (.370) | (.210) | (.424) |
| Forecast revision × Treated analyst | –.689••• | –1.253••• | –.630••• | –1.150•• |
| | (.190) | (.348) | (.191) | (.371) |
| Treated analyst × Post category addition | .003 | .006 | .003 | .007 |
| | (.005) | (.013) | (.005) | (.013) |
| Forecast revision × Treated analyst × Post category addition | 1.795••• | 3.096••• | 1.813••• | 3.217••• |
| | (.259) | (.536) | (.260) | (.549) |
| Expected error | | | .010 | .004 |
| | | | (.008) | (.019) |
| Forecast revision × Expected error | | | –1.017•• | –.709 |
| | | | (.380) | (.818) |
| Trading volume (ln) | | | –.000 | –.002 |
| | | | (.001) | (.002) |
| R-squared | .1545 | .1724 | .1559 | .1733 |
| N | 6,978 | 2,503 | 6,970 | 2,501 |

• $p < .05$; ••$p < .01$; •••$p < .001$.

* Standard errors are in parentheses. Analyst and year fixed effects are included in all models.

† Treated analyst refers to those who were ranked at time $t$ and who gained All-Star status because of a category addition in time $t+1$.

additions and table 6 the results for removals. Results provide further support for our hypotheses.

As signified by the positive coefficient of the three-way interaction in table 5, when *II* adds categories that create the opportunity for otherwise unranked analysts to receive All-Star status, the forecasts of such analysts suddenly have greater response from investors than if *II* did not make any change.[14] Conversely, as the negative coefficient of the three-way interaction in table 6 indicates, if *II* removes a category, thus resulting in some analysts losing their All-Star status, the investors' response to these analysts' forecasts is lower than if *II* did not make any change. Thus we conclude that analysts who gain status because of category additions have greater response from investors, our variable for market impact, while analysts who lose status because of category

[14] One key assumption of the diff-in-diff estimation is that the impact of forecast revisions in the treatment and the control group would follow the same time trend in the absence of the treatment. In results available from the authors, we tested for such a parallel trend in an analysis in which we added interactions not only with a post-treatment variable but also with a lagged time variable (see Autor, 2003). As the nonsignificance in the three-way interaction with this variable suggests, the revisions issued by the treated sample and the control sample did not have a significantly different trend prior to the treatment. We appreciate the suggestion of an anonymous reviewer to perform this test.

**Table 6. Impact of Forecast Revisions of Analysts Losing All-Star (*II*) Status after a Category Removal on CAR (Matched Sample) 1983–2010***

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Forecast revision | .372•• | .311 | .301•• | .239 |
| | (.114) | (.163) | (.114) | (.165) |
| Treated analyst† | .003 | .003 | .003 | .003 |
| | (.004) | (.007) | (.004) | (.007) |
| Post category removal | –.004 | –.010• | –.005 | –.010• |
| | (.003) | (.005) | (.003) | (.005) |
| Forecast revision × Post category removal | .266 | .528* | .343• | .663•• |
| | (.147) | (.216) | (.148) | (.223) |
| Forecast revision × Treated analyst | .360•• | 1.323••• | .415•• | 1.402••• |
| | (.139) | (.265) | (.139) | (.268) |
| Treated analyst × Post category removal | .006 | .008 | .006 | .008 |
| | (.004) | (.007) | (.004) | (.007) |
| Forecast revision × Treated analyst × Post category removal | –.706••• | –1.825••• | –.726••• | –1.709••• |
| | (.171) | (.311) | (.171) | (.313) |
| Expected error | | | .025••• | .013 |
| | | | (.006) | (.010) |
| Forecast revision × Expected error | | | –.815••• | –1.051• |
| | | | (.180) | (.409) |
| Trading volume (ln) | | | .001 | .001 |
| | | | (.001) | (.001) |
| R-squared | .0928 | .1227 | .0972 | .1247 |
| N | 10,607 | 4,941 | 10,595 | 4,939 |

• $p < .05$; ••$p < .01$; •••$p < .001$.

* Standard errors are in parentheses. Analyst and year fixed effects are included in all models.

† Treated analyst refers to those who were ranked at time $t$ and who lost All-Star status because of a category removal in time $t+1$.

removals have reduced response from investors. This is true even when controlling for other aspects of the analyst that might lead to changes in investors' response, such as quality.

## DISCUSSION

The significant benefits that high-status actors receive—including lower costs, greater access to resources, more leeway in deviant behavior, and greater market impact and credit—are predicated on the vertical nature of status and audience preferences for high-status actors. But status also has a categorical nature in many markets, such that it is awarded relative to others in a particular category. For example, prospective students order higher education institutions within specific categories: whether they are private or public, science or liberal arts, undergraduate or graduate programs, and so on. Similarly, stakeholders create different status hierarchies of firms based on the industry in which these firms are classified. We used the categorical nature underlying many status orderings to examine the relationship among status, actor quality, and market outcomes because category boundaries are not fixed and unchangeable, but porous and malleable. As markets evolve, the categories that structure them can expand in number, creating opportunities for new actors to be bestowed status, or they can contract, dethroning certain actors from their superior standing. In both cases, gains and losses of status may occur without changes in actors' quality.

In our setting, we established that high-status All-Star equity analysts have a greater impact in the market as measured by investors' response to their forecast revisions. We found that analysts who gained status because categories were added to the All-Star ranking had an amplified impact in the market after that change compared with similar others who were not affected by a category addition. We also found that analysts who lost their status positions because categories were removed from the ranking had a reduced impact in the market after that change compared with those who did not suffer a category removal. Across numerous specifications accounting for potential observed confoundings such as actors' performance, we observed that gaining or losing status from category changes is meaningful to investors, who use the estimates of affected analysts just as if the analysts gained or lost status for any other reason. The market privileges status however it occurs.

Our findings are particularly interesting given that category boundaries can be somewhat arbitrary. In our setting, for example, the burgeoning telecommunications industry was variously categorized as telecommunications equipment, telecommunications services, wireless telecommunication, and wireline telecommunication. There is no "right" way to subdivide telecommunications. Rather, each of these four represents a legitimate way to partition a large and important investment area. Yet as these categories changed, different analysts, all of whom examined firms related to telecommunication, were designated All-Stars in each configuration, even as their actions and quality did not change. This highlights how category changes can make status competition uniquely dynamic through structural changes underlying the status positions themselves. These seemingly arbitrary changes have a significant impact in the market, which calls into question the reliance on status as a meaningful indicator of underlying quality.

Our findings add to a growing literature showing that status can be decoupled from quality (e.g., Simcoe and Waguespack, 2011; Malter, 2014). This literature suggests that the basis for decoupling is generally actor focused—for example, actors might gain status superior to their quality by strategically forming ties with prestigious partners. Conversely, they might lose status for deviant behavior or because of competitive crowding, a situation in which others of equal or greater performance receive status instead. We provide evidence that this decoupling can also originate structurally, through category boundaries. Actors in our setting do not change their quality; the decoupling originates instead because categories change, making some actors appear to have higher status and others lower status as categories come and go.

The structural origin of status in our setting also uncovers a novel mechanism inhibiting financial markets' efficiency (e.g., Zuckerman, 2004; Cooper, Gulen, and Rau, 2005; Coval and Shumway, 2005) and provides evidence supporting the thesis that financial markets are embedded in and affected by social structures and institutions (Rao, Greve, and Davis, 2001; Lounsbury and Rao, 2004; Carruthers and Kim, 2011). Prior literature has shown that stock prices can fluctuate in response to analysts' estimates, but typically those estimates have been seen as relating to the analysts' privileged access to firms' information. Analysts have largely been seen as enablers of market efficiency, and when they are seen as inhibitors, it is because of their bounded rationality or conflicts of interest. Our work shows that a firm's stock price may change because of structural characteristics of analysts' award systems, separate from anything related to the analyst or the firm. Thus investors and other market participants who make decisions based on the perceived authority from rankings would do so erroneously if they assume that such changes are related to analysts' ability; similarly, opportunities may exist to find unique insights from formerly ranked analysts who are unappreciated by the market. Relatedly, investors who act on changes in stock price, believing it to be based on industry- or firm-specific information, would be mistaken if the movements in stock price originate in part because of structural changes in rankings.

Our results also have implications for analysts and their organizations. Typically a loss of status prompts actors to respond in some way to recover their lost position (Askin and Bothner, 2016). If those whose status declines undertake changes in behavior, they may be responding inappropriately if the decline in status position occurs solely because of changes in the underlying structure of the status system. Thus our results suggest an important dilemma. We find that analysts receive penalties for losing a high-status position regardless of whether the loss results from their behavior. Because status positions determine important outcomes for actors (Hong, Kubik, and Solomon, 2000; Sauder and Lancaster, 2006; Askin and Bothner, 2016), actors may be compelled to respond to changes in status positions no matter how they occur, lest they suffer career and market penalties. The incentive system of research departments in the brokerage firms that employ analysts has been strongly linked to the *II* ranking, as are firms' efforts to attract investment banking clients (Groysberg, Healey, and Maber, 2011). The cascading effects of arbitrary changes in ranking categories will also have consequences for analysts' compensation, as well as for their firms' ability to gain new clients.

## Limitations and Future Research

Our setting places certain boundary conditions on our findings. Our paper establishes that category changes will be seen as meaningful in the market, but the thresholds, if any, at which categories cease to be accepted in the marketplace remain to be systemically explored. It is reasonable to assume, for example, that audience acceptance will vary with the number of category changes. For example, adding an excessive number of categories might render a status system useless.

Additionally, we focus on a specific setting in which a third party controls the category system. We believe that this condition is more and more common in many markets in which status occurs, including financial markets, cultural markets, education, insurance, and consumer experience goods. In these markets, category changes can and do regularly occur in each iteration, as when brokerage systems change the partitions of their rating systems (Fleischer, 2009), educational rankings add categories such as ''A schools for B students'' (Mercer, 2015), and consumer websites add categories to attempt to refine users' experience (e.g., Yelp, 2010). When categories are changed by third parties, the results will have an impact as soon as they are published.

Categories also underlie many status-based settings without third-party involvement, such as academic research and venture capital. Categories can also be organization based, rather than market based, as when departments in a university split or are merged, or when new positions or departments are created, as in the rise of information technology or data analytics in organizations. We expect dynamics similar to what we describe here in such settings, although we make a significant caveat: if the category additions and removals appear gradually rather than sharply (Kennedy, 2008; Navis and Glynn, 2010), we expect the effect of status gains and losses on market impact to be less crisp than in settings in which categories are succinctly changed. A significant body of research suggests that categories are sites for strategic work by actors (e.g., Fleischer, 2009; Pontikes 2012; Delmestri and Greenwood, 2016), but the impact of any non-third-party category-based status dynamics is a subject for future research.

Category changes are just one example of a number of possible structural ways by which status can change without a corresponding change in actors' quality. Structural changes that can affect individuals' status permeate many social domains at different levels. In a ranking context, for example, the status of actors can be changed not only by the introduction or elimination of categories but also by changing the number of slots available in each category. Rankings can nominate only the winner or the best in the category, or they can expand the number of actors ranked in each category. They can also reveal finalists in addition to award winners. Each of these changes has different consequences for how actors will be perceived by their audience and is independent from their behavior.

Structural changes affecting individuals' status can also be more subtle, as when categories remain fixed but the underlying system of worth used to evaluate candidates changes. Rankings and awards, for example, frequently change the parameters that are used to rank actors within categories. These structural changes both change the nominal position of actors in the ranking and carry important consequences for them, to the extent that they analyze and react to such changes by taking them into account in their strategic decisions (Espeland and Sauder, 2007). Structural changes also occur not only with rankings but with interorganizational divisions (Neeley and Dumas, 2016) and legislative or regulatory systems (Steensland, 2006; Burshell and Mitchell, 2017). For example, when organizations create a new position or when regulations alter which classes of individuals can receive benefits (Steensland, 2006), they increase the status of some actors while reducing that of others.

Our evidence indicates that relying heavily on status as a way to make decisions may be misguided, because it can change as the result of seemingly arbitrary structural changes rather than because of changes in the market actors themselves. Audiences would be wise to view status, and the categories that give rise to it, as arbitrary rather than the natural, inexorable account of market activity. Those who study status dynamics, such as changes in status or changes in entry into or exit from particular status categories, would be well served to consider whether those changes are driven by the underlying structure. Our results follow research that points to the complicated structure that underlies the very mechanisms, such as status, that are meant to reduce complexity and encourage markets' functioning. Careful consideration of the unique situations that give rise to seemingly clear outcomes such as changes in status should lead to a greater understanding of markets.

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