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STIGMATIZED CATEGORIES AND PUBLIC DISAPPROVAL OF ORGANIZATIONS: A MIXED-METHODS STUDY OF THE GLOBAL ARMS INDUSTRY, 1996–2007

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Using qualitative and quantitative methods, I draw on the categorization and stigmatization literatures to predict the amount of negative social evaluations—that is, disapproval—received by firms. Association with a stigmatized category does not automatically result in disapproval, because straddling multiple categories dilutes stakeholder attention to the stigma. In addition, category saliency moderates the effect of category straddling on disapproval. Findings from the global arms industry highlight how managers can modify categorical associations at the industry and customer levels to decrease disapproval, and I discuss implications for diversification and internationalization strategies. Results also highlight how an exogenous shock (the 9/11 terrorist attacks) modified the saliency of the categories used by arms industry stakeholders. Finally, this study shows that category straddling results in more neutral social evaluations for firms, making positive evaluations less positive, and negative ones less negative.

Strategy is not only about acquiring resources to achieve superior financial performance. To remain competitive in the global arena, firms also need to secure social support from external stakeholders (Deephouse, 1999; Freeman, 1984). Typically, firms seek praise (Rindova, Pollock, & Hayward, 2006) and try to avoid *disapproval*, construed here as public accounts conveyed by the media that challenge, criticize, or condemn a firm's activities, behavior, or values. Keeping disapproval at a minimum is a key strategic achievement, because disapproval reduces a firm's capacity to find investors, build stable alliances, or maintain a loyal customer base (Kreiner, Ashforth, & Sluss, 2006; Sullivan, Haunschild, & Page, 2007). Scholars have studied in depth how firms can secure positive evaluations (Deephouse & Suchman, 2008), but little work has examined how they can contain disapproval (Suchman, 1995).

A recent stream of research attempts to fill this gap by looking at the stigma management strategies implemented by firms operating in so-called stigmatized industries (Devers, Dewett, Mishina, & Belsito, 2009; Galvin, Ventresca, & Hudson, 2004). A central observation in this literature is that firms associated with a stigmatized category face an unusually high level of disapproval. Accordingly, more prominent members of a stigmatized category are more disapproved of because they epitomize the negative features attributed to the vilified category (Jonsson, Greve, & Fujiwara-Greve, 2009). For instance, when the category of fast-food chains is stigmatized, the largest member of that group, McDonald's, usually emerges as the most publicly vilified.

However, this simple linear relationship between a firm's association with a stigmatized category and disapproval of the firm suffers from some limitations. In stigmatized industries, such as arms or tobacco, some players are able to avoid disapproval, while others face intense public vilification. Philip Morris, for instance, once received most of the disapproval aimed at cigarette producers. Yet Hudson (2008) suggested that, after the tobacco firm diversified into the food industry, its disapproval level decreased, possibly owing to "stigma dilution" in its corporate portfolio. At a cognitive level, external stakeholders may be influenced, in their social evaluations, by more than the mere intensity of a firm's association to a stigmatized category. Interestingly, the disapproval level of Philip Morris seems to have decreased despite the firm reinforcing its position as the world's leading cigarette producer. Similarly, in the arms industry, Boeing is consistently ranked among the

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top three largest arms producers worldwide (SIPRI, 2009), yet it manages to keep disapproval at a low level relative to many of its smaller competitors. Thus, this article questions the assumption that membership in a stigmatized category automatically translates into disapproval.

Microlevel research on stigmatization distinguishes between the disapproval level faced by stigmatized *categories* of individuals, such as ethnic minorities, and the disapproval level faced by any *particular member* of those categories (Leary & Schreindorfer, 1998). For individuals, membership in a stigmatized category is far from a perfect predictor of social approval or disapproval. I build on this insight to shed new light on the relationship between stigmatization of organizational categories and disapproval of particular firms. So, beyond the stigma of industry membership, what explains variation in disapproval across firms operating in contested industries?

To answer this question, I draw on the categorization and stigmatization literatures. Following prior research, I conceive of *stigma* as a vilifying label (Devers et al., 2009) that contaminates a group of similar peers (Jonsson et al., 2009; Pontikes, Negro, & Rao, 2010). Since organizational categories are cognitive classification schemes (Kaplan, 2011) that group similar firms to simplify a complex organizational landscape (Porac, Thomas, & Baden-Fuller, 1989), the relevant level of analysis for stigma is the organizational category in which it has spread. Put differently, this article treats stigmatization essentially as a category-level property (e.g., a stigmatized ethnic group is a category of individuals) and treats disapproval as a firm-level outcome.

I argue that the causal relationship between stigmatization and disapproval is more complex than prior accounts suggest, mainly for three reasons. First, organizations often straddle multiple categories. At the industry level, firms can be simultaneously identified as members of several categories; for example, Boeing is both an arms producer and a commercial aircraft maker. Past research on category straddling has consistently argued—and proved empirically—that multiple category membership blurs external stakeholder expectations, thereby decreasing firms' social evaluations (Hsu, 2006; Zuckerman, 1999). By contrast, this article demonstrates that, when straddling helps a firm to dilute its association with a stigmatized category, the result is a decrease in disapproval, regardless of that association's strength. Second, the article adds to prior work by showing that the causal relationship between association to stigmatized categories and disapproval is moderated by the saliency of the categories industry stakeholders use (Porac, Thomas, Wilson, Paton, & Kanfer, 1995). Third, in complex organizational settings, external stakeholders rely not only on industry categories to classify firms, but also on subcategories within industries, such as "Scottish knitwear producers" within the knitting industry (Porac et al., 1989). These subcategories coalesce around industry-specific firm properties (e.g., geographical origin) and channel stakeholder expectations in ways that affect disapproval. The argument about industry categories is thus extended to subcategories to account realistically for the formation of stakeholder evaluations.

I propose an integrative framework that predicts the level of disapproval faced by a firm given its categorical associations and their saliency, from the perspective of a reference stakeholder group. For the empirical setting, I use the global arms industry, a stigmatized category of firms. I examine over time (1996–2007) the disapproval of 210 weapon systems producers as conveyed by a key external stakeholder group: defense expert journalists. Understanding the antecedents of disapproval in the arms industry is important because disapproval is a crucial firm-level outcome in this sector, as in many others. Arms producers may be constrained in their ability to compete for major tenders because their prospective customers—national armies and governments—face pressure to avoid doing business with publicly criticized suppliers of weapon systems.

I develop a novel mixed-methods approach to understanding categorization and stigmatization. Using findings of a qualitative field research, I identify the categorical structure of the global arms industry—that is, how external stakeholders classify arms producers. I then use a longitudinal quantitative data set, wherein the 9/11 terrorist attacks represent an exogenous shock, to test my hypotheses in a quasi-experimental setting. Finally, I discuss contributions to research on categories, stigma, and social evaluations. A key finding for practitioners is that disapproval can be contained by modifying firms' categorical associations. Although the theory is developed for contexts in which firms are associated with at least one stigmatized category, the conclusive discussion of the argument's boundary conditions shows its potential for generalization to a broader range of empirical settings.

THEORY DEVELOPMENT AND HYPOTHESES

Disapproval of Firms and Why It Matters

Disapproval refers to the negative social evaluations of firms brought to public attention. It is the

expression of criticism directed at a firm's activities, values, or behavior. Disapproval updates prior expectations about an organization by publicly framing some aspect of its business operations as a potential violation of broader norms (Deephouse & Suchman, 2008).

An implicit assumption of past research is that public expressions of approval and of disapproval occur along the same scale, implying both that approval can compensate for disapproval and that a single variable can capture the resulting valence of an overall social evaluation (i.e., positive or negative)—as is visible in the use of Janis-Fadner coefficients to balance positive and negative media accounts in measurement design (e.g., Deephouse, 1996). According to this view, a firm's receiving one-thousand positive and one-thousand negative evaluations is equivalent to its receiving only ten of each because, in both cases, the resulting score is neutral. How should one interpret, then, the simultaneous ratings of Johnson & Johnson as the fourth most admired company in America (*Fortune*, 2010) and one of the top 15 most hated companies (*Atlantic*, 2011)? These ratings may seem to constitute a paradox unless approval and disapproval represent two distinct scales and have distinct antecedents and consequences. Thus, I do not assume that disapproval is merely the flip side of approval but treat it as a variable worth studying in itself.

The reason for this choice is that firms facing disapproval have difficulties acquiring resources (Pfeffer & Salancik, 1978), building partnerships with peers (Sullivan et al., 2007), and attracting employees, customers, and investors (Deephouse & Suchman, 2008). Disapproval leads to firms losing credibility and some stakeholders withdrawing their support. The mere expectation by stakeholders that others wish to withdraw their support can be enough of a reason for them to do so preemptively (Salancik & Meindl, 1984). Firms facing disapproval also report losing bargaining power when stakeholders implicitly or explicitly threaten to withdraw from transactions if their demands are not met (Pfeffer & Salancik, 1978). As such, disapproval of firms may be a crucial antecedent of decreases in firm performance or survival chances (Heugens & Lander, 2009; Hudson, 2008). Disapproval of a firm is likely to be more consequential when it emanates from stakeholders who are powerful and who express legitimate and urgent claims (Mitchell, Agle, & Wood, 1997).

In the arms industry, these mechanisms are at work simultaneously. Eighty-five percent of the world's defense spending is concentrated in rich democratic countries whose governments are subject to multiple pressures from advocacy groups, international organizations, the media, and NGOs (nongovernmental organizations), which monitor the arms trade to ensure taxpayers' money is well spent. Since the end of the Cold War, defense budgets have shrunk, and governments seek to achieve value for money while enhancing transparency. In this context, avoiding public disapproval is essential for arms producers that wish to compete in larger, more profitable markets. Firms heavily criticized in the media suffer from a bad image that scares away suppliers, subcontractors, and customers. Government officials and elected representatives prefer to deal with "clean" arms producers (Javers & Kopecki, 2006) to avoid negative spillovers that could taint their mandate or threaten their reelection. Arms producers facing high levels of disapproval may be prevented from competing for certain tenders, and when they arrive at the negotiation table, their bad name can be used against them in efforts to lower prices (qualitative evidence from the field is presented in the tables below). In the weapons business, customers seem to have the upper hand and are able to curb arms producers' returns on sales, which fluctuate around an industry mean of 3 percent. Negative consequences of disapproval include decreases in market value and cancellation of multibillion-dollar contracts or mergers/acquisitions (Uhlenbruck, Rodriguez, Doh, & Eden, 2006). Ten years ago, Motorola allegedly divested its defense business owing to the "bad press" it received in authoritative media outlets. Containing disapproval is also essential to arms producers for recruitment purposes, as firms want to appear attractive to talented engineers on the job market (Kreiner et al., 2006).

Disapproval of Organizations versus Stigmatization of Organizational Categories

Prior research has neglected how disapproval of firms is generated, but recent works on stigmatization attempt to explain its source (Devers et al., 2009; Hudson, 2008; Mishina & Devers, forthcoming). Originally, "stigma" referred to a mark branded on a criminal in ancient Greece. Today, a stigma refers to a visible and discrediting attribute that prevents full social acceptance in most social contexts (Crocker, Major, & Steele, 1998). Stigmatized groups (collectives sharing a stigma) are not necessarily recognized as such by every other group or at all times, yet they bear an enduring mark that signals a socially recognized difference. According to a sociofunctional view of stigmatization, the existence of stigmatized groups serves higher-level purposes, such as protecting the interests of the stigmatizers or main-

taining a social order that is based on status hierarchies (Neuberg, Smith, & Asher, 2000). In this view, stigmatization can persist over long periods of time without directly endangering the social reproduction of stigmatized groups; rather, stigmatization shows its most consequential effects when it translates into public attacks on particular individuals in the stigmatized group.

Membership in a stigmatized group is not the sole variable predicting individuals' social acceptance or social performance. In the U.S. between 1998 and 2002, the standard deviation in income was higher for blacks than for whites (General Social Survey, 2002). Thus, at least in some cases, stigmatized group membership is a poorer predictor of social outcomes than nonstigmatized group membership. When stigmatization research moved from the individual level (Sutton & Callahan, 1987) to the organizational level (Hudson & Okhuysen, 2009), the essential distinction was lost between the stigmatization of a *category of entities* and its idiosyncratic effects for any *particular member* of that category. Saying that a firm is stigmatized now implies that it is associated with a stigmatized industry category, such as arms, pornography, or tobacco; but this shortcut can be confusing because it obfuscates the difference between stigmatization as a category-level property and disapproval as an organizational outcome. As was clear in Goffman's foundational work, a stigma is "a special kind of relationship between an attribute and a stereotype" (1963: 4), which is why the stigmatized base their perceptions "not on what . . . is due *everyone* but only everyone of a selected social category into which [they] unquestionably fit" (1963: 6). External observers also acknowledge membership in stigmatized groups, as stigmatization arises "when a shared characteristic of a category . . . becomes consensually regarded as a basis for dissociating" (Leary & Schreindorfer, 1998: 15). Stigmatization is an attribute of a category and recognized as such both from within and from outside that category. Stigmatization keeps out-group members at a distance, whereas disapproval endangers the survival of an organization within its own in-group (Pfeffer & Salancik, 1978). Importantly, this distinction explains why stigmatized industries can persist over long periods as relatively isolated islands in the broader economy, *despite stigmatization*, and leaves room for explaining why only *some* firms in stigmatized groups are disapproved of to the extent that their survival is at stake.

Connecting Organizational Categories and Stigma

Categories are cognitively constructed classifications that coalesce around certain attributes of firms and help stakeholders make sense of complex industries (Khaire & Wadhwani, 2010). Research has highlighted how categorization shapes stakeholder expectations via the process of generalization (Rosa, Porac, Runser-Spanjol, & Saxon, 1999; Ruef & Patterson, 2009). Generalization leads to belief; for instance, a belief that all swans are white might be based on observations of a misrepresentative sample of the category of swans that coalesced, among other things, around the "color" attribute (Jonsson et al., 2009).

Prior works have emphasized the contagious nature of negative attributes (Sullivan et al., 2007). Stigmata, once connected to stereotypes, are generalized to groups of similar peers (that is, to whole categories), since categories are per definition groupings that are based on perceptions of similarity. Roehm and Tybout (2006) found experimental support for this idea and showed that stereotypical judgments of Burger King spread to two other members of the fast-food chain category, Wendy's and McDonald's. Ultimately, stakeholder generalization justifies the need to consider stigmatization a category-level property. Therefore, I propose the notion of *stigmatized categories* to refer to those groups of organizations, such as arms or tobacco producers, whose liability prompts out-group members to keep their distance to avoid a potentially harmful association.[1]

Disapproval of Firms in Stigmatized Categories

Keeping disapproval at a minimum may be particularly crucial (albeit more difficult) for firms operating in stigmatized industry categories such as tobacco, arms, and pornography (Galvin et al., 2004). A high level of disapproval attracts public scrutiny, raises doubts, and creates suspicion among stakeholders. Members of a stigmatized group tend to dislike such inquisitive behavior (Goffman, 1963), which increases the risk of isolation or scapegoating for the stigmatized group members that are publicly challenged. More specifically, firms in stigmatized industries share an intangible "reputation commons" (King, Lenox, & Barnett, 2002) that is more binding than that shared in nonstigmatized industries. This effect results

[1] Per Porac and Thomas (1994), stigmatized categories can also cross industry boundaries; for instance, firms that deal with the Burmese junta, no matter what they sell, form a stigmatized category.

from the intangible commons playing a larger role when individual behavior is difficult to observe (Tirole, 1996)—a common situation in stigmatized industries, which are typically shrouded in secrecy (Hudson & Okhuysen, 2009).

In stigmatized industries, firms capable of keeping disapproval low perform better, as they enhance customer loyalty and avoid most regulatory threats, but this capacity varies from firm to firm (Hudson & Okhuysen, 2009). In the arms industry, for example, some of the leading producers keep their disapproval level consistently below those of their competitors, and some even manage not to be disapproved of at all over long periods of time. Figure 1 presents a graph of these cross-firm discrepancies in disapproval in this industry.

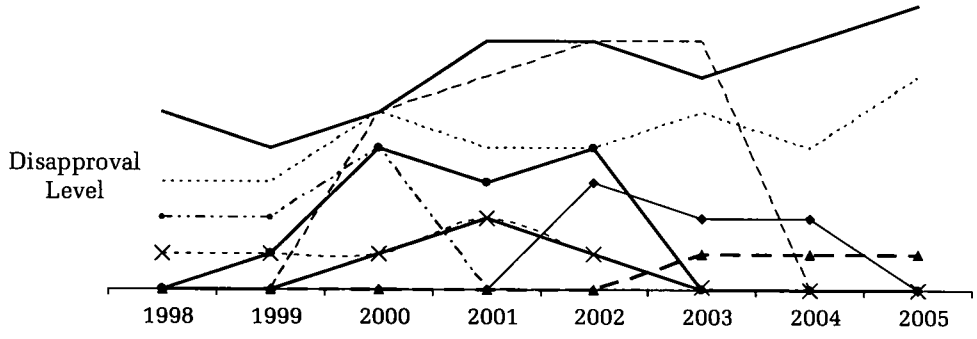
Multiple Category Membership and Stigma Dilution

In the literature on multiple category membership, a causal relationship between a firm's categorical associations and its social evaluations is posited (e.g., Hsu, 2006). Underlying this relationship is the idea that external stakeholders sanction category straddlers (i.e., they receive lower social evaluations than nonstraddlers). The rationale here is twofold. First, when the values associated with the straddled categories clash, external stakeholders impose social or economic sanctions on the straddlers (Rao, Monin, & Durand, 2005). Hsu argued that "audiences are likely to disapprove of the broad-aiming producers . . . because of poor fit with their expectations and preferred tastes" (2006: 444), and she provided evidence that critics give poorer ratings to movies that straddle genres (Hsu, Hannan, & Kocak, 2009). Second, stakeholders may infer that straddlers have ambiguous objectives or lack expertise in both categories, especially when the categories demand specialized skills. This inference leads to poorer evaluations, as demonstrated by Leung and Sharkey (2009), in the case of a peer-to-peer website, and by Zuckerman (1999), in the case of securities analysts' evaluations.

A limitation of prior works on multiple category membership is that only industries with high social acceptability have been examined empirically. This restriction has concurrently focused scholars' theoretical effort on the upper half of the social evaluation spectrum (Hirsch & Pozner, 2005), leaving unexplored the mechanisms underlying the formation of disapproval. Besides, what mattered most in past research was the number of categories a firm straddles rather than what those categories represent. So far, I have argued that when stigmatized categories are involved, maintaining disapproval at a low level may be more important for firms than generating approval. But what happens when firms straddle a set of categories that includes stigmatized categories? Following the traditional view on multiple category membership, one would expect such firms to generate poorer social evaluations—that is, more disapproval. In the following, I argue otherwise.

Underlying the negative impact of multiple category membership is the idea that category straddling defocuses stakeholder attention by sending multiple signals, thereby creating confusion and unclear expectations about future firm behavior (Zuckerman, 2000). Stakeholders have only a limited amount of attention available for each firm they intend to evaluate, as Zuckerman (1999) showed in the case of specialized securities analysts who must rate a large number of firms in a limited amount of time. Attention is a scarce resource that individuals deploy to issues following a

FIGURE 1
Persistent Cross-Firm Discrepancies in Disapproval in a Stigmatized Industry[a]



[a] The y-axis represents the level of disapproval faced by 15 arms producers randomly selected from the top 50 largest. Only eight curves are visible, as seven firms were not disapproved of during the period of observation. Details about how disapproval was measured can be found in the text.

selective process (Fiske & Taylor, 1991), and the presence of multiple issues has been shown to dilute agents' attention to any particular issue (Hansen & Haas, 2001; Hilgartner & Bosk, 1988). Thus, although firms associated with a single category focus all stakeholder attention on the latter, category straddlers send more complex signals that split stakeholder attention. For firms associated with a stigmatized category, additional membership in nonstigmatized categories can deflect attention from the stigma and dilute the vilifying association. This mechanism, which I term *stigma dilution*, would explain why Philip Morris became less disapproved of after the firm entered the food category, despite the continued growth of its tobacco business (i.e., in absolute terms, the firm's association to the stigmatized category was still strengthening). In other words, stigma dilution is the process whereby category straddlers associated with a stigmatized category dilute stakeholder attention, moving it away from that stigmatized category by forming multiple categorical associations. Thus, from the viewpoint of a stakeholder group that evaluates organizations:

Hypothesis 1. The more an organization dilutes its association with stigmatized categories, the lower the disapproval of the organization.

Moderating Role of Category Saliency

Salient organizational categories (stigmatized or not) are those that industry stakeholders systematically use to classify firms. Industry categories constitute a higher-level classification scheme with high saliency, as visible in the widespread use of SIC codes across countries and stakeholder groups. Within industries, subcategories can also acquire high saliency from the viewpoint of stakeholders (e.g., in the movie industry, genre categories are salient and differentiate between, say, thriller and comedy). Theoretically, the set of all possible classification schemes is infinite, but at any particular point in time only a few categories are salient for industry stakeholders. For instance, movies could also be classified alphabetically, but in the movie industry alphabetical categories have a saliency that is close to zero—just as categorizing firms by whether their name starts with the letter "A" or "B" makes little sense for consumers or securities analysts. Porac and Thomas (1994) found that stakeholders of the retail industry used the following categories to classify organizations: bookstores, groceries, and restaurants. In the knitwear industry (Porac et al., 1995), the salient categories were country categories (e.g., Scottish vs. non-Scottish producers) and product categories (hosiery vs. knitwear vs. lace).

In institutionalized organizational fields, stakeholders recognize shared norms to navigate the organizational landscape, and they also use a common set of categories to classify industry players (Porac & Thomas, 1990). Classification schemes can be seen as an industry's normative features that are enacted by stakeholders but also constrain their interactions. Salient categories come to be perceived as social facts requiring stakeholder attention—and how much attention is required depends on category saliency in the broader industry (Fiske & Taylor, 1991). Attention to particular events opens a channel for conveying social evaluations among individuals (Hilgartner & Bosk, 1988). Thus, to explain disapproval in a given industry, scholars should attend to "the differential and variable saliency of that particular subset of properties that have been selected for categorization and description" (Schweder, 1991: 179). In other words, the research task is to identify around which properties or attributes of firms the categories used by stakeholders coalesce.

An in-depth knowledge of an industry is required to identify salient categories. Ocasio and Kim (1999) found that, in several manufacturing industries, the functional background of CEOs was salient, as several core stakeholders paid particular attention to the category of "firms whose CEO is the former CFO." To be sure, "organizations whose CEO is a former mafia boss" would be an example of a stigmatized category along the same lines, and it would probably be a relevant category in such industries as night clubs or garbage hauling. When stigmatized categories crowd a classification scheme, much attention is focused on those organizations most representative of the stigma (Devers et al., 2009). For instance, in free market economies, audiences saliently categorize firms according to which industry they are involved in. Thus, involvement in a stigmatized industry category, such as arms, can generate intense disapproval, but multiple industry associations can dilute the attention given to the stigma and decrease disapproval. Yet, since firms are not saliently categorized in terms, say, of the proportion of sexual offenders on their payrolls, hiring fewer such offenders relative to competitors is unlikely to decrease disapproval—that is, the effect of stigma dilution will be minimal because little attention is granted to that low-saliency category. Thus, from the viewpoint of a stakeholder group that evaluates organizations:

Hypothesis 2. The more salient the categories into which an organization is classified, the

stronger the effect of stigma dilution across categories on the disapproval of the organization.

Multilevel Analysis and Mixed-Methods Approach: A Rich(er) View of Categorization

The hypotheses developed above rely on the mechanisms underlying how industry stakeholders split their attention across salient cues in a given industry, but they are agnostic with respect to the nature of the categories, which may vary across industries (e.g., country categories in the knitwear industry, genre categories in the movie industry). Also, the two hypotheses can apply to multiple levels of a classification scheme, as salient categories can be hierarchically embedded. A limitation of prior works connecting categorical associations to social evaluations is that only one type of category is usually examined: genre in the movie industry (Hsu, 2006), product categories in e-commerce (Leung & Sharkey, 2009), or industry categories at the national level (Zuckerman, 2000). Because, as previously argued, stakeholders typically use more than one type of category to classify organizations, delving deeper into how categorization affects social evaluations leads me to a general theory that I apply to multiple categorical associations, at different levels of the classification hierarchy, while taking into account the existence of stigmatized categories.

Which types of categories are salient and which are stigmatized depends on the industry. So although the theory offered here is general, researchers still need an in-depth knowledge of the classification schemes stakeholders use in the particular industry under study. For this reason, I introduce the empirical setting, the global arms industry, and use a mixed-methods research design to test the hypotheses. In preliminary qualitative research, I identified the classification schemes used by various arms industry stakeholders and found very high convergence among them, as is consistent with the arms industry's high level of global institutionalization. I then used a unique quantitative data set to test the hypotheses in two salient types of categories, thereby providing evidence that the theory proposed has high internal validity at multiple levels of an industry's categorization structure. Still, importantly, all independent variables of interest capture firms' idiosyncratic categorical associations and thus were measured at the firm level, ensuring high consistency in the models' results. Acknowledging the paradox that "most management problems involve multilevel phenomena, yet most management research uses a single level of analysis" (Hitt, Beamish, Jackson, & Mathieu, 2007: 1385), I seek to improve on past works in this respect.

The mixed-methods approach developed here uses qualitative findings to identify the categorical structure of the arms industry. The relationships tested quantitatively may generalize to other industries, as I argue in the Discussion section. I also use the qualitative findings to interpret the results of econometric analyses, so their role is not only illustrative: these findings also help to build theory in ways that are relevant to managers and informative for scholars, both empirically and theoretically, in keeping with recent calls for mixed-methods designs (Bansal & Corley, 2011).

THE GLOBAL ARMS INDUSTRY: INTRODUCTION AND QUALITATIVE FINDINGS

Methods

Despite its economic weight, the arms industry has received little attention in management research (exceptions are Baum and McGahan [2009, 2010], Elms and Phillips [2009], and Vergne [2011]).

In 2007 and 2008, during six months of field research, I conducted interviews with prominent industry players, such as defense experts and industry professionals. I had no prior connections to the industry and gained access to different stakeholder groups through snowball sampling (Battilana & Dorado, 2010). I started by contacting researchers specializing in defense issues and working at universities, international organizations, independent research institutions, and NGOs. Some of these external stakeholders put me in touch with industry insiders such as managers and government officials. I spent a week in Scandinavia at the headquarters of an international think tank at which a team of approximately 50 specialized researchers has been gathering data on the arms industry since the mid 1970s. I also gained access, as a researcher, to a three-day international arms trade fair normally closed to the public, where I conducted 15 short interviews. The interviews were open ended but included a series of questions used to identify the categorical structure of the arms industry (see below for details on that protocol). General questions revolved around the specificities of the industry; the difficulties of managing one's image, individually and as an organization, in that industry; the success factors for remaining profitable; the challenges that emerged in the aftermath of 9/11; the rules of international competition; and how the industry is likely to evolve in the

near future. The 44 respondents represented 11 nationalities and worked for think tanks, research groups, specialized defense journals, competitive intelligence providers, and defense contractors. Table 1 summarizes respondent characteristics. I complemented the knowledge acquired in the field with an extensive reading of specialized books, historical papers, policy documents, research articles, and press articles coming from the industry's leading publications (e.g., *Defense News*, *Jane's Defence*, *Defense Daily*, *Aviation Week*).

The Stigma of Weapons Production

Although this article's focus is not the antecedents of stigmatization but rather its consequences, readers may wish to have a sense of why it is a reasonable starting point to consider the arms industry to be stigmatized. Weapons producers, also known as "merchants of death" (Engelbrecht & Hanighen, 1934), represent a category of firms with which many wish to avoid contact. The origins of the stigma of arms production can be traced to the cognitive association between weapons and death. Throughout history, death and bodily mutilation have been pervasive sources of stigmatization in human societies (Goffman, 1963). Most studies examining group-level stigmatization implicitly or explicitly report association with death as a source of stigma; examples include the funeral industry (Garden, 2001), the tobacco industry (Galvin et al., 2004), abortion service providers (Hudson, 2008), and patients with an incurable disease (Lester, 1992).

According to a sociofunctional view (Neuberg et al., 2000), stigmatization of a death-related business serves a broad purpose of survival promotion. In fact, psychologists have demonstrated that what represents a physical danger for others is systematically stigmatized (Jones, Farina, Hastorf, Markus, Miller, & Scott, 1984), a finding that readily explains the stigma attached to arms. In this context, I was not surprised that most respondents asked to remain anonymous in my presentations of this work and refused tape-recording of the interviews. Table 2 compiles representative quotes from various stakeholders, organized along the lines of this article's arguments.

Salient and Stigmatized Categories in the Arms Industry

A key objective of the qualitative research was to understand how industry stakeholders classify arms producers. Drawing on the method developed by Porac and colleagues (e.g., Porac et al., 1989), I asked respondents to identify their own competitors plus those of two other randomly chosen firms (or those of three randomly chosen firms, for respondents not currently working at a defense contractor). This procedure was repeated with 25 respondents out of the 44 listed in Table 1. Respondents typically named between 7 and 12 firms. After recapitulating the content of the three lists thus obtained, I asked respondents what the firms listed had in common to make them direct competitors. Typically, respondents provided two to four reasons. The three most common reasons were each given by more than 70 percent of the respondents. First, respondents tended to group firms that served the same customers (e.g., "firms that sell to Norway" vs. "firms that sell to Libya"). Second, they grouped firms according to how diversified they were (e.g., "firms that sell mostly military systems" vs. "firms that sell mostly civilian systems"). Third, firms based in the same

TABLE 1
Summary of the Interviews Conducted and Respondent Characteristics

Respondent Type	Number of Interviews	Number of Nationalities	Mean Years of Experience	Mean Interview Length[a]	Industry Categories[b]	Customer Categories[b]	Country Categories[b]	Other Categories[c]
Defense economists	7	4	5.5	52	100%	86%	86%	Private armies
Political scientists	5	3	8.3	33	60	100	100	State-owned firms
Security experts	2	2	8.1	31	100	100	100	n.a.
NGO members	2	2	3.6	33	100	100	100	Landmine producers
Government officials	2	2	10.2	29	100	100	50	State-owned firms
Expert journalists	5	4	6.4	36	80	80	60	n.a.
Industry executives	21	7	12.7	24	81	76	71	State-owned firms
Total (weighted)	44	11	8.1	36	81	84	74	3–16%

[a] In minutes.

[b] The percentages indicate the proportion of respondents that identified the category as salient.

[c] "Other categories" refers to categories used by respondents to make sense of the industry. A maximum of 16 percent of the respondents mentioned each.

TABLE 2
Qualitative Evidence from the Field

Proposition	Stakeholder[a]	Representative Quotes[b]
The arms industry is stigmatized.	Technology development executive	"This is a very special business we're dealing with. Sometimes people feel embarrassed when I tell them I build and sell weapons. Well, you know what, somebody's got to do the dirty job, I tell them, and the reason why they don't have to do it is because there are people like me who'll do it for them."
	Recruitment consultant	"It is really hard to attract the best engineers at a defense firm. Many fresh graduates wonder why they'd create technologies meant to kill and destroy when they can work for Apple and build really cool stuff that their kids will love to play with."
	Systems integration engineer	"We've all met that guy at a dinner that would start being aggressive because you just told them what you do for a living. I mean, sometimes it feels strange to realize that people would start disliking you just because of your job. Now when I deal with strangers I don't tell them anymore that I design weapon systems. I just say I am a mechanical engineer."
	Computer engineer	"Earlier last year I transferred from the civilian to the military division of Firm Y. That's quite a change—I used to work on guiding systems for small commercial satellites, and now my job is to make sure missiles hit their target. . . . I am fine doing this, but I am aware not everybody is. In fact, I haven't told my parents and friends yet about my promotion and new position, and not at all because what I do there is classified or technologically sensitive, if you see what I mean."
	Activist at an anti–arms trade NGO	"Of course I blame them! Most of these guys who work for the arms industry do it because they chose to. They could have done something else, right? But they'll all tell you the same story: somebody's gotta do it, it's about defending our nation and values, and so on and so forth. But they won't recognize a simple fact. If people like them refused to build weapons, there would be less war, less destruction, less killing. You now have many mutual funds that agree with us and ban arms manufacturers from their investment list."
Disapproval matters to arms producers.	Sales executive	"I have been working closely with colleagues from corporate communication who deal with journalists and all, because maintaining a good image in public opinion is essential to open new market opportunities, and when the firm is criticized in the media, the word spreads rapidly. Then customers, business partners, even friends ask questions about what it is exactly that we do, they become suspicious."
	Account manager	"At the negotiation table, with suppliers or customers, the thing you want to avoid is having them mention the bad press you've had recently to make you feel uncomfortable during the talks and more willing to give them what they want. In fact, sometimes you won't even get the chance to sit at the table because some customers or suppliers simply won't do business with you. It's hard to tell how often firms fail to earn a contract because of what the media say, and you wouldn't always know when it happens, but for sure it happens."
Industry categories are highly salient in stakeholders' classification scheme.	Strategy analyst at a research institution	"Pure players in defense are not like diversified firms. Lockheed Martin is not like United Tech. You've got arms manufacturers and you've got high-tech firms with some involvement in arms. It's a different thing. And what matters is not how much you make with arms sales but how dependent you are on arms sales to reach your overall sales target, you see, it's a matter of proportion."
		Field observation: At a major international arms trade fair, the booths of most pure players tended to be grouped in the same hall, while diversified firms were located along a nearby alley.
Customer (sub)categories are highly salient in stakeholders' classification scheme.	VP sales and operations	"If we start selling to countries like Libya, Yemen, Zimbabwe, then we become one of those companies that . . . you know . . . but hey, we just don't want to be one of those companies!"
		Field observation: At a major international arms trade fair, firms that deal with "dodgy" customers had their booths located farther away from the main alleys or in corners where conversations were unlikely to be overheard by others.

Continued

TABLE 2
(Continued)

Proposition	Stakeholder[a]	Representative Quotes[b]
Home country (sub)categories are highly salient in stakeholders' classification scheme.	Expert journalist	"In this industry, where you come from makes a difference. German arms producers have their own identity, and so do U.S. firms, British firms, Chinese firms, and so on. Sometimes when you hear people discuss about competition for a public tender, they don't call the competitors by their corporate name; instead they say "the French, the Germans, the Americans," and then you have an idea of how they're going to play it."
		Field observation: At a major international arms trade fair, firms from the same country tended to have their booths in the same aisle.
Association with a stigmatized category increases disapproval.	Sales executive	"Being from [Middle Eastern country], for a defense company, is not a piece of cake. People are suspicious because of the country's reputation for corruption, bad government, bad politics, you name it. We feel stigmatized, sometimes. And when something goes wrong in a competition or regarding a product for which we delivered some parts, guess who gets blamed first?"
	Defense analyst at a global NGO	"I still remember which firms supplied weapons to the apartheid regime in South Africa, and I'm not the only one who does. It's a public fact, people talk about it, it's all over the news. They got criticized a lot, their name has been tarnished. But that's what happens every time weapons are provided to the wrong customer: such companies become public targets."
	Defense journalist and industry analyst	"If you work for, say, Lockheed Martin, then yeah, in people's minds, you are but an arms merchant, because that's the only thing Lockheed does. Arms companies are evil for many people. Brace yourself for some heavy protest. Sometimes even demonstrations down at the entrance of your office."
Stigma can be diluted by straddling categories.	Procurement official	"If you're one of those firms that sell to dictatorships, then you'd rather make sure you do not only sell to dictatorships but also to a lot of less controversial countries. And you'd better hope that the latter are the affiliates people will recall first when they think of your firm."
	Anti–arms trade NGO activist	"If you work for, say, Lockheed Martin, then yeah, in people's minds, you are but an arms merchant. . . . But if you work for Boeing, it's different. It can be seen as an aerospace company, or a diversified high-tech firm. It's not the same. Boeing and others like Boeing are not as evil [laughs]."
9/11 modified the relative saliency of the categories.	International marketing manager	"What has changed? A lot! For instance, since 9/11, we are more careful about who we work with because we don't want to end up among the wrong crowd. It is really about how people perceive you, and that has got a lot to do with whom you affiliate."

[a] Unless specified otherwise, respondents worked for a leading arms producer with international operations.

[b] Most of the quoted respondents did not have English as a first language. Some quotes have been slightly edited by the author. Many quotes come from notes taken by the author during the interviews and not from recorded material, because respondents generally did not wish to have their answers recorded on tape for confidentiality reasons.

country tended to be grouped ("Chinese arms producers" vs. "Swedish arms producers"). I retained those three consensual answers as a basis for identifying the categorical structure of the industry.[2]

Although the military and civilian categories correspond to traditional industry categories à la Zuckerman (1999, 2000), customer and country categories are more like subcategories within the arms industry. Interestingly, during my field observations at a major international arms trade fair, I noticed that the location of firm booths reflected the categorical structure of the industry: firms were not grouped solely by country, by customer, or by output type but followed a mix of the three (see Table 2). The next section examines the distribution of stigma at the three levels of categorization and details measurement procedures regarding category straddling.

[2] The fourth most frequent reason (16 percent of respondents) distinguished stock-exchange-listed from state-owned firms. There was high convergence in the reasons the different respondent groups provided (e.g., managers and journalists used the same categories).

QUANTITATIVE HYPOTHESIS TESTING FOR THE PERIOD 1996–2007

Data Collection

The global arms industry has only a small number of integrated systems providers, which have been well identified by *Defense News* in the list "Top 100 contractors" (www.defensenews.com, accessed September 12, 2008). I collected quantitative data at the firm level from several sources: the Stockholm International Peace Research Institute (SIPRI); a U.S. competitive intelligence provider (Infobase); the U.N. online database; LexisNexis; Factiva; annual reports, company websites; and defense publications. I gathered extensive data about products, customers, contracts, performance and corporate activity from 1996 to 2007 for the 210 largest global weapon systems providers (experts estimate that more than 90 percent of all final weapon systems producers are included). Forty percent of the firms are North American, 30 percent are European, 11 percent are Russian, and the remaining ones are Middle Eastern, African, Australian, and South American.

Dependent Variable

Type of measure used. Disapproval was measured "richly" by content-analyzing the negative social evaluations of arms producers as conveyed publicly by authoritative international newspapers. A similar method has been used widely in past research (Pollock & Rindova, 2003; Sullivan et al., 2007; Vergne, 2011; Zavyalova, Pfarrer, Reger, & Shapiro, 2012), enabling a rich tracking of variation in disapproval, over time and across firms. Unlike other measures, media content analysis can readily capture negative evaluations (Schneiberg & Clemens, 2006), which provides a good theoretical fit with the notion of disapproval. Newspapers, the public's main source of information, are seen as more reliable than TV or web content and generate stronger recall (Deephouse & Carter, 2005).

Stakeholder perspective. The measure of disapproval was computed from the viewpoint of expert defense journalists, who represent a key stakeholder group in the global arms industry. As confirmed during the interviews, each major international newspaper has at least one expert journalist on the payroll to cover defense, geopolitics, and international security issues. These expert journalists often have close ties with the defense industry: they regularly attend company events and industry reunions and meet with top executives for interviews during arms trade fairs. They have a precise knowledge of what defense contractors do and who their customers are. They have a lot of information on the supply side of the industry, so what they write publicly acts as a filter, channeling how broader society perceives arms producers. In other words, the social evaluations conveyed by expert journalists influence how customers, suppliers, regulators, governments, and civil society actors see particular firms in this secretive industry. Journalists' power to influence, coupled with the legitimacy attached to the newspapers for which they write and the propensity of targeted public criticism to elicit firms' reactions, make expert defense journalists "definitive stakeholders" in the global arms industry (Mitchell et al., 1997).

Choice of newspapers. I chose daily newspapers that (a) had no ties to governments or to private entities involved with the arms industry, to avoid bias toward or against particular firms; (b) had high legitimacy and high circulation, to ensure that their content had some authority and the power to influence perceptions; (c) were scattered across the five continents, to control for regional bias (e.g., the *New York Times* cannot be used as the sole source to compare firms located in and outside the U.S. because domestic business life receives more coverage in national papers). One can correct for regional bias when comparing firms F1 and F2, based in countries C1 and C2, by reading what newspapers N1 and N2 (also based in C1 and C2), write about *both* firms. Building on this idea, developed and validated elsewhere (Vergne, 2011), I ensured that each firm in the sample was covered by at least one regional newspaper and ten foreign newspapers, each based on one of the four other continents. The final list includes the *Financial Times* and the *Independent* in Europe, the *Jerusalem Post* and *Turkish Daily News* in the Middle East, the *New York Times* and the *Wall Street Journal* in North America, the *Moscow Times* and *Kommersant* in Russia/CIS, the *South China Morning Post* and the *Hindustan Times* in Asia, *Business Day* in Africa, and the *Australian* in Oceania.

Coding the variable. I searched the 12 newspapers for all articles conveying disapproval of any of the 210 sampled firms between 1997 and 2007. To do so, I looked for content that included (a) at least one keyword expressing criticism or condemnation (*condemn**, *protest**, *inappropriate**, *bad*, etc.); (b) at least one sampled firm's name or any of its commonly used variants; (c) the words *weapon**, *arm**, *military*, *defense*, or *defence*.[3] Every time disap-

[3] Using only criteria a and b yields only 18 percent more articles (i.e., most of the disapproval expressed

proval was conveyed about a firm in an article excerpt, I added 1 to the dependent variable. Thus, the measure richly captures a general form of disapproval targeting specific firms in the arms industry (2,014 excerpts were coded). A large share of coded content came from articles in which an expression of disapproval was passing, such as in the following examples: "[Firm A] has a bad name in the industry"; "He should refuse to be involved with arms merchants such as [firm C or D]"; "Where there is money, there is [firm E];" or "infamous defense contractors, like [firm G and firm H]." An independent rater recoded a subsample of articles. Reliability was high ($\alpha = .92$). I logged the variable *disapproval* because it was skewed to the right (Greene, 2008).

Independent Variables

Stigmatized industry categories and stigma dilution. Most arms producers are not pure players and realize a significant share of their business through civilian activities (e.g., Boeing). A clear divide separates military and civilian industry categories, fueled by the arms industry's specificities in terms of contracting, certification, and regulation. In fact, defense firms typically separate military and civilian activities in their formal structure and annual reports, as do defense experts in their own analyses of the sector (SIPRI, 2009). Virtually all firms straddle two very distinct categories, the stigmatized arms category and the nonstigmatized civilian category, albeit to various extents. I computed the measure *stigma dilution (industry)* as the percentage of an arms producer's yearly output devoted to the civilian product category. For example, this measure captures the fact that Boeing, whose share of arms sales is only half its total sales, dilutes the stigma of arms production more than does arms specialist Lockheed Martin, despite similar levels of arms sales. For any arms producer in year i:

$$\textit{stigma dilution across industry categories}_i = \frac{\textit{civilian sales}_i}{\textit{civilian sales}_i + \textit{arms sales}_i} \times 100.$$

Stigmatized customer categories and stigma dilution. The field research findings highlight the importance of arms producers being associated with well-perceived customers. Table 2 gives examples from the interviews. Indeed, stakeholders make sense of complex industry patterns by referring to such categories as "firms that sell to the U.S." or "firms that sell to China." Industry analysts and research bodies also tend to treat separately firms with different customer profiles because customer categories are informative regarding the firms' broader strategies (SIPRI, 2009). Other interviews confirmed that arms producers are categorized by how trustworthy their customers are with respect to the potential use of the weapons. Several interviewed informants referred to (stigmatized) groups with which they did not want to be associated as "those firms that sell arms to Sudan" or "those firms that sell to dictators." The field research revealed that customer categories are more or less stigmatized depending on a customer's likelihood of attacking domestic or foreign populations using the purchased equipment. Accordingly, I also computed the measure *stigma dilution (customer)* as the proportion of nonstigmatized customers in a firm's portfolio in any given year. Stigmatized customers were identified using Amnesty International's Political Terror Scale (PTS), which captures the extent of violent political oppression in a given country. This indicator is strongly correlated with the probability of the country's illegitimately using weapons both domestically and against neighboring countries.[4] The PTS ranges from 1 to 5 and the two highest values describe countries in which the likelihood of illegitimate weapon use is very high. Any country that receives a 4 ("murders, disappearances, and torture are a common part of life") or a 5 ("terror has expanded to the whole population") in a given year was considered a stigmatized customer. A close examination of how customer countries are distributed along the PTS revealed a clear distinction between two categories: "clean" cus-

targets firms' arms business). Findings are not affected by the exclusion of criterion c in the coding of disapproval. I excluded content disapproving of poor performance (typically authored by financial journalists) because it introduces a bias against firms that have a legal obligation to publish quarterly results. I also excluded content disapproving of firms in relation to a lawsuit regarding corporate misconduct. Usually, such lawsuits are not settled until years after the alleged violation, so it would not make sense to "predict" them in models that use current categorical associations as independent variables.

[4] Since 1980, the PTS has been coded consistently by the same team of researchers. At least two independent coders compare scores every year for every country, and in more than 80 percent of cases, they give the same score. Differences are cleared through discussion and the use of a third coder (Gibney, Cornett, & Wood, 2009). The PTS ensures comparability over time and across countries. More than 200 scholarly articles in leading social science journals have used it.

tomers, consistently rated with a 1 or 2, and "dodgy" customers, consistently rated with a 4 or 5. Accordingly, I measured stigma dilution annually as the proportion of clean customers in a firm's portfolio (i.e., customers that did not receive a PTS score of 4 or 5).[5] Higher values thus indicate that association to stigmatized customer categories is more diluted. Yearly data linking firms to their customers were retrieved from Infobase, and PTS data were retrieved from politicalterrorscale.org. For any arms producer having n different customers in year i:

$$\textit{stigma dilution across customer categories}_i = \frac{\textit{number of customers with PTS}_i < 4}{n}.$$

Stigmatized country categories and stigma dilution. For industry stakeholders, an "Indian arms producer" differs from a "British-American arms producer." Each country has a particular history, political regime, and institutional structure, which are believed to shape the strategy of domestic arms producers. The field research revealed that defense firms are more or less stigmatized depending on their home country's level of transparency in public procurement. To examine category-straddling behavior leading to stigma dilution at the home country level, I first looked for significant differences in levels of country transparency for firms with multiple home country memberships (e.g., EADS, a leading arms producer, is a German–French-Spanish firm with multiple headquarters). To that end, I used Transparency International's Corruption Perception Index (CPI), which gives an annual score between 1 and 10 to each country.[6] Values below 4 indicate pervasive corruption, and countries scored above 7 experience it only marginally. All the sampled firms' home countries were either very corrupt (CPI < 4) or very transparent (CPI ≥ 7), which clearly delineates two broad categories. Yet the vast majority of firms tied to multiple countries were affiliated with countries with similar transparency levels (e.g., EADS); that is, they did not straddle categories. Given this lack of category straddling, I did not test Hypotheses 1 and 2 at the home country level, and the subsequent models include home country memberships as control variables.

Category saliency. Category saliency is embedded in the mental models (Porac & Thomas, 1990) of industry stakeholders. It is essentially unobservable and relatively stable over time, and it is thus difficult to measure. The field research suggested that industry, customer, and country categories are salient to arms industry stakeholders, but I am unable to provide a reliable rank-ordering of the three categories along the saliency criterion because all three were mentioned with roughly equal frequency. Besides, the research was conducted in 2007–08, and I did not expect respondents to be able to assess retrospectively how category saliency had evolved yearly since 1996.

Sudden variation in saliency is rare, unless industry beliefs are reshuffled by some exogenous shock of a significant magnitude. Rao, Monin, and Durand (2003) highlighted the role of widespread protests in France in May 1968 in triggering the rise of the nouvelle cuisine category. Similarly, Garud, Gehman, and Karnøe (2010) identified the Three Mile Island and Chernobyl accidents as exogenous sources of categorical evolution in the nuclear industry. The field research findings suggest that, in the context of the arms industry, 9/11 represents such an exogenous shock, one resulting in disruptive change in the categorical structure of industry. In a second round of interviews designed to validate earlier findings, several respondents said that industry stakeholders had always grouped firms on the basis of their output, customers, and countries of origin. One added "Of course, things have evolved quite a bit since 9/11." The attacks were sudden, unexpected, and the cause of material, social, and economic damage, not to mention their cost in human lives. The modus operandi of the attacks was itself an experiment in terror with no known precedent, preventing any attempt at readily making sense of what happened. The unique properties of 9/11 make it a tipping point in the recent history of the arms industry: the attacks affected international affairs and government strategies, and they commanded strategic adjustment on the corporate side as they led to the diffusion of new industry beliefs.

Because the attackers used commercial airlines hijacked by terrorists armed with kitchen knives, the definition of the weapons category was questioned in the post-9/11 period. Progressively, security forces worldwide adopted a more holistic approach to national defense—one that envisions the military and civilian dimensions as complementary. Across countries, the birth of agencies such as the Department of Homeland Security, which are

[5] Weighing the proportion by the value of arms sales to each customer does not affect subsequent regression results.

[6] The CPI is a widely used annual measure based on multiple expert surveys. A scientific committee ensures that data are consistent over time and across countries (see Transparency International [2011] for a detailed methodology).

neither completely civilian nor military, further strengthened the feeling that military and civilian affairs were blending. As a high-ranking Pentagon official put it, "We are working on alleviating the boundary between the military and the civilian. . . . This is the new defense strategy of the Pentagon" (Lasserre, 2009). Industry insiders explained that dual-use technologies became more popular after 9/11, pointing to an increasingly fuzzy boundary between weapons and nonweapons.

In the aftermath of 9/11, discourse on the "clash of civilizations" and the "axis of evil" diffused globally through the media. The debate brought to light alleged political, cultural, and religious boundaries, which materialized in a "friend or foe" discourse conducted at the country level. Categorization based on ties to particular countries became more prevalent, and firms doing business with stigmatized countries came under heavier scrutiny. This was especially true of arms producers, whose ties to customer countries have significant geopolitical consequences (see Table 2 for more evidence from the field). In sum, the industry categories "weapons" and "civilian" were less salient after 9/11, whereas customer categories became more salient. I thus ran separate models for the pre- and post-9/11 periods to test Hypothesis 2.[7]

Control Variables

Firm level. I controlled for *age* (logged years since firm founding), *size* (logged weapon sales), *performance* (return on sales), and ownership type (dummy variable coded 1 for *publicly held*). All subsequent panel regression models also included firm-level effects (see below).

Within-category heterogeneity. Even once firm-specific heterogeneity has been controlled for, other sources of heterogeneity within categories of firms that affect disapproval may exist, independently of stigma dilution effects across categories. Firms that export more weapons may be more prone to disapproval, so I controlled for the yearly percentage of *weapons exports* relative to total weapons sales. Similarly, firms that sell *lethal weapons* may be more at risk, so I controlled for the proportion of lethal to nonlethal systems in a firm's product portfolio. Firms touched by *scandal* in the recent past were also identified with a dummy variable because it may influence stakeholder perceptions. I searched for the keyword *scandal** in the 12 dailies listed previously to identify such firms. I looked for scandals in the last six years, which was the mean tenure length of the defense journalists I interviewed (see Table 1). For a similar purpose, I added a dummy variable coded 1 for firms that had adopted a *code of ethics*. I also controlled for *media visibility* (the logged number of articles mentioning a firm), which provides opportunities for disapproval. Although most articles not expressing disapproval were neutral in tenor (e.g., reporting facts about product launches or interorganizational relationships), roughly 5 percent of articles expressed some form of *approval*, which I also included as a control variable. In addition, firms doing *military research* for governments were identified with a dummy, and so were those that entered the arms industry as *diversifying entrants*. I also controlled for the depth and concentration of firm participation in nonstigmatized industries. Having a popular brand attached to the name of an arms producer may favorably affect stakeholder perceptions, so I added a dummy variable coded 1 when an arms producer also controlled a well-known brand in a consumer-oriented industry (such as General Electric did before it divested its defense business units). For a similar reason, I controlled for the total *number of civilian industries* in which arms producers were involved (e.g., next to its defense businesses, Boeing has assets in commercial aircraft and financial services). To control for unobserved heterogeneity in the weapons category, I added a set of *segment* dummies (electronic warfare, aircraft, military avionics, helicopter, assault vehicle, transport vehicle, artillery & ordnance, missile, ships, submarines, military services, battlefield logistics). Finally, a *strategy change* dummy variable captured the occurrence of shifts in firm strategy as reported by InfoBase analysts.

Institutional level. I added one dummy variable for each of the 12 *home countries* that hosted at least five sampled firms, and a 13th variable for other home countries. To account for the possible effect of country status in the international scene on the perception of arms producers, I added a dummy variable signaling firms headquartered in a country with membership in the U.N. Security Council or in the North Atlantic Treaty Organiza-

[7] I content-analyzed United Nations Security Council annual reports (1996–2007), which are authoritative references on defense issues. In the reports, the context surrounding the occurrences of the words *arm** and *weapon** deals primarily with output and customer categories (e.g., what type of customer arms are sold to). Specifically, in the years before 9/11, it refers to output and customer categories 22 and 59 percent of the time, respectively. After 9/11, these proportions are 10 and 77 percent, respectively (differences are significant at $p < .05$). This is completely in line with qualitative findings: after 9/11, saliency increases for customer categories and decreases for output categories.

tion (*UNSC/NATO*). To capture the fact that stakeholder expectations may be lower for a firm based in a country with weak norm enforcement, I controlled for the size of the home country's *black market* economy (an average was used when firms had multiple home countries). Finally, I captured historical and institutional trends using *region* dummy variables (America, Europe, ex-USSR, Asia), and included *year* dummy variables to account for time-varying omitted variables. Table 3 reports descriptive statistics and correlation coefficients.

Model Choice

The data consist of a panel of 210 firms observed over 12 years (2,046 observations). Panel data analysis enables researchers to isolate individual effects (μ_i) for each firm before estimating the coefficients of the explanatory variables, some of which vary over time (X_{it}), while others do not (Z_i):

$$y_{it} = \alpha + \beta X_{it} + Z_{i\gamma} + u_{it}, \text{ where } u_{it} = \mu_i + \nu_{it}.$$

In management research, panel data are superior to cross-sectional data because they enable control at the firm level for time-invariant omitted variables, using either a fixed-effects (FE) or a random-effects (RE) estimator. Use of the FE estimator assumes the endogeneity of all the regressors with the firm individual effects and relies on a de-meaning process that prevents parameter estimation of the time-invariant variables Z_i (Greene, 2008). By contrast, the RE estimator assumes exogeneity of the regressors and allows for parameter estimation of Z_i, yet it may yield inconsistent estimates when the exogeneity assumption does not hold in the data (Mundlak, 1978).

The traditional approach to panel data relies on a Hausman test as a means to choose between use of fixed or random effects. However, the traditional Hausman test is not robust to heteroskedasticity or clustered standard errors, so I computed instead a Sargan-Hansen (SH) statistic using an artificial regression approach that treats the additional orthogonality conditions of the RE estimator as overidentifying restrictions (Schaffer & Stillman, 2006). The results (SH = 33, $p = .3$) could be interpreted as a Hausman statistic and led me to opt for the consistent and more efficient RE estimator. A Wooldridge test and a likelihood-ratio test comparing the homoskedastic and heteroskedastic error term models did not rule out the presence of serial correlation and heteroskedasticity. To mitigate both issues, I used the feasible generalized least squares (FGLS) estimator, which was the best linear unbiased RE estimator given the data and sample size (Greene, 2008).

A remaining concern was endogeneity. For instance, customer stigma dilution could be correlated with an unobserved firm effect if political pressures affected customer portfolios. Baltagi, Bresson, and Pirotte (2003) offered a more nuanced approach to the FE/RE choice by considering a third specification based on the Hausman-Taylor (HT) estimator, which allows for the endogeneity of some of the regressors. The HT estimator is essentially an RE two-stage GLS estimator that uses the individual means of the exogenous regressors as instruments for the regressors correlated with the individual effects. Following Baltagi (2005), to assess the performance of the HT estimator, I computed a test of overidentifying restrictions after tagging possibly endogenous regressors in the regression. I failed to reject the null hypothesis (SH = 9, $p = .8$) that the instrumented variables were valid, so I retained the HT estimator for further analysis (Baltagi, 2005: 132).

In sum, the FGLS estimator mitigates serial correlation and heteroskedasticity, and the HT estimator additionally corrects for endogeneity. Both estimators use RE to control for time-invariant omitted variables, while year dummies control for time-varying omitted variables. Since FGLS and HT GLS yield very similar results across all models, I report only the more conservative HT GLS estimates in Table 4. Lagged independent and control variables were used to enhance causal inference. The use of both lagged independent variables and instruments mitigates the risk of reverse causality–induced endogeneity, which is often the most problematic (Baltagi, 2005; Bascle, 2008).

RESULTS

All models reported in Table 4 use the international measure of disapproval as the dependent variable and display standardized coefficients on the stigma dilution variables to enhance comparability. Model 1 includes only control variables. Disapproval decreases with performance but increases with the existence of past scandal and with media visibility ($p < .01$). These two latter variables may have a priming effect on expert journalists, making them more likely to disapprove of particular firms. The coefficient on the variable for publicly held firm is never significant at the 10 percent level in the models, in keeping with the field research indicating that categorization based on ownership is only marginally salient among arms industry stakeholders. Across models, the *size* of firms' arms business does not affect their disapproval

TABLE 3
Descriptive Statistics and Correlations[a]

Variables	Mean	s.d.	Minimum	Maximum	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Disapproval	0.17	0.49	0	3.43																			
2. Stigma dilution (industry)	48.2	33.4	0	100	−.02																		
3. Stigma dilution (customer)	0.73	0.37	0	1	−.21	.32																	
4. Size	6.13	1.55	0	10.4	.24	−.13	−.11																
5. Age	3.65	1.06	0	5.9	−.04	.21	.16	.08															
6. Performance	0.03	0.12	−2.2	0.7	−.08	.01	.13	.08	.10														
7. Publicly held	0.71	0.45	0	1	−.01	.36	.31	.08	.05	.05													
8. Percentage lethal	0.55	0.41	0	1	.00	−.17	−.07	.05	−.07	−.02	−.16												
9. Research contracts	0.89	0.31	0	1	.02	.10	−.02	.26	−.10	−.03	.03	.05											
10. Diversifying entrant	0.37	0.48	0	1	−.02	.39	.01	.05	.48	.03	.23	−.15	.01										
11. Military exports	0.32	0.31	0	3.6	.10	−.18	−.22	.03	−.03	.07	−.16	.18	.00	−.11									
12. UNSC/NATO	0.80	0.40	0	1	.00	−.02	−.07	.07	.08	.00	.09	−.06	−.05	.09	.02								
13. Black market	16.8	11.9	8	49	.03	−.34	−.24	−.22	−.03	.04	−.44	.22	−.08	−.20	.50	−.08							
14. Past scandal	0.06	0.23	0	1	.35	.00	−.09	.16	−.09	−.01	−.03	−.01	.02	−.01	.08	−.02	.06						
15. Past strategy change	0.06	0.24	0	1	.05	−.01	−.00	.00	−.03	−.08	−.03	−.02	.01	.01	.00	−.01	−.03	.02					
16. Media visibility	1.93	1.45	0	6.3	.34	.22	−.36	.40	.12	−.04	.19	−.06	.04	.17	−.07	−.03	−.24	.29	.03				
17. Approval	0.02	0.15	0	1.4	−.06	−.01	−.08	.16	.02	−.00	.05	−.00	.01	.05	−.02	.02	−.08	.06	.02	.25			
18. Code of ethics	0.42	0.48	0	1	.00	−.04	−.02	.10	.15	.12	.14	−.16	.25	.03	.02	.10	−.16	−.21	.06	.02	.03		
19. Brand	0.21	0.40	0	1	.08	.51	.10	.14	−.00	.20	.20	−.06	.11	.31	−.05	−.11	−.13	−.06	.20	.37	.08	.04	
20. Number of civilian industries	0.65	1.29	0	6	.13	.40	.12	.13	.01	.17	.19	−.16	.02	.27	−.10	−.02	−.21	.17	.01	.39	.07	.07	.62

[a] Absolute values above .05 are significant at the 1 percent level.

TABLE 4
Hausman-Taylor Random-Effects GLS Regression of Disapproval[a]

Variables	Model 1: Control	Model 2: Hypothesis 1	Model 3: Hypothesis 1	Model 4: Hypothesis 1 (Full)	Model 5: Hypothesis 2 (Pre 9/11)[b]	Model 6: Hypothesis 2 (Post 9/11)[b]
Stigma dilution (industry)		−0.06*		−0.04†	−0.09*	−0.02†
		(0.03)		(0.02)	(0.04)	(0.01)
Stigma dilution (customer)			−0.10**	−0.10**	−0.07**	−0.14**
			(0.01)	(0.01)	(0.01)	(0.01)
Size	0.01	0.01	−0.001	−0.005	0.001	−0.003
	(0.01)	(0.12)	(0.01)	(0.01)	(0.01)	(0.02)
Age	0.001	0.004	0.003	0.004	0.001	0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.08)
Performance	−0.29**	−0.26**	−0.27**	−0.25**	−0.32*	−0.34**
	(0.09)	(0.08)	(0.08)	(0.08)	(0.13)	(0.11)
Publicly held	0.05	0.05	0.06	0.06	0.05	0.12
	(0.05)	(0.05)	(0.05)	(0.05)	(0.07)	(0.10)
Weapons exports	0.17**	0.18*	0.12†	0.13†	0.25*	0.01
	(0.04)	(0.07)	(0.07)	(0.07)	(0.12)	(0.10)
Proportion lethal	0.13†	0.11	0.09	0.14*	0.09	0.13†
	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
Past scandal	0.56**	0.55**	0.47**	0.47**	0.46**	0.34**
	(0.05)	(0.05)	(0.05)	(0.05)	(0.09)	(0.08)
Code of ethics	−0.03	−0.03	−0.03	−0.03	0.02	−0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
Media visibility	0.13**	0.12**	0.11**	0.10**	0.06†	0.12*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.06)
Past approval	−0.07†	−0.07†	−0.07*	−0.07*	−0.10*	−0.05
	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Military research	−0.001	0.01	−0.03	−0.02	−0.06	−0.06
	(0.07)	(0.07)	(0.07)	(0.07)	(0.09)	(0.16)
Diversifying entrant	−0.04	−0.02	0.06	0.07	0.21	0.03
	(0.14)	(0.15)	(0.15)	(0.15)	(0.23)	(0.4)
Brand	−0.07	−0.03	−0.09	−0.06	0.01	−0.04
	(0.08)	(0.08)	(0.09)	(0.09)	(0.012)	(0.21)
Number of civilian industries	0.001	0.004	0.01	0.01	−0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.05)
Past strategic change	0.04	0.04	0.03	0.03	0.04	0.08
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)
UNSC/NATO	−0.001	0.01	−0.05	−0.04	0.01	−0.15
	(0.09)	(0.09)	(0.1)	(0.1)	(0.16)	(0.16)
Black market	−0.007	−0.007	−0.005	−0.01*	−0.01	−0.01
	(0.005)	(0.005)	(0.005)	(0.006)	(0.009)	(0.012)
Segment dummies	Included	Included	Included	Included	Included	Included
Home country dummies	Included	Included	Included	Included	Included	Included
Region dummies	Included	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included	Included
Constant	0.07	0.08	0.10	0.10	0.13	−0.06
	(0.17)	(0.17)	(0.18)	(0.18)	(0.28)	(0.38)
n	2,046	2,046	2,046	2,046	981	1,065
χ^2	281.4	284.9	366.5	372.6	115.9	160.1
$\Delta\chi^{2c}$	n.a.	6.8*	85.1**	91.2**	22.4**	62.4**

[a] Coefficients on firm-level variables were estimated with instrumental variables to correct for endogeneity. Standard errors are in parentheses.

[b] The period 9/11/2001–12/31/2001 is lumped together with the pre-9/11 period in the analysis because only yearly data were available. The effect of 9/11 on category saliency was probably not instantaneous, so a 3.5 months delay in the observation of the post-9/11 period should only have a limited impact on the estimates.

[c] Chi-square tests were computed versus similar models including control variables only.

† $p < .10$
* $p < .05$
** $p < .01$

significantly, in keeping with the study's starting point about the strength of association to a stigmatized category being a poor predictor of disapproval.

Models 2 and 3 provide strong support for Hypothesis 1: stigma dilution across industry and customer categories decreases disapproval significantly ($p < .05$). Specifically, a 1 percent increase in stigma dilution across industry categories (i.e., a 1 percent increase in the civilian to total sales proportion) decreases disapproval by 0.002 unstandardized logged units, that is, by $e^{-0.002} \approx 1$ newspaper article. Stigma dilution across customer categories has a negative coefficient significant at the 0.1 percent level (model 3). Using the same transformations as above, I find that a 1 standard deviation increase in this variable decreases disapproval by 0.9 article. Such a decrease could be achieved by a firm substituting Finland for Ethiopia in a portfolio of customers containing two other countries with a PTS score below 4. In the full model (model 4), the two coefficients of interest are simultaneously significant, meaning that stigma dilution effects accumulate across categories.[8]

To test Hypothesis 2, I ran separate models for the pre- and post-9/11 periods (models 5 and 6). As predicted, diluting stigma across customer categories decreases disapproval more after 9/11, but the opposite effect is observed across industry categories. After 9/11, the benefits of diluting firm association with the stigmatized weapons category are lower, consistently with the civilian and weapon categories having become less salient. Conversely, as customer categories became more salient, the effect of stigma dilution across the latter is stronger, meaning that avoiding dodgy customers became more attractive after 9/11 from a social evaluation perspective.

I assessed the significance of the changes in coefficients over periods in three ways. First, I compared the distribution of values for the two periods. The two variables have very similar means, standard deviations, skewness, kurtosis, minimum, and maximum values before and after 9/11, so it is unlikely that changes in distribution caused observed differences. Second, I computed one-tailed *t*-tests and found that the pre-post 9/11 differences were significant for customer categories ($p < .05$) and marginally significant for industry categories ($p = .09$). Third, I ran regressions on the full sample that interacted each of the two variables with a dummy that took the value 1 after 9/11, finding *p*-values for the interaction terms indicating the extent to which pre- and post-9/11 differences reflect true differences in the population. Both coefficients were in the expected direction ($p = .06$ for customer; $p = .01$ for industry). Overall, Hypothesis 2 receives strong support.

[8] The study looks at articles in 12 press outlets, but Factiva includes more than 15,000. By extrapolating, one could say that 1 article observed in the 12 outlets may be accompanied by a proportional amount in the 14,988 others (1 article observed = 1,250 articles actually published). This set of articles could also proxy what other media, such as TV or blogs, say about arms producers. Thus, the effect of stigma dilution appears substantial on top of being statistically significant.

Robustness Checks

Model specification. I regressed the untransformed count dependent variable using the negative binomial specification, which accounts for overdispersion (Greene, 2008). Results did not change significantly, as can be seen in Table 5 (model 7). A Vuong test of zero inflation did not reach an acceptable significance level ($p = .14$). As an alternative to the log transformation of the dependent variable, I used the inverse hyperbolic sine transformation recommended by Burbidge, Magee, and Robb (1988), with four different values for the θ parameter (from 0.2 to 1.5). The most significant change observed in the results is a slight decrease in the effect size of dilution across customer categories combined with a higher *p*-value ($\beta = -0.08$ instead of -0.10; $p < .05$ instead of $p < .01$).

Reverse causality. Intense disapproval of prominent members of a category, if sustained over time, may spill over to the whole category and affect the extent to which it is stigmatized in the future. This form of reverse causality, one of three primary sources of endogeneity in management research (Bascle, 2008), might affect the regression results. The fact that the temporal effects before and after 9/11 run in the direction predicted by theory is already reassuring in this respect. Furthermore, I had already taken a significant step to mitigate the endogeneity issue by opting for a Hausman-Taylor estimator, which consists of a two-stage GLS model with instrumental variables. However, to circumvent concerns about reverse causality more specifically, I took two additional measures. First, I ran two series of regressions predicting the study's two main independent variables with disapproval to check whether significant reverse causal effects were at work. I lagged the disapproval predictor by one year and by three years in both cases. The lowest *p*-value and largest effect size were obtained with customer stigma dilution as a dependent variable in a model with a one-year lag ($\beta = 0.26$, $p = 0.41$). This increases confidence that reverse

TABLE 5
Robustness Checks[a]

Variables	Model 7: Random-Effects Negative Binomial	Model 8: GMM Arellano-Bond	Model 9: Disapproval (Behavior)	Model 10: Disapproval (Values)
Stigma dilution (industry)	−0.29[b]	−0.02[†]	−0.03[†]	−0.02[†]
	(0.1)	(0.01)	(0.02)	(0.01)
Stigma dilution (customer)	−0.69**	−0.09**	−0.07**	−0.06**
	(0.06)	(0.02)	(0.03)	(0.02)
Size	0.08	0.005	−0.003	−0.004
	(0.06)	(0.02)	(0.01)	(0.01)
Age	−0.02	0.03	0.004	0.002
	(0.08)	(0.10)	(0.06)	(0.01)
Performance[b]	−1.2**	−0.26**	−0.22**	−0.07
	(0.3)	(0.07)	(0.03)	(0.06)
Publicly held	0.00	0.03	0.03	0.05
	(0.1)	(0.10)	(0.04)	(0.06)
Weapons exports	0.5[†]	0.10	0.08[†]	0.08[†]
	(0.3)	(0.07)	(0.05)	(0.05)
Proportion lethal	0.4[†]	0.4[†]	0.1	0.05[†]
	(0.2)	(0.2)	(0.1)	(0.3)
Past scandal	0.6**	0.3[†]	0.15**	0.07*
	(0.1)	(0.2)	(0.03)	(0.03)
Code of ethics	−0.1	−0.01	0.03	−0.04
	(0.3)	(0.03)	(0.03)	(0.02)
Media visibility	0.74**	0.08**	0.06**	0.10[†]
	(0.08)	(0.02)	(0.01)	(0.07)
Past approval	−0.05	−0.05[†]	−0.05[†]	−0.01
	(0.09)	(0.03)	(0.03)	(0.01)
Military research	−0.14	−0.50**	−0.02	−0.05
	(0.4)	(0.17)	(0.04)	(0.07)
Brand	−0.02	−0.03	−0.07	−0.08
	(0.10)	(0.09)	(0.09)	(0.07)
Number of civilian industries	0.4	0.01	0.05	−0.02
	(0.4)	(0.02)	(0.2)	(0.02)
Past strategic change	−0.16	0.04	0.3	0.00
	(0.1)	(0.03)	(0.4)	(0.03)
UNSC/NATO	−0.11	−0.10*	−0.01	−0.01
	(0.5)	(0.05)	(0.2)	(0.1)
Black market	−0.04[†]	−0.02	−0.01	−0.005*
	(0.02)	(0.02)	(0.01)	(0.001)
Diversifying entrant	−0.03		0.05	0.01
	(0.3)		(0.15)	(0.1)
Lagged disapproval		0.01		
		(0.09)		
Segment dummies	Included	Included	Included	Included
Home country dummies	Included	No	Included	Included
Region dummies	Included	No	Included	Included
Year dummies	Included	Included	Included	Included
Constant	12.1	0.57	0.23	0.05
	(63.9)	(0.63)	(0.32)	(0.08)
n	2,046	1,629	2,046	2,046
χ^2 (log-likelihood)	(−1,063)	70.6	370.7	374.2
$\Delta\chi^2$	n.a.	8.1*	83.2**	88.7**

[a] Standard errors are in parentheses.

[b] A regression of performance on disapproval with one- and three-year lags, using the same controls, reveals a significant negative effect of disapproval on future performance ($0.2 < \beta < 0.3$, $p < .05$). This confirms econometrically that disapproval is consequential for arms producers. I thank an anonymous reviewer for suggesting this additional test.

[†] $p < .10$
* $p < .05$
** $p < .01$

causality does not affect this study's results: disapproval does not predict stigma dilution across categories. Second, I run a dynamic panel regression model with the Arellano-Bond estimator, which uses the first differences of the explanatory variables and includes a lagged dependent variable as a predictor to control for reverse causality (Arellano & Bond, 1991; Greene, 2008). The model removes unobserved heterogeneity by instrumenting the endogenous regressors with their past levels. It is especially recommended for small-T large-N panel data such as those used in this study. The model also clusters standard errors at the firm level to mitigate heteroskedasticity. The most significant changes observed are for the military research and UNSC/NATO variables, which have negative coefficients combined with low p-values. Involvement in government research and being domiciled in a country affiliated to UNSC or NATO both seem to shield arms producers from disapproval, an effect that was not observed in previous models (model 8 in Table 5).

Dimensions of disapproval. Throughout the study, disapproval was measured in general terms. However, disapproval may be a multidimensional construct; a similar argument was made about legitimacy by Rueff and Scott (1998) and Vergne (2011). In other words, it could be that some firms are disapproved of along a particular dimension more than along another. To check whether this could affect the results, I recoded the disapproval expressed in the articles along two dimensions: disapproval targeting a firm's actions and behavior versus disapproval targeting a firm's values and identity. Around 55 percent of the previously coded content fell into the first category, and 45 percent fell into the second. The full model was rerun separately for these two refined dependent variables (models 9 and 10). The most significant difference between the two is the fact that performance does not significantly decrease disapproval targeting firm values and identity. High performance only protects firms from disapproval related to what they do, not to what they are. Unpacking the disapproval construct represents an interesting opportunity for future research.

DISCUSSION

Categorical Associations and How Social Evaluations Are Generated

Containing disapproval is key to firm performance (Suchman, 1995), and the arms industry is no exception. I connected the categorization and stigmatization literatures to explain cross-firm variation in disapproval using a parsimonious attention-based mechanism. After 9/11, customer categories became more salient as the clash of civilizations discourse gained prominence, while the "weapon" and "civilian" industry categories became less salient as the boundary between weapons and nonweapons began to blur. Thus, stigma dilution across customer categories decreased disapproval more after 9/11, and the opposite was true across industry categories.

Firms have multiple categorical associations, and to classify them, industry stakeholders use a few salient categories—some of which are stigmatized, albeit to various extents. I argued and demonstrated empirically that category straddling, when it deflects stakeholder attention away from stigmatized categorical associations, decreases disapproval. This finding can be interpreted in mere probabilistic terms: multiple categorical associations send multiple cues that decrease the likelihood that any particular cue will receive too much attention, thereby drowning the stigma in an ocean of information. However, the pre-post 9/11 effects suggest that stakeholder attention is affected in more subtle ways. The values embedded in categories and category saliency play crucial roles overlooked in prior works.[9]

The finding that category straddling can decrease disapproval should not be seen as contradicting past results showing that it decreases approval (Hsu, 2006; Zuckerman, 1999), but rather as a complement to theories of categorization. Putting the two pieces of the category-straddling puzzle together, I find that splitting stakeholder attention across multiple cues brings both positive and negative evaluations closer to zero. In other words, when attention is unfocused, stakeholders give evaluations that are less extreme or, equivalently, more neutral, which is true for all types of social evaluations, positive and negative. This finding is consistent with the attention-based mechanisms detailed here: confused stakeholders are less likely to generate outlying evaluations.

[9] Controlling for the number of categories straddled does not affect the results. At the industry level, all firms straddle both the weapon and civilian categories. Using a more restrictive definition of what constitutes a category, I counted the number of customers to which each firm sold products yearly (ranging from 2 through 16) and included that number as a control. Before the inclusion of the stigma dilution variables, only the coefficient for the number of customer categories is positive and (marginally) significant ($p < .10$). Once the sigma dilution effects are accounted for, this control is no longer significant.

Future research should take a closer look at the chronology underlying stigma dilution. For instance, does operating in health care and diversifying into arms production have the same effect on disapproval as operating in arms production and then diversifying into health care? The order in which firms make decisions matters because certain trajectories seem to be irreversible at the resource and capability levels (Kaplan & Orlikowski, 2005). Future research could build on this idea to explain heterogeneity in social evaluations despite similarities in straddling industry categories.

Organizational Stigmatization and Disapproval

In simplistic accounts, stigmatization automatically translates into disapproval of firms, and stigmatized firms presumably do not care about disapproval since there will always be someone willing to buy weapons, pornographic material, or tobacco. This study's findings go against such common wisdom at three levels. First, membership in a stigmatized industry is a poor predictor of firm-level disapproval (see Figure 1). Second, in stigmatized industries, whose survival depends on the capacity to remain discreet, players attacked publicly are more likely to be scapegoated by their peers. So, especially in stigmatized industries, disapproval is costly and reduces a firm's survival chances, which is why managers who are aware of these effects try to keep disapproval at a low level. Third, if the story was as simple as "firms are stigmatized for selling weapons," then the largest arms producers would be the most disapproved of, which is not what the results suggest; for example, the effect of the size of the arms business is never significant in the reported models.

It is only by distinguishing between stigmatization as a category-level property and disapproval as a firm-level outcome that one can explain the ability of stigmatized industries to survive as wholes over centuries: the arms trade is 4,500 years old. If one mistakenly equates stigmatization with disapproval, then one cannot explain why so many firms can survive and make comfortable profits without contradicting all the findings showing that public legitimation is crucial to firm survival (Baum & Oliver, 1991). But if one recognizes that stigmatization of industries contributes to their relative isolation from the rest of society, thereby turning secrecy and discreetness into assets, one can easily understand how the category of "merchants of death" can thrive. Future research could benefit from comparing different stigmatized industries to identify macro variables influencing their long-term trajectories. For instance, the extent of the perception that a stigmatized industry is a "necessary evil" could affect the relationships between categorical associations, disapproval, and firm survival.

In prior works on organizational stigma, stigmatization has not been distinguished from negative social evaluations. Devers et al. (2009) defined stigma at the firm level as a discrediting label and a negative social evaluation, but they also argued that "a Chinese firm may decide to move its operations from its home country to another country . . . to remove the 'Made in China' stigma" (Devers et al., 2009: 159), thereby introducing an ambiguity regarding whether stigma is a firm or category attribute. Not all firms based in China consider moving out of China to avoid the stigma, perhaps because for many of them such stigma does not translate into disapproval. To avoid circular reasoning and account realistically for the evolution of "evil" industries, stigmatization and disapproval must be distinguished. Besides, I show that stigmatization causally affects disapproval, albeit in complex ways, because of category straddling and saliency differences among categories.

Future research could help to disentangle the complex relationships between disapproval and approval of firms. It seems that the two would best be represented as two distinct scales, rather than be seen as the two extremes of a single scale. Only the former allows for the existence of firms, such as Johnson & Johnson, that simultaneously face high levels of approval and disapproval. The two constructs may also have different antecedents and consequences, and a firm could well be approved of on some dimension and disapproved of on some other.

Category Evolution

Most scholars interested in categories attempt to achieve an understanding of how categories evolve (Kaplan, 2011), as their evolution relates to how industries change (Garud et al., 2011; Rao et al., 2005) and how they generate new socially accepted products (Rosa et al., 1999). Prior works have emphasized two important drivers of category evolution. First, mimetic behavior and status pressures provide incentives for industry players to change endogenously (Khaire & Wadhwani, 2010), as was the case in gastronomy during the rise of nouvelle cuisine (Durand, Rao, & Monin, 2007). Second, external evaluators have the power to create new categories to maintain their position and mitigate conflicts of interest, as Fleischer (2009) demonstrated in her study of brokerage firms. This study sheds new light on a third factor that affects cate-

gory evolution, namely exogenous shocks. Rather than arguing that categories can appear out of the blue or vanish at once, I demonstrate that categories can be more or less salient to industry stakeholders, and that an exogenous shock such as 9/11 can dramatically modify category saliency.

Formally, it cannot be denied that "firms whose name starts with letter A" form a category, unless one assumes a priori that to be recognized as a true category, a group of firms must be salient to industry stakeholders. Thus, theories need the notion of saliency to explain why categories are not equally important and to avoid an implicit assumption that verges on tautological reasoning (i.e., to find that categories matter is not surprising if one defines them a priori as salient). By the same token, this article's theory offers a simple answer to the question of how categories appear or disappear. Although the set of all possible categories is infinite, an actual category "appears" when its saliency rises above zero and "vanishes" when its saliency decreases to zero. A category's saliency rises above zero when (at least) some industry stakeholders use it to classify firms. In the arms industry, I showed that industry and customer categories have high saliency throughout the period, and even if 9/11 had an asymmetric impact on their saliency, none "vanished."

Future works could measure saliency on the basis of two important features of stakeholder classification schemes: how frequently a category is used, and how high it is in the hierarchy of embedded categories (Porac & Thomas, 1994). For instance, in the movie industry, both genre and country are almost always used to classify productions. Yet the Internet Movie Database always indicates a movie's genre before its country of origin, so one can hypothesize that genre categories are located higher than country categories in this particular industry's classification hierarchy. By extending this study's theory to the movie industry, one would expect straddling genre categories to be more consequential than straddling country categories. Put differently, a movie that is both a thriller and a comedy should receive more neutral evaluations than an Indian-American movie, ceteris paribus.

A limitation of this study is that I measured category stigma by considering only the most prominent attribute around which arms industry categories coalesced (e.g., extent of political violence for customer categories). In many contexts, categories coalesce around more than one attribute, and future research could investigate the consequences of such increased complexity (Durand & Paolella, in press). For instance, in the movie industry, genre categories provide information about both content (e.g., the action category) and target audience (e.g., the family category).

Validity of the Results and Methodology

The hypotheses rely on no specific assumption about the type of categories at stake. The findings support the theory at multiple levels of the arms industry's classification scheme as I examined straddling across industry and customer categories. The theory applies equally to traditional industry categories but also to subcategories within a particular industry, a sign of strong internal validity.

Usually, studies of organizational categories cross-sectionally examine one industry within regional or national boundaries (Hudson & Okhuysen, 2009; Porac & Thomas, 1994; Sutton & Callahan, 1987), which raises the triple issue of generalizability of the findings to other time periods, industries, and national contexts. Because this study is based on extensive longitudinal data on a global industry, it already addresses two-thirds of the problem, therefore significantly increasing the study's external validity relative to prior works.

A boundary condition for the applicability of my theory to other industries is the existence of a measurable stigmatization gap between salient categories of firms. In the financial industry, at least since the so-called subprime crisis, such gaps exist as stakeholders contrast different categories of firms, such as "consumer banks," "investment banks," "mortgage lenders," and "hedge funds." Within the entertainment industry, stigmatization can also vary from slight to strong when one thinks of businesses such as "tattoo parlors," "strip clubs," or "swingers' clubs" (Hudson, 2008). Even among religious communities, "cults," "sects," and "religions" represent categories eliciting various expectations on the stakeholders' side. The findings of this study are thus likely to generalize to other industries, including those not typically tagged as "stigmatized." In fact, this article shows that, instead of speaking of stigmatized industries as wholes, scholars should conceive of industries as embedded sets of categories conveying stigmas to various extents. Rather than wondering if a particular industry is stigmatized in absolute terms or not, scholars should devote more resources to trying to understand why disapproval varies across categories of players in that industry (e.g., Durand & Vergne, forthcoming).

The methodology provides guidelines for studying categories in virtually any industry. Combining qualitative and quantitative approaches enables scholars to identify the categorical structure of an

industry before proceeding with robust hypothesis testing based on longitudinal panel data. With a mixed-methods approach, the justification to examine genre or country categories relies on an in-depth knowledge of the industry rather than on the researcher's prior belief that category A matters and category B does not matter (or matters less). Field research eases identification of sources of cross-firm, within-category heterogeneity before quantitative data collection. In subsequent analyses, it is less likely that important control variables are overlooked, even though—and this study is no exception—one can never guarantee that all causes of heterogeneity are accounted for, especially within entities as intangible as categories.

Managerial Implications

To contain disapproval, managers should pay attention to the way industry stakeholders categorize firms. In the arms industry, diversification can indirectly benefit the arms business of a firm by decreasing disapproval. Because of the particular categorical structure of that industry, expected disapproval levels should be considered a primary outcome of corporate strategy. In fact, the disapproval generated by industry stakeholders is one of the few selection forces that shape firm trajectories in the global arms industry, and the capability to deal with disapproval is likely to be a source of competitive advantage for industry players (Vergne & Durand, 2011).

The findings delineate actionable strategies to curb future disapproval in relation to a firm's customer portfolio. In the arms industry, some managers seem to be aware of that. As the CEO of BAE Systems put it in 2005, "Whatever the government policy turns out to be, companies still have their own decision to make about what business they want to pursue. . . . Nothing forces us to sell to China" (Weinberger, 2005). Because "firms that sell to country X" are stigmatized in certain industries, containing disapproval in the long run may require managers to renounce certain opportunities in the short run. Why would managers be willing to do this? Because disapproval may have long-term negative effects on performance that no immediate cash inflow can compensate.

Managers have quite some leeway to alter their firm's categorical associations with industries and customers—and the consequences of their decisions for disapproval can be huge. For instance, in the arms industry, the firms that most benefited from the saliency effects of 9/11 on disapproval are found in Scandinavia, and their strategy combines three elements: a high level of specialization in weapons (which ceased to be a liability after 9/11), a relatively small proportion of dodgy customers in their address book, and affiliations with relatively transparent home countries (two features with a stronger negative impact on disapproval after 9/11). Only a careful categorical analysis of the industry can help to explain why those are the firms that gained a competitive edge after the terrorist attacks (rather than U.S. firms, as is the common assumption).

A compelling avenue for future research would be to estimate the impact of disapproval on firm performance precisely, to inform strategic decision making more finely. With quantified estimates of the negative performance effect of disapproval, scholars would be able to tell, for example, when it is most profitable for a firm *to decline doing business* with a new customer associated with a stigmatized category, or to refuse an offer from new shareholders whose investment would shift the firm's perceived national affiliations in damaging ways.

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