

# Playing with fire : Category-level strategies for dealing with public disapproval. The case of the global arms industry (1996-2007)

Jean-Philippe Vergne

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## « PLAYING WITH FIRE: CATEGORY-LEVEL STRATEGIES FOR DEALING WITH PUBLIC DISAPPROVAL. THE CASE OF THE GLOBAL ARMS INDUSTRY (1996-2007) »

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# INTRODUCTION

Strategy is not just positioning an organization in a resource space to achieve superior financial performance in the form of high positive cash flows. Performance also has a social dimension reflected in the evaluations that audiences and stakeholders grant to the organizations that operate in their field (Meyer and Rowan, 1977). Organizational scholars have devoted substantial attention to the mechanisms underlying the generation of positive social evaluations, which accumulate in the form of reputation and legitimacy, both of which significantly contribute to crucial outcomes such as sustained competitive advantage and organizational survival (Deephouse and Suchman, 2008). Thus, if strategy is about managing selection pressures in order to thrive in a particular environment, then the selection pressures relevant to managers are not just economic, but also social and cognitive (Rao, Monin, and Durand, 2003; Durand, 2006). From this perspective, organizations have a clear interest in eliciting positive social evaluations, but they also need to avoid negative ones (Hudson, 2008; Jonsson, Greve, and Fujiwara-Greve, 2009).

Much less attention in past research has been devoted to the study of negative social evaluations – which in this dissertation I call disapproval – and more specifically, to their antecedents and consequences. Intuitively, one can easily imagine why disapproval can lead to organizational failure when one thinks of prominent cases such BP and the oil spill, or Toyota and the massive unsafe car recalls. But disapproval does not have to be that intense, neither does it have to follow actual organizational misconduct (e.g., a media bashing campaign can do the job pretty well, independent of whether the targeted organization is guilty or not, that is, independent of whether it actually violated

field norms or not). Some organizations seem to attract more disapproval than others, no matter what they do or say.

Typically, organizations operating in the so-called "stigmatized" or "contested" industries (Galvin, Hudson, and Ventresca, 2004) are perceived as the usual suspects when it comes to predicting where high levels of disapproval are going to crystallize. Many would expect that firms involved in arms production, pornography, or tobacco will be disapproved of because they have their hands in some kind of dirty business. Still, within such stigmatized industries, there is a great deal of variation in disapproval across competitors, as visible on Figure 2.1 at the end of this document. For instance in the arms industry, stigmatized for turning war and death into profitable activities, firms like Blackwater or Halliburton suffer from much higher levels of disapproval than firms like Raytheon or General Dynamics, as visible in the media coverage these firms have received in recent years (and after controlling for actual corporate misconduct). In other words, categorization based on industry membership is not enough to predict who will be praised and who will be disapproved of. In this dissertation, I will argue that a great deal of variation in disapproval can be explained by a refined examination of how organizations are categorized within their industry (Porac, Thomas, and Baden-Fuller, 1989). Thus, because organizations are categorized along multiple dimensions beyond industry membership (Porac and Thomas, 1994) and because stigmas exist in many different forms (Devers et al., 2009), it is necessary to disentangle the various aspects of categorization and stigmatization to understand how audience evaluations shape disapproval levels (Hudson and Okhuysen, 2009). In particular, chapter 2 argues that it is necessary to distinguish between stigmatization as a category-level property (e.g., a stigmatized ethnic minority is a category of individuals) and disapproval as a firm-level outcome.

Firms are aware, at least to some extent, that categorical associations matter, and they use the latter as a lever for action. The intense disapproval of BP with respect to the oil spill in the Gulf of Mexico, for instance, triggered several observable changes at the industry level. Several competitors joined effort to create a research group about ecological safety in the context of deep water offshore oil extraction. BP and a few other firms decided to divest assets from the deep water extraction industry niche, and the U.S. government has announced new regulatory measures targeted at that specific segment of the oil industry. Industry audiences, by now, have learned to distinguish oil companies involved in unsafe deep water extraction from those that exclusively exploit more traditional – and safer – oil wells. Similarly, NGO and U.N activism in the arms industry led to the introduction of a novel categorical distinction between firms that produce landmines and cluster bombs – leading to civilian deaths and awful disabilities years after the end of an armed conflict – and those more responsible firms that do not produce such devices. In sum, it seems that an intense form of disapproval, which we term "public attacks" in chapter 3, often leads to major changes at the firm and industry levels.

This dissertation will thus demonstrate that the categorization/stigmatization perspective proves useful to understand both the antecedents of disapproval and the consequences of a particularly intense form thereof, namely public attacks. In the following, I will therefore seek to answer this broad research question:

***To what extent can firms strategically influence how industry audiences categorize them, in order to decrease disapproval and contain stigmatization?***

To answer this question, this dissertation will look at the possible strategic actions that firms can implement *ex ante* to maintain future disapproval at a low level, and at the strategic responses they

can implement *ex post* to avoid further damage. Before I go into the details of how each chapter of the dissertation provides insights that help answer this broad question, I will justify at a theoretical level how the categorization and stigmatization literatures can be useful to understand firm strategies with respect to disapproval.

**Categorization of organizations: what is it and why does it matter?**

To make sense of complex organizational landscapes, we constantly rely on categories, and often without even noticing it (Porac and Thomas, 1990). Categories are schematized cognitive patterns that summarize the attributes that any of their members is expected to have. When a friend speaks of an organization previously unknown to me as a "restaurant", she does nothing else but classify that organization in a particular industry category. From a statement of membership in the restaurant category, I can infer a lot of useful information about what we are talking about : the organization is located in a place open to the public ; in that place, people can sit at tables, where food is brought to them for immediate consumption (although occasionally, it may be possible to bring the leftovers back home) ; there are probably between three and twenty employees working there; the organization has a name that is likely to evoke food or a country famous for its gastronomy; customers can choose in a menu what they will eat and drink, and they will eventually have to pay for what they order ; the price list gives some information about the quality of the food and wines, so does the way waitresses are dressed, and whether a separate employee called a *sommelier* deals with wine orders; customers eat in small groups of one to ten people, they talk to each other while sitting most of the time, unless someone needs to go to the restroom; etc. Thus, categories should be seen as cognitive shortcuts that provide us instantly with a large amount of information.

When organizations are readily classifiable in a well defined category, audiences can have clear expectations about them (Zuckerman, 1999). To be sure, it does not mean that expectations will be met, but it still reduces the uncertainty that is inherent to any encounter with previously unknown social actors. It is thus important for an organization to be easily categorized, because it reassures its core stakeholders about what the organization is, what it does, and what it is likely to do in the future. Thus for organizations, being readily categorized is a cheap way of conveying essential information to investors, customers, shareholders, regulatory bodies, and the state. Still, organizations neither have perfect knowledge of, nor total control over, how audiences categorize them. Only in marginal cases do organizations purposefully attempt to induce classification in a category that has nothing to do with their actual activities, solely to manipulate audience perceptions. For instance, this is the case for organizations with unclear, illicit activities, which set up front organizations to reduce uncertainty on the side of their audiences and thus avoid further scrutiny (multipurpose criminal organizations are set up as "trash hauling companies", outlaw motorcycle clubs as "tattoo parlors", etc.). Conversely, to assume that organizations have no influence whatsoever on how audiences categorize them would also be a misrepresentation of reality.

In a country like France, where gastronomy has a long history (Rao et al., 2003), Mc Donald's has spent a lot of advertising budget trying to establish that it was running *restaurants*, not *fast foods* (in France, « un fast food » is a fast food restaurant, and « un restaurant » is not used to refer to fast food restaurants, so there is a very sharp divide between fast food restaurants and other restaurants). Similarly, among firms that produce weapons, some insist on speaking of themselves as "high tech firms", "aerospace firms", or "government contractors", rather than as "defense firms", or worse, as "arms producers" or "weapons manufacturers", as many pacifist NGOs portray them. This last anecdote collected during my field research confirms what previous categorization research has

emphasized: categories play a role in channelling social perceptions of organizations. This is why it is reasonable to assume that both organizations and their audiences will try to strategically influence categorical associations.

**Organizational stigmatization: what is it and why does it matter?**

Stigma is a linguistic label that discredits and vilifies a category of organizations that share some common, stereotypical feature (Devers et al., 2009). For instance, ex managers of an organization stigmatized by bankruptcy have difficulties finding an equivalent position in a new firm, because people fear that they may have been involved in the process leading to bankruptcy (Sutton and Callahan, 1987). Stigma is contagious and diffuses to similar others. The mechanism at work is not suspicion but simply categorical inference (Jonsson, Greve, and Fujiwara-Greve, 2009). Organizations who share a lot of commonalities with a stigmatized group may become stigmatized if audiences infer that the stigmatized feature is also part of what both have in common, because stigma is conveyed by language and says very little about what is true or false (Roehm and Tybout, 2006).

Stigma is a serious issue for organizations because it damages how they are socially perceived, thereby partly driving disapproval (Hudson, 2008). Moreover, because stigma is contagious, stigma is not a concern solely for the stigmatized. Both organizations with ties to the stigmatized and organizations similar to the stigmatized should be concerned by stigma. This is why stigmas should be studied in relation to categories: the latter constitute the niche in which stigmas emerge, diffuse, and wreak havoc.

**Answering the research question in three steps**

Previous works on the social evaluations of organizations have developed a body of measures that can capture negative and positive aspects of audience evaluations (Schneiberg and Clemens, 2006). However, this has never been done in an international context where firms operate in various countries where social norms are likely to differ (Marquis and Battilana, 2009). This raises a serious issue: how can we compare the social evaluations received by Firm A, based in a Country A' that has a set of norms A", with those received by Firm B, based in a Country B' with a different set of norms B"? Moreover, what data source could possibly provide us with comparable coverage of the social evaluations of Firm A and B, given that information about organizations is more likely to be found in geographically proximate sources? For instance, looking at articles published in the New York Times may be an option to compare the social evaluations received by two American firms, but what shall we do when we wish to compare an American firm to, say, a Danish firm?

Because the empirical setting of the dissertation requires that such comparison be made in the context of the global arms industry, Chapter 1 develops and validates a novel measure of social evaluations that can be used to capture the various components of disapproval in a longitudinal and international context. While this new measure is developed in the specific case of legitimacy, a positive social evaluation, it can readily be applied to measurement of disapproval, as shown in Chapter 2. Thus, the first step in answering the research question resides in answering the following: ***How to measure and compare social evaluations across firms based in different countries within an industry?***

Disapproval, a specific instance of negative social evaluation, can vary a lot from firm to firm. This non-random distribution of disapproval levels within industries suggests that some structural

patterns might be at work that can explain cross-firm variation in disapproval. Once we can compare social evaluations across firms, discrepancies in disapproval levels become observable. As mentioned before, past research relating stigma to disapproval has focused on stigma diffusion within industries because similar organizations tend to be grouped cognitively in the same industry category, and because belonging to the same category as that of a stigmatized organization represents a threat (Jonsson et al., 2009). However, industry membership is only one of the several dimensions along which organizations are categorized. In fact, a limitation of previous research on categories is their exclusive focus on a single dimension of categorization (e.g., movie categorization based on genre, firm categorization based on industry membership), whereas in reality organizations are categorized along multiple dimensions. For instance, as Porac et al. (1989) demonstrated, Scottish textile producers are categorized, among other things, based on their country of origin (using two categories: Scotland vs. Rest of the world), and based on the type of textile used (using three categories: hosiery vs. knitwear vs. lace). This is an important observation because there is no reason to assume that stigmatized features can only diffuse within industry categories.

The fact that stigmatized categories are found across various dimensions of categorization (based on customer type, product type, etc.) underlines the importance of accounting for the values embedded in categories. What if we find that raw knitwear is mostly produced by underage slave labor? Then stigma contagion is likely to harm organizations that are members of the knitwear category, independent of their country of origin, or even of their industry (e.g., carpet producers using knitwear may also be contaminated). Thus, the relevant unit of analysis for stigma is the category, provided that one recognizes that several dimensions of categorization matter, each containing a few possible categories, each category representing a potential niche for stigma diffusion.

In fact, stigma can diffuse so smoothly within a category that the latter can sometimes become entirely stigmatized. For instance, "those firms that do business with the military junta in Burma" form such a stigmatized category, located along a customer-based dimension of categorization. Of course, most firms that do business with the Burmese junta also do business with other customers, that is, they straddle multiple customer categories. The consensus in past research is that category straddlers receive poor social evaluations because audiences cannot infer categorical information on them at a low cost (for a recent review, see Hsu et al., 2009). For instance, analysts give poorer grades to diversified firms because their industry membership is unclear. But should we generalize this finding and say that firms with diversified customers will receive better evaluations than firms that have the Burmese junta as their sole customer? Maybe not.

The usefulness of bridging the categorization and stigmatization literatures lies in that it brings value back into categories by recognizing that categorical associations are not equivalent from a social evaluation perspective. Thus, it can be good for a firm to straddle categories if it appears to dilute its membership in a stigmatized category in the eye of a relevant audience. In other words, what matters to organizations is not to count how many categories they straddle along a particular dimension of categorization, but to understand what determines the aggregate perception that audiences will have as a result of straddling. Keeping in mind that the objective is to identify what strategic levers for action firms can rely on to decrease disapproval, the second step of this dissertation consists in answering the following, using a unique mixed methods research design: ***What explains cross-firm variation in disapproval in a contested industry? More specifically, how is disapproval affected by multiple categorical associations across several dimensions of categorization in the presence of stigma?***

While admittedly the above formulation sounds very specific, this research question makes sense for organizations in virtually all industries. Indeed, all organizations are categorized along several dimensions, and stigmatized categories exist in all industries, albeit not always permanently. Even though it seems easier to think of stigmatization in the context of so-called "contested industries" such as pornography or arms, reading a daily newspaper might prove sufficient to realize that any industry has its black sheep. The finance industry has "those banks involved in risky subprimes emission". The apparel industry has "those firms that use slave labor in Asia". The pharmaceutical industry has "those firms who let people die in Africa because they overly protect their patents", and "those firms that do not withdraw a drug from the market, although they know it is killing people". The car industry has "those firms that do not recall unsafe vehicles", and so forth. So the fact that the research question studies organizations "in the presence of stigma" should not be seen as a restrictive condition, but rather as the recognition that previous works on stigma, which were focused on so-called contested industries, can in fact generalize to most empirical settings.

Having identified *ex ante* the factors that drive future disapproval at the level of organizational categories, I will be able to assess the potential scope of firm strategic agency (De Rond and Thiétart, 2007) with respect to those factors. But this is only one part of the whole story as it focuses on anticipating disapproval. Firms already facing intense disapproval may also be in a position to respond so as to contain further damage. Put simply, firms can also implement response strategies in the face of public attacks.

Past case study research has examined how firms react to public attacks by describing the various response strategies implemented. Previous works have emphasized the corporate communication strategies available to attacked firms, such as denial, avoidance, or emphasis on positive attributes.

However, while anecdotic evidence suggests that attacked firms sometimes react by using strategies that go beyond communication, as Philip Morris did amidst public attacks by changing its name to Altria and diversifying outside the industry of tobacco, virtually no research has focused on firm response to public attacks beyond communication. To extend the theory offered in Chapter 2 and fill this gap in the literature, Chapter 3 examines the following research questions that focus on the consequences of a particularly intense form of disapproval: ***Why do firms differ in their responses to public attacks? When they respond, what affects how they manipulate the strength of their association to the industry category threatened by contamination?***

While quite specific, these two questions nevertheless address issues that will be of interest for organizations operating in industries occasionally touched by public attacks, such as banking, energy, auditing, construction, churches, and so forth. Public attacks may be more widespread in industries where firms engage more often in illegal behavior (Mishina et al., 2010), but it can also break based on false rumors. As such, there is no reason to assume that certain firms or industries should be excluded *a priori* from the scope of applicability of a theory of response to public attacks.

To address these issues, Chapter 3 relies on the literatures on categorization. In this co-authored piece, we argue that the negative externalities generated by the attacks targeting a focal firm's *rivals* can contaminate the whole industry category. Hence, consistent with stigmatization research, public attacks of rivals drive a firm to withdraw from transactions (Yu, Sengul, and Lester, 2008). However, while prior works have looked at within-industry dissociation from peers (Sullivan et al., 2007; Jensen, 2006), our research examines dissociation from the industry as a whole, that is, between-industry strategic moves. We argue and find empirically that more intense and consensual public attacks on their rivals lead firms to more intense dissociation from the arms industry category (i.e.,

they move into civilian activities). Two mechanisms drive this process: audience generalization of the attacks to the whole category, and categorical inference, which is a judgement about the intensity of a firm's membership in the arms producers category. When audiences generalize more and firms are more prone to elicit categorical inference, we find that the effect of public attacks of rivals on industry dissociation is reinforced, consistent with our categorization perspective (see Figure 3.1 at the end of this document). Thus, we provide evidence that firms respond strategically to public attacks of their rivals, we explain why, and we unpack the various externalities that make a particular type of response more likely than others.

**Dissertation structure**

All three essays use the same empirical setting, i.e. the global arms industry between 1996 and 2007. The three essays are empirical, but each of them develops a portion of theory that feeds back into the broader picture and provides an important building block for answering the research question. A mixed methods approach is used throughout the dissertation, which combines qualitative field research with quantitative hypothesis testing (chapter 2 is the reference chapter in this respect).

To understand to what extent firms can strategically influence how industry audiences categorize them, in order to decrease disapproval and contain stigmatization, this dissertation proceeds in three steps. The first step (Chapter 1) argues in favor of a new methodology that allows measuring and comparing disapproval levels across firms at an international level. Observed differences across firms are then explained by identifying category-level factors that drive disapproval in the presence of stigma (Chapter 2). When firms act upon those factors, they modify audience categorization patterns and are thus able to decrease future disapproval levels – what I term an *anticipation strategy*. Besides, firms are also able to react to high levels of disapproval once they face public attacks to contain

subsequent stigmatization. The idea here is that when it is too late to prevent, firms have no other option left than try to find a cure. So in Chapter 3 the focus is on *response strategies* – on actions implemented by firms in reaction to public attacks of rivals in order to dissociate from a potentially contaminated industry category.

The chapters all contribute to answering the research question by assessing empirically various strategies that could help firms decrease disapproval and contain stigmatization, both *ex ante* (anticipation) and *ex post* (response). Based on the theoretical lens outlined above, an expected contribution of the dissertation is to show that strategies affecting categorization of the focal firm by industry audiences will be particularly effective, because they modify the value-laden stereotypes used by audiences to generate evaluations of firms.

**Summary of the dissertation structure**

**To what extent can firms strategically influence how industry audiences categorize them, in order to decrease disapproval and contain stigmatization?**

*Important facts and observations based on previous research*

- Organizations are classified along several dimensions of categorization
- Categories convey information at a low cost and channel social perceptions of organizations
- Both organizations and their audiences will try to strategically influence categorical associations
- Membership in stigmatized categories may influence disapproval of particular firms, yet little is known about the consequences of category straddling in the presence of stigma

***Method***

**Chapter 1 – 1st Essay**

How to measure and compare social evaluations across firms based in different countries within an industry?

- *social evaluations are best captured through media content analysis within an industry category*
- *adoption of ethics code is not an effective strategy for decreasing disapproval in contested industries*

***Anticipation strategies***

**Chapter 2 – 2nd Essay**

What explains cross-firm variation in disapproval in a contested industry? How is disapproval affected by multiple categorical associations across several dimensions of categorization in the presence of stigma?

- *variation in disapproval depends on categorical associations, distribution of stigma across categories, and their saliency*
- *stigma can be strategically diluted by category straddling*

***Response strategies***

**Chapter 3 – 3rd Essay**

Why do firms differ in their responses to public attacks? When they respond, what affects how they manipulate the strength of their association to the industry category threatened by scandal contamination?

- *firms implement response strategies to public attacks of rivals*
- *generalization and categorical inference drive the strategic response process*

**Main result**

**Firms should implement both anticipation and response strategies to deal with disapproval. The main strategic lever for action in both strategies is firm manipulation of categorical associations**

# Chapter 1

# (Essay 1)

# CHAPTER 1 – TOWARDS A NEW MEASURE OF ORGANIZATIONAL LEGITIMACY: METHOD, VALIDATION, AND ILLUSTRATION

*This chapter is forthcoming at Organizational Research Methods. It is available online, ahead of print, since April 10*

**ABSTRACT**

There is still no consensual method for measuring organizational legitimacy. We review and discuss the three traditional measurement strategies, based respectively on an examination of code adoption, firm linkages, and media perception. Legitimacy essentially deals with perceptions of social congruence between an organization and broader norms, so we argue in favor of a perceptual measure based on media content analysis. We extend existing media-based indicators by offering a multidimensional measure of legitimacy which accounts for heterogeneity of perceptions across space and time. The paper proposes a three step methodology to compute this new measure, the Raw Legitimacy Vector (RLV), and illustrates its applicability using longitudinal data at an international level on the global defense industry. We find strong support for RLV's factorial, convergent, discriminant, and criterion-related validity, and demonstrate that RLV performs better than code adoption and firm linkage measures of legitimacy. We emphasize the contributions of RLV to organizational research, in particular the fact that RLV methodology readily applies to measurement of disapproval.

**Keywords:** legitimacy, measure, validity, code, media

## INTRODUCTION

Institutional theory, with its emphasis on the legitimacy construct, has become a leading perspective in organizational research (Heugens and Lander, 2009), and is viewed as the third leg of the "strategy tripod" (Peng, Wang, and Jiang, 2008). Institutional theory highlights the pivotal role of legitimacy in social interaction (DiMaggio and Powell, 1983; Meyer and Rowan, 1977). Legitimacy is defined as a generalized perception of social acceptance (Scott, 1995; Suchman, 1995). Legitimate organizations are those whose existence, values, and behavior appear congruent with socially-accepted norms. For example, firms with high levels of legitimacy survive longer and acquire resources more easily (Deephouse and Suchman, 2008; Suchman, 1995). However, recent criticism suggests that the notion of legitimacy is poorly defined and hard to manipulate at the empirical level (Hudson, 2008).

Finer-grained measures of existing constructs usually open interesting avenues for research (Keegan and Kabanoff, 2008; Ketchen, Boyd, and Bergh, 2008; Venkatraman, 2008). So far, legitimacy has often remained unobserved in empirical studies (Zucker, 1989), or proxied by simplistic measures of political or regulatory patterns (Schneiberg and Clemens, 2006). To date, measures of firm legitimacy fall in three categories. A first measure tracks corporate adoption of codes of conduct (e.g., ethics codes), which reportedly signal increasing organizational congruence with societal expectations (Bansal and Hunter, 2003; Stevens, Steensma, Harrison, and Cochran, 2005). The second type of measure focuses on firm linkages to field-level regulatory bodies, such as accreditation agents, because such ties indicate social fitness between a firm and its environment (Baum and Oliver, 1992; Rao, 1994; Ruef and Scott, 1998; Singh, Tucker, and House, 1986). The third measure relies on media content analysis to evaluate how firms are perceived and derive a measure of their legitimacy, usually based on the computation of a Janis-Fadner coefficient of imbalance between endorsing and challenging accounts (Deephouse, 1996; Janis and Fadner, 1965). All three methods have their limitations: corporate codes can be adopted only symbolically as a

response to stakeholder criticism; accreditations may signal product quality as much as legitimacy; media content analysis, a time-consuming approach, is constrained by the limited coverage scope of media sources (usually, newspapers).

Past research has insufficiently explored two intuitions underlying most institutional work. First, since multiple norms coexist within fields, we should not only acknowledge the multiplicity of stakeholder groups or audiences (Ruef and Scott, 1998) but also the existence of *different dimensions of legitimacy*. Second, perceptions are *heterogeneously distributed across space and time*: a firm can be more legitimate in California than in Louisiana or less legitimate in 2009 than in 2007. This is because firms' attributes and actions are not constant over time, nor are the norms with which they should be congruent (Meyer, Boli, Thomas, and Ramirez, 1997). The recent focus on social evaluations at a cross-national level (Chan and Makino, 2007; Deephouse, Li, and Newburry, 2009; Orr and Scott, 2008) should spur scholars to design a measure of legitimacy suitable for comparison across space. So far, empirical research has not seriously tackled these issues, and a careful examination of past measurement approaches is required to improve the match between theory and applied research.

After reviewing the existing measures of legitimacy (section 1), this paper argues in favor of a perceptual measure based on media content analysis, and suggests a three step methodology that substantially refines existing approaches (section 2). Appreciably, the proposed methodology identifies four dimensions of legitimacy suitable for field-level research across space and time, including at an international level. This approach leads to the computation of a Raw Legitimacy Vector (RLV) which richly captures organizational legitimacy while correcting for most measurement bias. To illustrate the argument, section 3 applies the methodology to measure the legitimacy of defense contractors between 1997 and 2007. RLV is compared to alternative measures, we establish its reliability and validity (section 4), and discuss avenues for future research, in particular the extension of RLV to measurement of disapproval.

## PRIOR MEASUREMENT STRATEGIES FOR ORGANIZATIONAL LEGITIMACY

In the past, measures of legitimacy have relied on the observation of three categories of phenomena: code adoption, organizational linkages, and media perception (Schneiberg and Clemens, 2006).

Code adoption does not necessarily signal firm legitimacy, and managers can adopt codes in a purely symbolic manner (Westphal and Zajac, 1994). Besides, ceremonial adoption is unlikely to generate endorsing accounts when firm behavior is frequently monitored by committed stakeholders concerned with actual, rather than reported behavior (Boiral, 2003, 2007). Recent cases of corporate malfeasance showed that code adoption is a possible response to stakeholder criticism (Stevens et al., 2005), so code adoption may even temporally coincide with a peak in illegitimacy. Similar problems are encountered at the country level of analysis: Henisz, Zellner, and Guillen (2005) capture legitimacy by examining adoption of institutional reforms, yet regret that such patterns constitute only "coarse indicators of the micro-level influences at work" (Henisz et al., 2005, p.893).

Linkage measures capture organizational compliance with regulations and quality standards. Organizations gain legitimacy by participating in certification contests (Rao, 1994), and signal their ties to prominent institutional actors (Baum and Oliver, 1992) by receiving external evaluations (Durand, Rao, and Monin, 2007). This approach has two limitations. First, it is not always obvious whether endorsement by third parties captures legitimacy or quality (the perception of which is usually associated with reputation, not legitimacy, as in Washington and Zajac (2005)). Arguably, when external agencies certify day care centers or hospitals for their technical competence (Baum and Oliver, 1992; Ruef and Scott, 1998), they also signal their quality and provide patients with information not conveyed by price mechanisms, thereby decreasing transaction costs (North, 1990). Second, linkage measures are difficult to implement across space since organizations from different regions typically deal with different regulatory agencies, some of which follow their own expansion

strategies (Durand and McGuire, 2005). In comparative studies, it thus remains unclear which external evaluations should be used to compare legitimacy across firms. In a cross-national analysis of the impact of ISO 9000 certification, Clougherty and Grajek (2008) acknowledge that ISO both signals quality and enhances mutual understandability, so it simultaneously captures some aspect of reputation and of legitimacy, resulting in theoretical ambivalence.

In a comparative study of ownership structures, Chan and Makino (2007) acknowledge that "it would be useful to examine legitimacy more closely by adopting a qualitative approach to observe the process of the bestowal of legitimacy on foreign subsidiaries" (Chan and Makino, 2007, p. 635). This qualitative leap becomes possible with the third measurement approach, which taps media content to assess legitimacy. Since legitimacy essentially deals with perceptions of appropriateness, and since the media both reflect and shape perceptions, this approach seems particularly well suited to capture legitimacy in its most common sense (Pollock and Rindova, 2003). Accordingly, legitimacy is measured by unpacking the normative evaluation conveyed by media content, a robust method to derive firm-specific indicators of social acceptance (Deephouse, 1996; Schneiberg and Clemens, 2006). This measure overcomes the first limitation of linkage indicators since social support in the media is typically not correlated with product quality, but rather with the broader fit between a firm's perceived behavior and accepted societal norms. Newspapers have been the preferred media source so far (Deephouse and Carter, 2005) because newspaper content and public opinion are closely aligned (Dowling and Pfeffer, 1975), and because newspaper is the prevailing source of information for the public. Newspaper stories also have stronger recall (Stempel, 1991) and are perceived as more reliable than internet content (Stanton and Rogelberg, 2001). A recent survey conducted in ten countries, including the U.S., the U.K, India, Russia, Germany, Brazil, and South Korea, showed that national and regional newspapers are highly trusted, while only 9% of the respondents cited internet as the 'most important' news source (BBC-Reuters-Media Center, 2006). Articles can be aggregated

per month, quarter, or year, thereby enabling a fine-tuned tracking of legitimacy variations over time. Yet, newspapers tend to focus on local news (Deephouse, 1996), which poses a serious challenge for creating legitimacy scores comparable across space.

A widely-used comparative measure of legitimacy is based on the Janis-Fadner coefficient of imbalance (Janis and Fadner, 1965) between endorsing and challenging press articles. It proves very useful to track over time the legitimacy of firms which receive comparable coverage in a given press outlet. A potential issue with this measure is the interpretation of the relation between a firm's visibility and legitimacy (Carter, 2006). For instance, if a large publicly-held corporation is mentioned in twelve articles reporting its monthly sales and in twelve others involving corporate scandals, its Janis-Fadner coefficient will be zero according to the standard coding procedure (Deephouse and Carter, 2005), indicating neutral perception, i.e. the same as that of a privately-owned firm endorsed only once and challenged only once in the same year. Is it reasonable to conclude that the two firms are equally legitimate? Deephouse and Suchman (2008) shed new light on this dilemma. On the one hand, one may consider that perfectly legitimate organizations are so taken-for-granted that they are no longer scrutinized, which translates into the quasi-absence of press coverage. Yet some organizations, notably stigmatized organizations, may wish to remain invisible in the news to avoid public attacks, as Hudson and Okhuysen (2009) demonstrated in the case of men's bathhouses. On the other hand, quasi-absence of newspaper coverage can represent a liability for firms that seek to expand their network of investors, partners, suppliers, and customers (Pollock and Rindova, 2003). In sum, whether visibility is a component of legitimacy is likely to depend on how socially valuable it is for a firm to be visible. Consequently, in contested industries (e.g., tobacco, weapons, men's bathhouses), visibility may not be as salient a component of legitimacy as in industries with broad social support. This insight should help scholars interpret situations wherein equal legitimacy scores are obtained for firms with very different media visibility patterns.

## A THREE-STEP METHODOLOGY TO MEASURE FIRM LEGITIMACY

### Step 1: Selection of relevant dimensions of legitimacy

Legitimacy is the perception that an organization is congruent with broader norms and values. Because there are different types of norms and values, legitimacy has several dimensions. We used an iterative process to identify a rich yet parsimonious dimensional structure for the legitimacy construct. Based on a literature review and discussions with institutional scholars, we built a tentative list of dimensions of legitimacy that we thought captured most phenomena likely to affect perceptions in a wide range of situations involving an organization's natural environment, rivals, investors, owners, employees, customers, and the broader civil society. For example, we retained "environmental legitimacy" from the beginning to capture organizational congruence with environmental standards, as in Bansal and Clelland (2004). Then, using keywords provided by Sullivan et al. (2007), we searched for legitimacy-challenging articles in the business press and asked two independent coders to link them to one or more dimensions, depending on the reported scope of norm violation. Following further discussion, we grouped together pairs of dimensions that were not empirically distinguishable (i.e., pairs consistently associated with the same articles). We then coded some more articles and iterated the whole process one more time. Originally, the list contained seven dimensions, and we ended up with five. The pre-test phase of the survey-based validity assessment led us to merge two more dimensions (see validity assessment section below), so our final dimensional structure consists of four dimensions.

*Environmental legitimacy* captures the congruence between an organization and environment-related norms (e.g., no hidden toxic waste). *Competitive legitimacy* captures the congruence between an organization and norms of competition (e.g., no bid rigging). *Accountability legitimacy* captures the congruence between an organization and accountability standards (e.g., no earnings overstatement).

*Transactional legitimacy* captures the congruence between an organization and ethical norms preventing abuse of organizational power for personal benefit in work-related transactions (e.g., no bribe taking, no sexual harassment). Not all dimensions will be relevant every time, so scholars should pick those they need based on their research question (Buchanan and Bryman, 2007)[1].

**Step 2: Selection of relevant press outlets**

Because newspapers tend to give more weight to local stories, past research using the press to measure legitimacy has remained within regional or national boundaries (e.g., Pollock and Rindova, 2003; Ruef and Scott, 1998; Tolbert and Zucker, 1983). International research seems impeded by cross-national norm heterogeneity, which could prevent meaningful comparison of perceptions. Yet, norms do not necessarily vary more across countries than within countries. For example, Hudson and Okhuysen (2009) find strong evidence that men's bathhouses are less socially accepted in the South of the U.S. than on the West Coast. One probably would not observe such a discrepancy in the extent of men's bathhouse acceptance between, say, the Netherlands and California, two liberal territories with a history of tolerance towards sexual minorities. In fact, institutional theory is premised on the idea that field-level norms diffuse across geographical boundaries because of the pervasive influence of professions and field-level regulation (Meyer et al., 1997). Accordingly, this paper proposes that comparative studies of legitimacy can be conducted as long as the level of analysis remains the *organizational field* – even when the latter spans multiple countries.

Fields are embedded in various environments, assessed by multiple audiences (Carter and Deephouse, 1999), and a given newspaper reflects only a partial perception of a field as whole (Earl, Martin, McCarthy, and Soule, 2004). Thus, the selection of press outlets should not only favor high-circulation and authoritative sources (Deephouse, 1996), but also sources without an obvious topical

[1] The diffusion of international initiatives such as ISO 14001 at the environmental level, WTO agreements at the competitive level, IFRS at the accountability level, and the UN Convention against Corruption at the transactional level all point to the existence of some shared understanding that corporations should be monitored in certain ways, even though norm enforcement varies across space and time (Henisz et al., 2005; Meyer et al., 1997)

bias. For instance, depending on their ownership and government ties, newspapers may vary greatly in their tendency to cover stories about, say, environmental damage in the oil industry. Hence, the outlets retained for article search should not have a propensity to avoid the topics related to the selected legitimacy dimensions.

**Step 3: Control for spatial bias**

Following the previous discussion, *The Los Angeles Times* should not be used as the sole source to compare the social perception of men's bathhouses located in California and Louisiana, because of the newspaper's location and probable editorial bias. The same line of reasoning would apply to the comparison of MNCs headquartered in two different countries. Generally speaking, in a study of Firm A and Firm B, head-quartered respectively in regions (or countries) A' and B', one can fix the comparability issue by analyzing what newspapers A" and B", based respectively in regions A' and B', write about *both* firms (or groups of firms). This correction is even more relevant if both firms do business in both countries, and its interpretation is rather intuitive. Say both firms operate internationally within the same field; if Firm A is challenged only in its home country while Firm B is challenged in both countries, then Firm A is probably better off in terms of legitimacy. The next section extends this reasoning to situations with more than two regions.

Based on this methodology, one can compute for each firm-year observation a Raw Legitimacy Vector (RLV), which has the same number of dimensions as the legitimacy construct retained in the study, and which records for each dimension the number of challenging articles.

*Insert Figure 1.1 about here*

## ILLUSTRATION: THE LEGITIMACY OF GLOBAL DEFENSE FIRMS, 1997-2007

**Research context**

There is to date no comparative work that measures or explains variation in firm legitimacy across countries. We examine firm legitimacy between 1997 and 2007 in the defense industry, also known as

the arms industry or the weapons industry (SIPRI, 2009), a sector of the economy virtually ignored by organizational scholars (exceptions include Anand and Singh, 1997; Baum and McGahan, 2009; Depeyre and Dumez, 2009). The data for this study were collected in two steps. First, the author conducted interviews with prominent field actors, such as defense experts, defense economists, political scientists specialized in defense, and industry professionals. Then, the author collected quantitative data at the firm level from the Stockholm International Peace Research Institute (SIPRI), from a U.S. competitive intelligence provider, from the U.N. online databases, from annual reports, from defense-related publications, from Lexis-Nexis, and from Factiva.

World defense spending amounts to US$1.5 trillion (SIPRI, 2009). The arms industry has undergone major transformations since the fall of the USSR. What was once a sector controlled by state authorities has become increasingly autonomous, global, and competitive. International competitive bids become the norm for large programs as governments face budget constraints and seek to achieve value for money. When public funds are spent on foreign military products, a significant degree of compliance with various norms (e.g., transparency) is expected from exporting firms. The internationalization of arms trade goes hand in hand with the diffusion of field-level norms, encouraged by the constant monitoring of NGOs (e.g., Transparency International).

The arms industry is a highly-institutionalized organizational field (Suchman and Eyre, 1992). Governments do not only acquire weapons for national security purpose, but also to bolster national pride and imitate their counterparts. System performance does matter, yet social evaluations play a crucial role in business transactions despite the high-tech profile of the sector. The defense field is regulated by several international treaties and export control rules. The U.N. plays an important role at regulating weapon flows, during and between political conflicts. The diffusion of normative field templates is facilitated by the intense integration of field actors after the fall of the USSR. There are a limited number of final weapon system providers in the global arms industry, and they are well

identified (Defense News, 1997-2007). A few international publications specialized in defense are widely read by defense professionals across the world (i.e., *Defense News*, *Jane's Defence*, *Aviation Week and Space Technology*). A number of yearly and biyearly events such as arms trade fairs provide occasions for discussion and networking (e.g., Farnborough in the UK). Most countries have professional associations such as the U.S. National Defense Industrial Association, which represent the interests of the defense community before political authorities. In sum, the arms industry can be seen as a "complex interorganizational field of commercial activity" (Galvin et al., 2004) wherein professionalization and field actors have fostered institutionalization of normative templates.

**Step 1: Selection of relevant dimensions of legitimacy**

Several international NGOs (e.g., Campaign Against Arms Trade) challenge the legitimacy of arms producers, sometimes described as "war makers" or "war profiteers". Arguably, our empirical setting represents a contested industry, not only because arms are used occasionally to kill people, but also because of the perceived secrecy surrounding arms-related transactions. According to an official U.S. government report, half of the known bribes worldwide between 1996 and 2000 were for defense contracts (ICTA, 2000). Business interactions are often tarnished by accusations of anticompetitive behavior (e.g., Boeing, Airbus, and Embraer are involved in several WTO disputes). A recurring criticism against arms producers is the lack of transparency surrounding sales activities, which may result in the diffusion of untrue annual reports. Also, the highly-polluting nature of the technologies involved in the industry triggers protest among environmentalists. Thus, all four dimensions of legitimacy are retained for this study.

Our sample includes the 210 largest defense contractors worldwide between 1997 and 2007 (Defense News, 1998-2007; SIPRI, 2008). All firms operate internationally and are monitored by various stakeholders outside their home country. Notably, from 1997 onwards, the OECD

Convention on Bribery progressively extends North-American standards relative to transactional legitimacy to 17 countries. This event described as "a tipping point" (DAC/Transparency International, 2008) makes international comparison even more relevant after that date.

**Step 2: Selection of relevant press outlets**

Based on previous research (Sullivan et al., 2007) and the careful reading of lengthy newspaper articles reporting illegitimate behavior in the defense industry, we identified useful keywords for subsequent database search (e.g., 'illeg*', 'unethical', 'unlawful', 'scandal*', 'fraud*', 'violat*', accus*', 'corrupt*', "bribe*', 'cartel*', 'antitrust', 'toxic*'). Consistent with the previous discussion, we focused on legitimacy-challenging articles only, for they signal incongruence between an organization and broader societal norms, and adequately capture legitimacy variations (Devers, Dewett, Mishina, and Belsito, 2009)[2]. We used the keywords and 50 randomly-selected firm names to conduct a search in *Factiva's* 14,000 international media sources between 1997 and 2007. We retained the ten most recurrent sources for each firm and aggregated article count across firms to list authoritative sources unbiased towards covering defense-related issues.

**Step 3: Control for spatial bias**

We divided our sample in eight regional categories: Europe, the Middle-East, North America, South America, Russia/CIS, Africa, Asia, and Oceania. For each region, we retained the two newspapers that returned the largest amount of relevant articles. We ended up with 12 sources, all of which were leading, authoritative, public-oriented publications in their own region. The final list includes *The Financial Times*, *The New York Times*, *The Wall Street Journal*, *The Independent* (UK), *Turkish Daily News*, *Jerusalem Post*, *The South China Morning Post*, *The Australian*, *The Moscow Times*, *The Hindustan Times*

[2] Interviews confirmed that media visibility was an unlikely component of legitimacy in a contested field like defense. At a major arms trade fair, a defense executive epitomized this fact when he claimed: "You know, we're not really looking for additional publicity in the press during and between these kinds of fairs". The 30 articles analyzed for keyword search came from newspapers based in different regions of the world and covered challenging stories of different types related to defense, such as corrupt arms deals, overbilling, tax dodging, cronyism, environmental damage, etc.

(India), *Kommersant* (Russia), and *Business Day* (South Africa)[3]. An internet search was conducted to ensure that none had close ownership ties with government bodies or defense contractors. For each of the 210 firms, we then searched for all legitimacy-challenging articles *published in all 12 newspapers*, thereby considerably reducing spatial bias. Firm legitimacy was therefore systematically evaluated in one or two geographically proximate newspapers and in ten or eleven geographically remote sources.

When a single article challenged a firm on more than one issue or dimension, or targeted more than one firm, we coded separate challenges, so the coding unit was the issue-dimension-firm-year. We coded 1710 units (mean=.83, s.d=3.01, median=0, mode=0, max=72), then reverse-coded the number of challenges to obtain the RLV (e.g., a firm with a RLV of {-2; -1; 0; 0} in 2003 was challenged along the environmental and competitive dimensions twice and once, respectively). The RLV Score, defined as the total number of challenges across dimensions in a given year, is computed by summing across dimensions. For the same firm, the RLV Score in 2003 is (-2)+(-1)+0+0=(-3)[4].

## CONSTRUCT VALIDITY OF THE RAW LEGITIMACY VECTOR (RLV)

### Factorial validity: Multidimensionality of legitimacy

The factorial validity of the RLV is assessed using survey data and a method very similar to that implemented for measurement scale validation (e.g., Tracey and Tews, 2005). The survey aims at validating the multidimensional structure of legitimacy and assessing whether heterogeneity across newspaper sources is problematic (e.g., the normative content of press articles varies cross-nationally,

[3] Except for two specialized publications, only generalist dailies appeared in the top of the list generated in Step 2. We excluded the specialized publications to retain a homogeneous body of sources, consistent with a measure of 'public legitimacy' (Deephouse and Carter, 2005). For South America, no publication appeared in the results, but since only one sampled firm is based in this region, it was not an issue. For Africa, only one publication appeared. For Oceania, five publications appeared and we chose to select only the most relevant, for two sampled firms only are located in Oceania.
[4] Given this paper's sample size and the international scope of the data, computing a Janis-Fadner coefficient of imbalance would mean content-analyzing several tens of thousands endorsing, neutral, and challenging press articles. While this is theoretically feasible, RLV is more efficient, less time-consuming, and leads to finer-grained measurement.

so article content could be miscategorized – coded in the "wrong" dimension – or misinterpreted – reader A may find an article challenging while reader B does not).

We constructed a 15-item survey using the following procedure. First, we rearranged all the coded units in three categories based on newspaper location: Europe and the U.S., Africa and the Middle East, and Asia. Second, for each of the four dimensions of legitimacy, we randomly selected one coded excerpt from each regional category. Third, we replaced all firm names by "*Firm Inc.*" and slightly rewrote some excerpts to fit the requirements of survey methodology (e.g., five sentences were shortened to create survey items that minimize respondent fatigue). After a discussion with colleagues, we designed three items to capture reputation – a construct related to legitimacy, yet theoretically distinct (Washington and Zajac, 2005) – to assess RLV's discriminant validity. Respondents (n=104) rated the randomized items on the extent to which they believed that the items challenged each of the four dimensions of legitimacy and reputation (from 1, "not at all", to 5, "completely"). Within-dimension reliability was high ($0.74<\alpha<0.93$). We then conducted a series of exploratory (EFA) and confirmatory (CFA) factor analyses. We found that all legitimacy items loaded uniquely on the proposed dimension. Reputation items primarily loaded on a fifth, distinct dimension. Our proposed 4-factor model fitted the data better than an alternative one-dimensional model, and better than a 5-factor model that included reputation items. Overall, analyses provided strong evidence of reliability and of factorial, convergent, and discriminant validity for RLV. More details on the methodology and results are provided in the Appendix.

**Criterion-related validity**

As noted by Deephouse and Suchman (2008), consequences of legitimacy other than survival and IPO performance have received little attention in institutional research. Because our data contained too few IPO events and because our window of observation was too short for survival analysis, we decided to check whether known antecedents of legitimacy predicted well RLV Score, a form of

predictive validity assessment. Consistent with institutional research (Deephouse, 1996), we expected firm age (Singh et al., 1986), performance (Meyer and Rowan, 1977), and conformity to field norms (Wry, Deephouse, and McNamara, 2007) to be positively correlated with RLV Score. However, given the contested character of the defense field and the fact that larger firms are more scrutinized (Powell, 1991), we did not expect a positive correlation between size and legitimacy.

The dependent variable is discrete and overdispersed, so we used panel negative binomial regression. We opted for a random-, rather than fixed-effects specification, based on a test of overidentifying restrictions. Interestingly, random effects enable coefficient estimation for within-firm constant covariates (Long and Freese, 2006). We used logged measures of *age* and *size* (net sales), and computed *performance* as the ratio of net profit over net sales. Owing to the particular history of the field with respect to corruption, stakeholders put a lot of pressure on arms exporting countries to monitor defense contractors. We therefore measured *conformity* with a dummy variable coded 1 when a firm's home country is part of the OECD Convention on Bribery in a given year. We included several control variables that could influence firm legitimacy: *year* dummies, *industry* dummies (aircraft, marine, ground vehicles, electronics), *ownership* type (coded 1 for state-owned firms), *arms production intensity* (logged arms sales), NATO or UN permanent Security Council *membership* dummy (coded 1 for firms headquartered in member countries), and a dummy for firms with a *research* orientation (coded 1 for firms that develop new technologies internally). Model 1 in Table 1.1 displays the coefficients for the baseline model with control variables. Model 2 includes age, size, performance, and conformity. We found the expected positive correlation between RLV and age ($p<.01$), performance ($p<.001$), and conformity ($p<.001$). The coefficient on size is negatively correlated with legitimacy ($p<.001$), which confirms that visibility is a liability for defense firms. We rerun the models by adding controls for the firms' country of origin to capture unobserved cross-

national heterogeneity. Results (unreported) did not change in any significant way. Overall, the results provided strong evidence of the criterion-related validity of RLV.

*Insert Table 1.1 about here*

**Comparison with alternative measures of legitimacy**

***Expert rating***. To further establish the *convergent validity* of the RLV and its ability to track legitimacy scores across space and time, we measured firm legitimacy using defense expert evaluations. We simply asked the respondents (n=5) to choose in the list of sampled firms the twenty companies which, according to them, had been most challenged over the last decade because of their illegitimate behavior. Respondents come from four different countries and have worked as defense experts in various organizations for several years. Generally speaking, they do not possess information about defense firms that is not publicly available. Their perceptions, thus, are based on a focused reading of defense-related topics in the international press, which makes this survey particularly relevant for RLV validity assessment. We computed a rank correlation statistic using Kendall's adjusted tau ($\tau$) to measure the degree of correspondence across two rankings of the 210 firms: one based on expert evaluations, one based on RLV Score. $\tau$ is comprised between -1 and 1, with values around zero indicating independence of the rankings, and positive (negative) values indicating (dis)agreement. We found $\tau$=0.43 ($p<.000$), suggesting a high level of convergent validity[5].

***Code adoption measure***. To compare RLV and a code adoption measure, we selected all British firms with at least 4 firm-year observations (n=16, two firms excluded) and coded if they adopted ethics codes. We chose British firms because: 1/ given time and resource constraints, this choice allowed us to look at all firms within one country; 2/ there was a lot of variation in RLV Score across British firms. We used company websites and a search in *The Independent* and *The Financial Times*

[5] The ratio of concordant to discordant pairs of ranked observations is given by $(1+\tau)/(1-\tau)=2.13$, which means that more than two paired observations in three correspond across rankings. We re-estimated $\tau$ in 10,000 bootstrapped samples of 20 randomly-selected firms. We found bootstrapped $\tau$=0.43 ($p=.01$), increasing confidence in the results.

starting in 1985 to identify code adoption events. We tested whether firms were more or less challenged *after* adopting the code using RLV Score summed across three dimensions (i.e., we excluded the environmental dimension, typically covered by the adoption of a separate code). No firm formally adopted an ethics code before 1997, and 9 out of the 16 firms did so between 1997 and 2007. Five adoptions occurred amidst a wave of challenging accounts. The content of codes was similar across firms and covered ethics, accountability, and competitive behavior.

The average yearly RLV Score was -0.12 (sd=0.48) for firms without a code and -2.07 (sd=2.64) for firms with a code. This significant difference ($p<.01$) indicates that British arms producers adopting an ethics code fail to improve media perception. The results are in line with past research (e.g., Boiral, 2003) and support the claim that code adoption is often an overly simplistic measure of legitimacy. The analysis was replicated using a random sample of 10 U.S. firms, *The Wall Street Journal* and *The New York Times*, and similar results were obtained ($p<.05$).

***Firm linkage measure***. To sell weapons, a defense firm typically needs an official accreditation from the customer government. It guarantees that the contractor meets the requirements in terms of product specification, testing, confidentiality, customer service, and the like. Signing a new customer for a new product line – the result of a difficult bidding and certification process – is especially well perceived when the customer runs technologically-advanced forces. We have argued that linkage measures may indicate product quality and capture legitimacy inadequately, but we wish to verify this empirically. To proxy a linkage measure of legitimacy (e.g., Baum and Oliver, 1992), we counted how many different new government certifications an arms producer had received over the past 3 years, and weighed each tie by a measure of customer technological sophistication (i.e., the ratio of yearly military spending to military headcount). We rerun the predictive validity regression with the linkage measure as a dependent variable (models 5 and 6 in Table 1.1). Results provided little evidence of predictive validity. RLV appears much more consistent with theory.

## MAKING RLV LESS "RAW": TWO FURTHER APPLICATIONS

### Controlling for media influence and saliency of legitimacy dimensions

So far, we have assumed that it was possible to "sum" challenging articles published in *The Australian* and in *The New York Times*. However, newspapers vary in the extent of their influence on public opinion. To control for this, the number of coded units can be weighted by a measure of newspaper influence. We gathered yearly data on newspaper circulation from various sources (FAS, 1998-2008) and newspaper self-assessments. We rerun the negative binomial regressions using weighted RLV Score as a dependent variable (models 3 and 4 in Table 1.1) and found similar results. The Bayesian Information Criteria for model 4 (BIC=1995.0, *df*=25) was significantly smaller than for model 2 (BIC=2992.4, *df*=25), meaning that using weighted RLV fits the data much better.

Dimensions of legitimacy vary in saliency across time and space. People did not care as much about carbon emissions 15 years ago, and maybe they care more about it in Denmark than in China. RLV could be further refined by weighting the number of coded units by the saliency of their associated dimension. For each year and newspaper, estimating the relative proportion of articles focused on each dimension, for instance by using appropriate keyword search, would enable researchers to track the relative saliency of each aspect of legitimacy across time and space. This would be particularly useful in research designs wherein several dimensions of legitimacy appear as independent variables to predict different firm-level outcomes[6].

### Obtaining a refined and continuous measure of legitimacy

Scholars may wish to distinguish finely between equally challenged firms (e.g., firms with a zero RLV Score in a given year), or isolate the variation in legitimacy not explained by structural factors such as

[6] A measure of relative saliency was computed by counting the proportion of dimension-related articles published each year in each outlet. For example, the keyword "sustainable development" was used to search for articles related to the environmental dimension. Regression results (unreported) did not change when using the saliency-weighted measure.

firm age or size. This can be done by regressing RLV Score on one or more variables predicting firm legitimacy, and to treat the residuals as a *continuous legitimacy score* that more readily captures the perception attributable only to reported organizational behavior. Besides, this transformation refines econometric modeling by increasing within-firm and between-firm variation in legitimacy[7].

## CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH DIRECTIONS

This paper has validated a new measure of organizational legitimacy, the Raw Legitimacy Vector (RLV), which performs better than code adoption and firm linkage measures of legitimacy, two simplistic measures of a complex, multidimensional construct. By refining existing media-based measures of legitimacy, RLV gets closer to the spirit of institutional theory and is suitable for comparative research across space and time, including internationally. The paper has provided the first international study that compares over time firm legitimacy in a global organizational field – and along four dimensions (environmental, competitive, accountability, and transactional).

It is important to specify two boundary conditions for RLV applicability. First, the unit of analysis has to be the organizational field. The notion of field implies the recognition by field actors of common normative issues pertaining to their activities (DiMaggio and Powell, 1983), which makes comparison possible despite heterogeneity in norm enforcement levels. As demonstrated by Meyer and colleagues, there is mounting evidence that "events like political torture, waste dumping, or corruption, which not so long ago were either overlooked entirely or considered routine, local, specific aberrations or tragedies, are now of world-societal significance. They violate strong expectations regarding global integration and propriety and can easily evoke world-societal reactions

[7] When legitimacy is the dependent variable, firms with legitimacy scores constant over time are excluded from a fixed-effects panel estimation, thereby reducing sample size and increasing selection bias. Measures based on residual analysis have been used widely in fit-performance research (Katsikeas, Samiee, and Kaodosiou, 2006). Fit is measured by the absolute value of the residuals in a regression wherein contextual factors are used as predictors. Our suggestion is consistent with this, since legitimacy captures a fit between a firm and its (normative and cognitive) environment.

seeking to put things right" (Meyer et al., 1997, p.175). RLV is thus a promising tool for international research. Second, depending on the field under study, media visibility may be an important component of legitimacy. When visibility enhances legitimacy, researchers can compute a coefficient of imbalance between endorsing and challenging accounts for each dimension of RLV (if it is feasible to do so given time and resource constraints). Otherwise, we suggest a focus on challenging accounts only. That said, RLV is applicable to any organizational field, provided one can find media outlets that frequently cover the studied organizations.

A limitation of RLV, as used in this paper, is that only publications in English were used. Still, we are confident that the resulting bias is limited since each region of the world has English-speaking authoritative dailies that usually draw on the same news feeds as local language newspapers. Also, it is often the case that published papers in English dailies are adapted (when not directly translated) from articles published in local language outlets. Moreover, eight outlets out of the twelve used in the study are published in countries where English is an official language.

RLV opens avenues for future research. For example, cross-national measures of firm legitimacy could help managers anticipate the level of protest organizations are likely to face in foreign environments. Also, RLV allows for a rich longitudinal tracking of legitimacy variations, a *modus operandi* superior to cross-sectional measurement (Hitt, Gimeno, and Hoskisson, 1998; Ketchen and Bergh, 2007) which has been called for in diffusion research (Fiss and Hirsch, 2005). Easy to compute, RLV offers a refined measure of legitimacy, which circumscribes measurement error – a source of endogeneity that plagues panel studies in management research (Bascle, 2008).

This research paves the way for more methodological work in institutional theory. The fact that this theory is concerned with macro-level phenomena will never compensate a lack of micro-level understanding of its core constructs, such as legitimacy or isomorphism. Psychometric studies would certainly shed new light on the much needed debate about the overlaps and differences

between legitimacy, reputation, status, prestige, celebrity, and stigma (Deephouse and Suchman, 2008; Devers et al., 2009) – all related constructs to which RLV can also potentially apply. Also, RLV represents a first methodological step towards a rich measure of disapproval, that is, the negative evaluations publicly conveyed about a firm.

# Chapter 2

# (Essay 2)

# CHAPTER 2 – STIGMATIZED CATEGORIES AND PUBLIC DISAPPROVAL OF ORGANIZATIONS: A MIXED METHOD STUDY OF THE GLOBAL ARMS INDUSTRY (1996-2007)

*The following chapter has been recently revised and resubmitted to the Academy of Management Journal. The version hereafter is the most recent one.*


## ABSTRACT

This paper integrates the categorization and stigmatization literatures to explain cross-firm variation in disapproval, a strategic outcome which represents the negative social evaluations publicly conveyed about firms. To classify organizations, industry stakeholders use salient categories, some of which are stigmatized. However, a firm's association with a stigmatized category does not automatically result in disapproval, partly because straddling multiple categories dilutes stakeholder attention across several cues, a phenomenon called stigma dilution. By distinguishing between stigma as a category-level property and disapproval as a firm-level outcome, we shed new light on firms operating in stigmatized environments. Using a unique mixed methods approach, we first identify the categorical structure of the global arms industry based on a qualitative field research, and we test our theory with quantitative data on the 210 largest arms producers worldwide between 1996 and 2007. Empirical results support the theory and show that 9/11 significantly modified the saliency of the categories used by arms industry stakeholders to make sense of their surrounding.



**Keywords:** disapproval, stigmatization, category, mixed methods

## INTRODUCTION

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

A recent stream of research intends to fill this gap by looking at the stigma management strategies implemented by firms operating in the so-called stigmatized industries (Devers, Dewett, Mishina, & Belsito, 2009; Galvin, Hudson, & Ventresca, 2004; Hudson & Okhuysen, 2009). A central observation in this literature is that firms associated with a stigmatized category of firms may face an unusually high level of disapproval. According to this view, more prominent members of a stigmatized category are always 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, usually Mc Donald's – the largest member of that group – comes out as the most publicly vilified.

However, this simple linear relationship between association to a stigmatized category and disapproval of the firm suffers from some limitations. In stigmatized industries such as arms or tobacco, some major players are able to avoid disapproval while others face intense public vilification. Philip Morris, for instance, used to focus most disapproval expressed against cigarette

producers. Yet Hudson (2008) suggests that, since the firm diversified in the food industry, its disapproval level decreased owing to some form of stigma dilution in its corporate portfolio. In other words, at a cognitive level, it could be that external stakeholders are influenced, in their social evaluations, by something else than the mere intensity of a firm's association to a stigmatized category. Interestingly, the disapproval level of Philip Morris seems to have decreased in spite of the firm reinforcing its position as the world's leading cigarette producer. Similarly, in the arms industry, Boeing is consistently ranked among the top 3 largest arms producers worldwide (SIPRI, 2009), yet the firm manages to keep disapproval at a low level relative to many of its smaller arms-producing competitors. This paper starts by questioning the assumption that stigmatized category membership automatically translates into disapproval.

Micro-level research on stigmatization distinguishes between 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 being a perfect predictor of social approval or disapproval, and we build on this insight to shed new light on the relationship between stigmatization of organizational categories and disapproval of particular firms. So we ask: beyond the stigma of industry membership, what explains variation in disapproval across firms operating in contested industries?

To answer this question, the paper integrates the categorization and stigmatization literatures. Consistent with prior research, we conceive of stigma as a vilifying label (Devers et al., 2009) that contaminates a group of similar peers (Jonsson et al., 2009). Since organizational categories are cognitive classification schemes (Kaplan, 2011) that group together similar firms to simplify a complex organizational landscape (Porac et al., 1989), the relevant level of analysis for stigma is the organizational category in which it has spread. Put differently, this paper treats stigmatization

essentially as a category-level property (e.g., a stigmatized ethnic group is a category of individuals), while disapproval is conceived of as a firm-level outcome.

The paper will 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, this means that firms can be simultaneously identified as members of several categories of firms. 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 decreases the social evaluations received by firms because its blurs external stakeholder expectations (Zuckerman, 1999; Hsu, 2006). Because this paper recognizes that some categories are stigmatized, we will show that, when straddling helps a firm to dilute its association with a stigmatized category, it can actually decrease disapproval, no matter how strong that association is. Second, the causal link between association to stigmatized categories and disapproval is likely to depend heavily on which aspects of categorization are salient to the stakeholder group that generates disapproval (Porac et al., 1995). The saliency of categorical boundaries varies over time, and that is likely to affect how effective stigma dilution can be. Third, in complex organizational settings, external stakeholders do not only rely on industry categories to classify firms, but also on subcategories within industries. Porac et al. (1989) show that knitwear producers distinguish, within the industry, between Scottish and non-Scottish firms. Those are two subcategories that also channel external stakeholder expectations in ways that can affect the formation of disapproval. The paper's argument about industry categories will be extended to subcategories within industries to account realistically for the formation of external stakeholder evaluations.

The paper offers 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 external

stakeholder group. We use the global arms industry (1996-2007), a stigmatized category of firms, as our empirical setting, and examine over time the disapproval of a large sample of final weapon systems producers as conveyed by a key external stakeholder group, namely defense expert journalists. The paper develops a novel mixed-methods approach to understand categorization and stigmatization. Based on the findings of a preliminary qualitative field research, we identify the categorical structure of the global arms industry, that is, how external stakeholders classify arms producers. A unique quantitative dataset is then used to test the paper's hypotheses. We then discuss the contributions of the paper to research on organizational categories, stigma, and social evaluations. While the theory is developed for contexts wherein firms are associated to at least one stigmatized category, our 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 stigmatization

Disapproval refers to the negative social evaluations of firms brought to public attention. It is the expression of a criticism towards a firm's activities, values, or behavior. Disapproval updates prior evaluations and expectations about an organization by publicly framing some aspect of its business operations as a potential violation of broader field norms (Deephouse & Suchman, 2008).

An implicit assumption of past research is that public expressions of approval and of disapproval occur along the same scale, thereby implying that disapproval somehow can be compensated for by approval, and that a single variable can capture the resulting valence of an overall social evaluation (i.e., positive or negative) – as visible in the use of Jadnis-Fadner coefficients to balance positive and negative media accounts in measurement design (e.g., Deephouse, 1996). According to this view, it is equivalent for a firm to receive one thousand positive and one thousand

negative evaluations or to receive only ten of each, because the resulting score comes out as neutral in both cases. How should we interpret the fact, then, that Johnson & Johnson is at the same time the 4th most admired company in America (Fortune, 2010) and one of the top 15 most hated ones (The Atlantic, 2011)? This is a paradox unless we recognize that approval and disapproval represent two distinct scales, and probably have distinct antecedents and consequences. In this paper, we do not assume that disapproval is merely the flip side of approval and 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), or attracting employees, customers, and investors (Deephouse & Suchman, 2008). Disapproval makes firm lose credibility, driving some of its closest stakeholders to withdraw their support. The mere anticipation by stakeholders that others may wish to withdraw their support can be enough of a reason for them to do so pre-emptively (Salancik & Meindl, 1984). Firms facing disapproval are also reported to loose bargaining power in their relationships with stakeholders because the latter 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 that are powerful and who express legitimate and urgent claims (Mitchell, Agle, & Wood, 1997).

How disapproval of firms is generated has been neglected in prior research, but recent work on stigmatization attempts to explain its origins (Hudson, 2008; Devers et al., 2009). Originally, the notion of stigma refers to marks branded into the body of criminals in Ancient Greece. It is a visible and discrediting attribute that prevents full social acceptance, not in all but 'in most social contexts' (Crocker, Major, & Steele, 1998). Stigmatized groups are not necessarily recognized as such by every

out-group or at all times, yet they bear an enduring mark that signals a socially-recognized difference. A sociofunctional view of stigmatization argues that the existence of stigmatized groups serves higher-level purposes, such as protecting the interests of the stigmatizers, or maintaining a social order based upon status hierarchies (Neuberg, Smith, & Ascher, 2000). From this perspective, stigmatization can persist over long periods of time and does not directly endanger the social reproduction of stigmatized groups; rather, it is when stigmatization causes public attacks or discrimination of particular individuals within those groups that stigmatization shows its most consequential and observable effects.

This implies that membership in a stigmatized group is not the sole variable predicting the degree of social acceptance for individual group members, and it may even be a poor predictor in some cases[8]. When stigmatization research moved from the individual (Goffman, 1963; Pontikes, Negro, & Rao, 2010; Sutton & Callahan, 1987) to the organizational level (Hudson & Okhuysen, 2009), the essential distinction between the stigmatization of a *category of entities* and its idiosyncratic effects for any *particular member* of that category was somehow overlooked. It is now a common shortcut to say that 'a firm is stigmatized' to express the idea that it is associated with a stigmatized industry category, such as arms, porn, or tobacco, but this can be confusing as it obfuscates the difference between stigmatization as a category-level property and disapproval as an organizational outcome. As was clear in the founding work by Goffman (1963:4-7), a stigma is 'a special kind of relationship between an attribute and a stereotype', 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'. This perception held by the stigmatized that they belong to a stigmatized group is also shared by external observers that do not belong to that group, as

[8] Between 1998 and 2002, in the U.S., the standard deviation in income was higher for the Blacks than it was for the whites (GSS, 2002). Thus, at least in some cases, stigmatized group membership is a poorer predictor of social outcomes than nonstigmatized group membership.

stigmatization arises 'when a shared characteristic of a category […] becomes consensually regarded as a basis for dissociating from […] individuals who are perceived to be members of that category' (Leary & Schreindorfer, 1998: 15). In sum, stigmatization is attributed to a category and such attribution is recognized both from within and from outside that category. Stigmatization keeps out-group members at a distance (Sutton & Callahan, 1987) while 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 of time as relatively isolated islands in the broader economy, *despite stigmatization*, and leaves some room for explaining why only *some* firms within stigmatized groups are disapproved of to the extent that their survival is at stake.

**Connecting organizational categories and stigma**

Besides distinguishing between stigmatization and disapproval of firms, we suggest that categories and stigma should be theoretically connected to predict social evaluations of firms. Organizational categories are cognitively constructed classification schemes that help stakeholders make sense of complex industries and compare firms (Fleischer, 2009; Messick & Mackie, 1989; Porac & Thomas, 1994). The categorization literature highlights how classification of firms shapes stakeholder expectations via the process of generalization (Rosa, Porac, Runser-Spanjol, & Saxon, 1999; Lounsbury & Rao, 2004; Ruef & Patterson, 2009). In a nutshell, generalization is what can lead us to believe that 'all swans are white' based on prior observation of a misrepresentative subsample of the whole category of swans (Jonsson et al., 2009).

Prior works have emphasized how contagious negative attributes can be (Sullivan et al., 2009): stigma, once connected to stereotypes, is generalized to groups of similar peers – which per definition are found within categories (i.e., a category groups together entities based on a perception of similarity). Roehm & Tybout (2006) find experimental support for this idea and argue that it explains why stereotypical judgements of Burger King spread to Wendy's and McDonald's, two

other members of the fast-food chain category. Ultimately, external stakeholder generalization justifies the need to consider stigmatization as a category-level property. Therefore, this paper brings forward the notion of 'stigmatized categories' to refer to those groups of organizations, such as arms or tobacco producers, which are prompting out-group members to keep their distance to avoid a potentially harmful association. Drawing on the finding by Porac and Thomas (1994) that applies to organizational categories in general, we would like to point out that stigmatized categories can also be found *across* industry boundaries (e.g., firms that do business with the Burmese junta, no matter what they sell, form a stigmatized category).

**Disapproval of firms in stigmatized categories**

Keeping disapproval to a minimum may be particularly crucial – albeit more difficult – for firms operating in stigmatized industries such as tobacco, arms, or porn (Galvin et al., 2004). A high level of disapproval attracts public scrutiny, raises doubts, and creates suspicion among external stakeholders. Members of a stigmatized group tend to dislike such inquisitive behavior more than 'the normal' (Goffman, 1963), which increases the risk of isolation or scapegoating for the stigmatized group members that are publicly challenged. Another reason why firms in stigmatized industries are especially sensitive to disapproval lies in the existence of an intangible reputation commons (King, Lenox, & Barnett, 2002), which is more binding in stigmatized than in nonstigmatized industries. Indeed, as argued by Tirole (1996), intangible commons play a larger role when individual behavior is hard to observe, and since stigmatized industries are typically shrouded in secrecy (Hudson & Okhuysen, 2009), reputation commons matter more in such settings, thereby making disapproval of particular firms a bigger issue for all stigmatized group members.

Within stigmatized industries, firms capable of keeping disapproval at a low level seem to perform better, as they are able to keep a loyal customer base and avoid most regulatory threats, but this capacity varies a lot from firm to firm (Hudson & Okhuysen, 2009). In the arms industry, we

observe the same pattern: some of the world's leading arms producers are able to maintain consistently their disapproval level below their competitors', and some even manage not to be disapproved of at all over long periods of time (see Figure 2.1 below).

*--- Insert Figure 2.1 about here ---*

**Multiple category membership and stigma dilution**

The literature on multiple category membership makes the case for a causal relationship between a firm's categorical associations and the social evaluations it receives (e.g., Hsu, 2006). Underlying this relationship is the idea that category straddlers are sanctioned by external stakeholders, i.e. they receive lower social evaluations than non-straddlers. The rationale behind this is twofold. First, when there is a clash in values across the straddled categories, then external stakeholders may impose social or economic sanctions on the straddlers (Rao, Durand, & Monin, 2005). For instance, Hsu et al. (2009) provide evidence that movies straddling genres are poorly evaluated by critics. In the same vein, Hsu (2006:444) argues that 'audiences are likely to disapprove of the broad-aiming producers […] because of poor fit with their expectations and preferred tastes'. Second, external stakeholders may infer from category straddling that straddlers have ambiguous objectives or lack sufficient expertise in each category, especially if those categories demand very specialized skills. This leads in turn to poorer evaluations, as demonstrated by Leung and Sharkey (2009) in the case of a lending peer-to-peer website or by Zuckerman (1999) in the case of securities analysts' evaluations.

A limitation of prior works on multiple category membership comes from the fact that only industries with high social acceptability have been examined empirically. It would not be an issue *per se* if it had not concurrently focused all of our theoretical effort on the upper half of the social evaluation spectrum (Hirsch & Pozner, 2005). Past focus on approval, and on how multiple category membership decreases it, has left aside the mechanisms generating disapproval and has assumed that organizational categories are essentially equivalent with respect to the values they convey. What

matters in past research is how many categories a firm straddles rather than what those categories represent. So far, we have argued that when stigmatized categories are involved, maintaining disapproval at a low level may be more important for firms than trying to generate approval. But what happens when firms straddle a set of categories that includes stigmatized categories? If we followed the traditional view on multiple category membership, we would predict that it generates poorer social evaluations, that is, more disapproval.

As explained above, underlying the negative impact of multiple category membership is the idea that category straddling defocuses external stakeholder attention by sending multiple signals, thereby creating ambiguity, confusion, and unclear expectations about future organizational behavior (Zuckerman, 2000). Yet external stakeholders only have a limited amount of attention available for each organization they intend to evaluate. Zuckerman (1999) detailed this process in the case of securities analysts who specialize on certain industries to be able to evaluate a greater number of firms in a limited amount of time. Attention has been conceived of as a scarce resource deployed across issues following a selective process (Fiske & Taylor, 1991), and information nodes crowded by multiple issues have been showed to dilute agents' attention to any particular issue (Hansen & Haas, 2001; Hilgartner & Bosk, 1988). Thus, while firms associated with a single category focus all external stakeholder attention on the latter, category straddlers send more complex signals which split stakeholder attention across multiple chunks of information. For firms associated with a stigmatized category, additional membership in nonstigmatized categories has the ability to deflect attention away from the stigma and dilute the vilifying association. This mechanism, which we term stigma dilution, could explain why Philip Morris became less disapproved of after the firm began to straddle the food industry category next to cigarette production (even though its tobacco business was still growing). In other words, stigma dilution is the process whereby category straddlers associated with a

stigmatized category dilute stakeholder attention away from it owing to 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**

When organizational categories, stigmatized or not, are used systematically to classify firms or make sense of an industry setting, it means that have become salient for industry stakeholders. 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 industry stakeholders (e.g., in the movie industry, genre categories differentiate between thriller and comedy). Theoretically, the set of all possible classification schemes is infinite, but only a few categories end up being salient for an industry's stakeholders at any particular point in time. For instance, movies could also be classified alphabetically, but alphabetical categories have a saliency that is close to zero in that industry – just like distinguishing firms based on whether their name starts with letter A or B hardly makes any sense for consumers and securities analysts (whatever the industry). Porac and Thomas (1994) find that stakeholders of the retail industry use the following categories to make sense of competition: 'bookstores', 'groceries', and 'restaurants'. Within the knitwear industry (Porac & Thomas, 1989; Porac et al. 1995), the salient categories are country categories (Scottish vs. non-Scottish producers) and product categories (producers that use hosiery vs. knitwear vs. lace).

In institutionalized organizational fields, stakeholders recognize shared norms to navigate the organizational landscape (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). Porac and colleagues extend this finding by showing that stakeholders also share a common set of categories to classify industry players (Porac & Thomas, 1990). Classification schemes can be seen as normative features

of an industry that are enacted by stakeholders but at the same time constrain their interactions. Salient categories come to be perceived as social facts requiring stakeholder attention, and how much attention stakeholder grant them depend on their saliency within the broader industry (Fiske & Taylor, 1991). Attention to particular events opens a channel through which social evaluations are conveyed across 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; see also Goodman, 1972).

An in-depth knowledge of the industry is often required to identify which categories are salient. Ocasio and Kim (1999) find that in several manufacturing industries, the functional background of the CEO is salient as several core stakeholders pay 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 line, and it would probably be a relevant one in industries such as night clubs or garbage hauling. When stigmatized categories crowd a classification scheme, a lot of attention is given to those organizations that are most representative of the stigma (Devers et al., 2009). For instance, industry-level categorization is very salient in free-market economies: audiences carefully distinguish firms based on which industry they are involved in. This is why involvement in a stigmatized industry category, such as weapons, can generate intense disapproval, and also why multiple industry associations can dilute attention away from the stigma, and decrease disapproval. But since firms are not saliently categorized, say, based on the proportion of sexual offenders on their payroll, hiring few of them 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, the stronger the effect of stigma dilution across categories on the disapproval of the organization.*

**Level of analysis: A rich(er) view of categorization**

The hypotheses developed above rely on the mechanisms underlying how industry stakeholder split their attention across salient cues in a given industry, but they are agnostic with respect to the type of categories at stake – which anyway vary across industries (e.g., country categories in the knitwear industry, genre categories in the movie industry). Also, the two hypotheses can apply at 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 categories is usually examined: genre categories in the movie industry (Hsu, 2006), product categories in e-commerce (Leung & Sharkey, 2009), or industry categories at the national level (Zuckerman, 2000). As previously argued, stakeholders typically use more than one type of categories to classify organizations, so this paper intends to delve deeper into how categorization affects social evaluations by offering a general theory that applies to multiple types of categorical associations, at different levels of the classification hierarchy, and that takes into account the existence of stigmatized categories.

Which types of categories are salient and which categories are stigmatized depends on the industry. So while the theory offered here is general in nature, it still requires researchers to have an in-depth knowledge of the classification schemes used by stakeholders in the particular industry they study. That is why, in the following, we introduce our empirical setting, the global arms industry, and implement a mixed methods research design to test our hypotheses. In a preliminary qualitative research, we identify the classification schemes used by various arms industry stakeholders and find very high convergence in that matter across stakeholders groups, consistent with the fact that the arms industry is highly institutionalized at a global level. Then, we use a unique quantitative dataset to

test our hypotheses across three salient types of categories, thereby providing evidence that the theory proposed has high internal validity.

## THE GLOBAL ARMS INDUSTRY: INTRODUCTION & QUALITATIVE FINDINGS

In 2007 and 2008, during a six month field research, we conducted interviews with prominent field actors, such as defense experts and industry professionals. Informants represented 11 nationalities and worked for think tanks, research groups, specialized defense journals, competitive intelligence providers, and defense contractors (see Table 2.1 below). Fifteen short interviews were conducted at a major international arms trade fair. We complemented the knowledge acquired in the field by an extensive reading of specialized books, historical papers, policy documents, research articles, and press articles coming from the industry's leading publications, namely Defense News, Jane's Defence, and Aviation Week & Space Technology[9].

*--- Insert Table 2.1 around here ---*

### Historical trends in the arms industry

There is documented historical evidence of organized arms production as early as in 1800 B.C., and arms sales became a significant feature of international trade in the modern age (Raudzens, 1990). Despite its historical, political, and economic weight, the arms industry has received very little attention in management research (notable exceptions are Baum and McGahan, 2009, 2010).

The arms industry, also known as the defense industry (SIPRI, 2009), supplies products and services designed for the particular needs of the military. The industry has undergone major transformations since the fall of the USSR, and has become increasingly autonomous, globalized, and competitive (Bitzinger, 1994). The technological sophistication of weapons spurs producers to seek foreign sales opportunities at an early stage of program development to ensure that the huge R&D

[9] An extensive list of references on the arms industry is available from the authors upon request.

investment will be split across a sufficient number of units (GAO, 2005). Consequently, competition has become global in most segments of the industry[10]. Final customers are governments, represented by state agencies (Hooks, 1990; Suchman & Eyre, 1992). International competitive bids have become the norm for large programs as governments face budget constraints and seek to achieve value for money (Christensen, Searle, & Vickery, 1999).

Since the late 1990s, the quasi-totality of military powers recognize and share the same rules regarding foreign business transactions (DAC/Transparency International, 2008). These rules and norms represent a consistent set of institutionalized guidelines along which cross-national comparison is possible. The diffusion of normative field templates is facilitated by the intense integration of field actors after the fall of the USSR. There is only a limited amount of final system providers in the global arms industry, and they are well identified (Defense News, 1997-2007).

**The stigma of weapons production**

While this paper's focus is not on the antecedents of stigmatization (but rather on its consequences), it is important to give the reader an idea of why it is a reasonable starting point to posit that the arms industry is a stigmatized one. 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 back to the cognitive association that exists between weapons and death. Death, as well as bodily mutilation, has been a pervasive source of stigmatization across most human societies throughout history (Goffman, 1963). In fact, many studies examining group-level stigmatization implicitly or explicitly report association with death as a source of stigma, for instance in the funeral industry (Garden, 2001), the tobacco industry (Galvin et al., 2004), abortion service providers (Hudson, 2008), or among patients suffering from an incurable disease (Lester, 1992).

[10] A notable exception is nuclear weapons, which remain under tight government control. Our study excludes this segment as well as small arms, because the related data are unreliable owing to the prominence of black market activity.

The sociofunctional view of stigmatization would argue that stigmatization of death-related business serves a broad purpose of survival promotion (Neuberg et al., 2000). Psychologists add to this view by demonstrating that entities which impede social interactions and/or represent a physical danger for others are systematically stigmatized (Jones et al., 1984), a finding that further explains the stigma attached to the arms industry. In this context, it was not a surprise for us that most industry executives, at the beginning of the interviews, explicitly asked to remain anonymous in future presentations of our work. One American respondent even admitted that he never told his family and friends that he had transferred, a year before, from the civilian to the military business unit of his company – 'and not at all because what I do there is classified or technologically sensitive', he added.

**Why keeping disapproval at a low level matters in the arms industry**

On several occasions in the past, disapproval of firms led to damaging outcomes. A respondent pointed out that Motorola had to divest its defense business unit ten years ago owing to the 'bad press' it received in authoritative media outlets. For industry actors, the strategic consequences of disapproval can be considerable and include decrease in firm market value, cancellation of multi-billion contracts, or of M&A operations (Uhlenbruck, Rodriguez, Doh, & Eden, 2006). 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, Ashforth, & Sluss, 2006). In several interviews, respondents insisted on how damaging disapproval of their firm could be. An executive at U.S. firm argued that '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'.

Four defense economists, out of the seven we interviewed, explained that disapproval of arms producers had the potential to decrease bargaining power with suppliers and customers, which

can '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'. While the threat of transferring current business to a competitor is rarely used explicitly, remarks about negative social evaluations publicly conveyed in the media often suffice in obtaining favorable outcomes at a negotiation table.

**Salient and stigmatized categories in the arms industry**

A key objective of the preliminary qualitative research conducted in the field was to understand how industry stakeholders classify arms producers. We drew on the methodology developed by Porac and colleagues (e.g., Porac et al., 1989) and asked respondents to identify their own competitors plus those from two other randomly-chosen firms (or those from three randomly-chosen firms for respondents not currently working at a defense contractor). We were able to repeat this procedure with 25 respondents out of the 44 listed in Table 2.1. Respondents typically named between 7 and 12 firms. After recapitulating the content of the three lists of competitors with the respondents we asked them what the firms listed together had in common that made them direct competitors. Typically respondents gave between two and four reasons why this was the case. The three most common answers were each used by more than 70% of the respondents. First, respondents tended to group together firms that 'serve the same customers'. Second, they grouped together firms that were either 'pure defense players' or 'diversified'. Third, firms based in the same country tended to be put together very often. The fourth most common answer was given by less than 20% of the respondents and was about the distinction between listed and state-owned arms producers.

We decided to retain only the three most consensual answers as a basis for identifying the categorical structure of the industry. There were no significant discrepancies in the answers collected across stakeholder groups (e.g., internal and external stakeholders use similar classification schemes).

In sum, the categories used by arms industry stakeholders are of three types: customer categories distinguish between 'firms that sell to Norway' and 'firms that sell to Lybia'; industry

categories between firms that sell mostly 'military' or 'civilian' products; country categories between 'Chinese' and 'Swedish' arms producers. Here the military and civilian categories correspond to traditional industry categories à la Zuckerman (1999, 2000), while customer and country categories are more like subcategories within the arms industry (e.g., Swedish arms producers form a subgroup within the complete set of arms producers, just like Scottish knitwear producers in Porac's work). Interestingly, during our field observations at a major international arms trade fair, we noticed that the location of firm booths reflected the categorical structure of the industry: firms were not grouped only by country, by customer, or by output type, but following a mix of the three. Firms from the same country tended to have their booths not far from one another, but the same was true of diversified firms and of firms with similar customer profiles. In particular, firms used to deal with 'dodgy customers' had their booth located further away from the main alleys or in corners where conversations are unlikely to be heard. In the next section, hypotheses 1 and 2 will be tested for the three types of categories identified here using a quantitative dataset.

## QUANTITATIVE HYPOTHESIS TESTING FOR THE PERIOD 1996-2007

### Data collection

We collected quantitative data at the firm level from the Stockholm International Peace Research Institute (SIPRI), from a U.S. competitive intelligence provider (Infobase), from the U.N. online database, from Lexis Nexis and Factiva, from annual reports, from company websites, and from defense publications. Extensive data about products, customers, contracts, performance, and corporate activity were gathered over the period 1996-2007 for the 210 largest global weapon systems providers (experts estimate that more than 90% of all final weapon systems producers are included). 40% of sampled firms are North-American, 30% are European, 11% are Russian, and the remaining ones are from the Middle East, Africa, Australia, and South America.

**Dependent variable**

***Type of measure used.*** *Disapproval* is measured in a rich way 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 (Deephouse, 1996; Deephouse & Carter, 2005; Pollock & Rindova, 2003; Sullivan et al., 2007) because it allows for a fine-grained tracking of variation in disapproval, over time and across firms. Moreover, 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. Also, newspaper is the prevailing source of information for the public, it is perceived as more reliable than TV or Internet content, and it generates a stronger recall (Deephouse & Carter, 2005).

***Stakeholder perspective***. Our measure of disapproval is 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, industry meetings, 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 (almost) complete information on the supply side of the industry, so what they write publicly acts as a filter that channels how broader society perceives arms producers. In other words, the social evaluations expert journalists convey in their articles represent a reference point that influences how customers, suppliers, regulators, governments, and civil society actors see particular firms in this relatively discreet industry. The power to influence, coupled with the legitimacy attached to the newspapers in which journalists write, and with the fact that targeted public criticism typically urges companies to react, make expert defense journalists 'definitive stakeholders' in the global arms industry (Mitchell et

al., 1997). Importantly, the five expert journalists interviewed during the qualitative phase mentioned the three types of categories described above, and only two journalists mentioned a fourth one (i.e., 'state-owned firms' and 'system integrators'). The stakeholder perspective taken by expert defense journalists is thus consistent with the broader industry classification schemes adopted by other important stakeholder groups, first and foremost company executives.

***Choice of newspapers***. We chose daily newspapers that: a/ had no ties with governments or private entities involved with the arms industry to avoid bias towards or against particular firms in our sample; b/ had high legitimacy and high circulation to ensure that what they publish has some authority and the power to influence perceptions; c/ were located 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 the U.S. and outside the U.S., for domestic business life receives more coverage in national papers). One can correct for regional bias when comparing firms F1 and F2, based respectively in countries C1 and C2, if one reads what newspapers N1 and N2, based respectively in C1 and C2, write about *both* firms. Building on this intuition, we made sure that each firm in the sample was covered by at least one regional newspaper and ten foreign ones based across 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, *South China Morning Post* and *The Hindustan Times* in Asia, *Business Day* in Africa, and *The Australian* in Oceania.

***Coding of the variable***. We searched in the twelve newspapers for all articles conveying disapproval of any of the 210 sampled firms between 1997 and 2007. To do so, we looked for content that included: a/ at least one keyword expressing criticism or condemnation (e.g., 'condemn*', 'protest*', 'inappropriate*', 'merchant* of death*', 'bad', etc.); b/ at least one sampled firm's name, or any of its commonly-used variants; c/ the word 'weapon*', 'arm*', 'defense', or 'defence'. We re-run the search

using only criteria a/ and b/ above, and found only 18% more articles, which means that most of the disapproval expressed against the sampled firms deals with their weapons business. Subsequent findings were not affected by the exclusion of criteria c/ in the coding of the *disapproval* variable.

We excluded content disapproving (only) of arms producers' poor financial performance, because it is usually written by financial journalists rather than by defense experts, and because it would introduce a bias in the measure for firms with a legal obligation to publish quarterly results. We also excluded content disapproving of firms in relation to a current lawsuit following corporate misconduct. Typically, such lawsuits are settled years after the alleged violation of the law, so it would make little sense to try and 'predict' them based on recently-known categorical associations (Mishina et al., 2010). Every time disapproval was conveyed about a firm in an article excerpt, we added 1 to the dependent variable. Thus, our 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 comes from articles where an expression of disapproval is mentioned in passing, casually, 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'; 'Firm F, […] used to evil rumors, …'; 'infamous defense contractors, like firm G and firm H, …'. A random subsample of coded excerpts was read and coded by an independent rater. Reliability was high ($\alpha$=.92). *Disapproval* was log-transformed 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 in civilian activities (e.g., Boeing). Still, there is a clear divide between military and civilian industry categories, which is fuelled 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, and so do defense

experts in their own analyses of the sector (SIPRI, 2009). Most firms thus straddle two very distinct categories, the stigmatized 'arms' category and the nonstigmatized 'civilian' one, albeit to various extents. We computed a measure of stigma dilution as the percentage of an arms producer's yearly output devoted to the civilian product category. 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 arms specialist Lockheed Martin despite similar levels of arms sales. For any arms producer in year $i$:

$$\textit{stigma dilution across industry categories}_i = \frac{\textit{civilian production}_i}{\textit{civilian production}_i + \textit{weapon production}_i} \times 100$$

***Stigmatized customer categories and stigma dilution***. The saliency of customer categories in the arms industry was already highlighted by Suchman and Eyre (1992), who stress how important it is for arms producers to be associated with well-perceived customers. Our field research findings confirm this observation. As a sales executive at a European firm stated, 'we only sell to legitimate customers… I mean, I wouldn't sell stuff for guys to attack their neighbors! We just provide national defense systems'. Indeed, 'firms that sell to peaceful countries', 'firms that sell to China', and so forth, form categories on which industry audiences heavily rely to make sense of complex industry patterns. Industry analysts and research bodies also tend to treat separately firms with different customer profiles because customer categories are informative about the firms' broader strategies (SIPRI, 2009). Other interviews confirmed that arms producers are categorized based on how trustworthy their customers are with respect to the potential use of the weapons. Several interviewed informants spoke of 'those firms that sell arms to Sudan' or 'those firms that sell to dictators' as (stigmatized) categories with which they did not want to be associated. Our field research revealed that customer categories are more or less stigmatized depending on how likely it is that a customer will use purchased material to aggress domestic or foreign populations. Customer categories corresponding to non-democratic countries are more stigmatized because of the potential damage

their weapons could create under the control of an aggressive autocrat. However, democracies vary greatly in their use of military weapons, so a binary democracy variable would be a poor measure of customer category stigma.

Instead, we used Amnesty International's Political Terror Scale (PTS) which captures on a yearly basis the extent of violent political oppression in a given country. This indicator is strongly correlated with the probability of illegitimately using weapons both domestically and against neighboring countries. PTS has been consistently coded, since the early 1980s, by the same team of researchers. At least two independent coders compare scores every year for every country, and in more than 80% of cases, they give the exact same score. Discrepancies are cleared up through informal discussions and the involvement of a third independent coder (Gibney, Cornett, & Wood, 2009). PTS ensures high levels of comparability over time and across countries and has been used in more than 200 scholarly articles, published mostly in leading political science and economics journals. We summed weapon sales for each customer for each firm-year, and weighted the amount using the customer's PTS index (the index was reverse-coded so that higher values signal more peaceful, less stigmatized countries). Thus, this measure takes into account the strength of the association with each customer category and the extent to which latter is stigmatized. The data linking firms to their customers were retrieved from Infobase. For any arms producer having $n$ different customers in year $i$ :

$$stigma\,dilution\,across\,customer\,categories_i = \sum_{c=1}^{n}\left( PTS_{ci} \times \frac{weapon\,sales\,to\,customer_{ci}}{total\,weapon\,sales_i} \right)$$

***Stigmatized country categories and stigma dilution.*** In the eyes of industry stakeholders, an 'American arms producer' differs from an 'Indian arms producer', but also from a 'British-American' one. Each country has a particular history, political regime, and institutional structure, which are believed to shape the strategy of domestic arms producers. Arms producers from Russia, for

instance, form a category associated with the perception that product stocks and flows are difficult to trace over time (independent of whether this is true or not). A Russian executive admitted that he shared this perception but did not know if it was justified, which is consistent with a view of stigmatization as felt by out-groups and by stigmatized in-groups. A sales representative at a major artillery manufacturer complained that 'competitors from Pakistan do us harm, 'cause they don't respect anything and hide stuff from the international community. We don't wanna be put in the same category'. He considered that arms producers based in his own country did not deserve as much stigmatization. More generally, countries with tighter transparency standards are perceived as more appropriate hosts for arms producers, which results in smaller amounts of stigmatization.

The field research revealed that defense firms are more or less stigmatized depending on two characteristics of their home countries[11]: the degree of cognitive support granted locally to the defense sector and the transparency with which the defense-related business is conducted. In certain countries (e.g., Italy, the U.S.), defense is seen by the government as similar to other high tech sectors: the industry embodies innovation and competitiveness, creates jobs, and bolsters national prestige. In other countries (e.g., Iceland), defense is seen by civil society and the government as a dubious imperative associated with warlike behavior, and the arms industry receives very little cognitive support. Besides, countries vary in how appropriate the local business practices are perceived, which influences how stigmatized local arms producers are. Countries suspected of corrupt business behavior provide poor home bases for defense firms because the latter are already associated with secrecy and questionable transactions. To reflect both influences in the measure of home country stigma dilution, we computed this indicator as the product of the relative importance of defense in a home country's economy (using defense sector size as %GDP) by the perceived level

[11] For arms producers tied to a single home country, the home country-level measure of stigma dilution captures the relative extent of country stigmatization in the context of the arms industry. The firm with the largest amount of home country ties is EADS, which is a French-German-Spanish company headquartered in the Netherlands.

of corruption in this country's economy (using Transparency International's Corruption Perception Index, or CPI, which ranges from 0 to 10, with higher values for more transparent countries[12]). Accordingly, countries where defense receives more public support and which enforce stricter transparency standards are less stigmatized for hosting arms producers. If one compares two countries wherein defense contributes equally to GDP, the most transparent one is less stigmatized. If one compares two countries that are equally transparent, the one wherein defense receives broader public support is less stigmatized. For any arms producer in year *i* tied to *c* countries:

$$\textit{stigma dilution across countries}_i = \sum_{c=1}^{n}\left(\frac{\%GDP\ in\ defense_{ic} \times CPI_{ic}}{c}\right)$$

***Category saliency***. Category saliency is embedded in the mental models (Porac & Thomas, 1990) of industry stakeholders. It is essentially unobservable, relatively stable over time, and thus quite difficult to measure. Based on our field research, we know that industry, customers, and country categories are salient to arms industry stakeholders, but we are unable to provide a reliable rank-ordering of the three along the saliency criterion because all three were mentioned with equal frequencies. Besides, we conducted our research in 2007-2008 and we did not expect respondents to be able to assess, even subjectively, how category saliency evolved on a yearly basis 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) highlight the role of the May 1968 protests in triggering the rise of the nouvelle cuisine category. Similarly, Garud, Gehman, and Karnoe (2011) identify the Three Mile Island and Chernobyl accidents as exogenous sources of categorical evolution in the nuclear industry. Our field research findings suggest that, in the context of the arms industry, 9/11 represents such an exogenous shock resulting in disruptive change in the

[12] The CPI is a widely-used measure computed every year for 150 countries based on multiple surveys and expert reviews. An advisory scientific committee ensures that data are consistent over time and across countries. In a nutshell, within-country sources are made comparable using matching percentiles technique, and cross-country comparison is made easier owing to a statistical tool called beta transformation. The detailed methodology is available on www.transparency.org. According to Google Scholar, 3,000+ scholarly articles have used CPI in the last 5 years.

categorical structure of industry. In a second round of interviews designed to validate our earlier findings, respondents said that industry stakeholders had always grouped firms based on their output, customers, and countries of origin. One added that 'of course, things have evolved a bit since 9/11'. The attacks were sudden, unexpected, and caused material, social, and economic damage, not to mention their cost in human lives. The *modus operandi* of the attacks is 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 industry: the attacks affected international affairs, government strategies, and commanded strategic adjustment on the corporate side as they led to the diffusion of new industry beliefs.

Because the attacks were performed using commercial airlines hijacked with kitchen knives, the definition of the existing weapons category was questioned in the post-9/11 period. At the same time, the perception of threats to national security changed as terrorism emerged as a major challenge. Progressively, security forces across the world adopted a more holistic approach to national defense, wherein military and civilian dimensions are viewed as complementary. Across countries, the birth of agencies such as the U.S. Department of Homeland Security, which are neither completely civilian nor military, further strengthens the feeling that military and civilian affairs are blending. As a high-ranking Pentagon official puts 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 popular after 9/11, pointing to an increasingly fuzzy boundary between weapons and non-weapons.

In the aftermath of 9/11, discourse on the 'clash of civilizations' and the 'axis of evil' diffused globally through the media. Although opinions across the world were far from consensual, the debate still brought to light alleged political, cultural, and religious boundaries, which materialized in a 'friend or foe' discourse 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 is especially true of arms producers, whose ties to countries are of two sorts: on the one hand, they are associated with their home country, and sometimes seen as an instrument of its geopolitical strategy; on the other hand, they are associated with the countries to which they sell weapons (i.e., their customers), and sometimes thought to indirectly support their international action. As a Japanese industry executive told us, 'since 9/11, we are more careful about who we work with because we don't want to end up among the wrong crowd'.

In sum, the 'weapons' and 'civilian' categories are less salient after 9/11, while customer and country categories are more salient[13]. We will thus run separate models for the pre and post 9/11 periods to test hypothesis 2.

**Control variables**

At the firm level, we controlled for *age* (logged years since firm founding), *size* (logged weapon sales in US$), *performance* (return on sales), and ownership type (a dummy variable identified *publicly-held* firms). Firms that produce readily *lethal* weapon systems such as missiles, bombers, or assault vehicles were identified using a dummy variable, and were firms involved in government *research* contracts. We added a dummy variable coded one for firms that were not arms producers at founding but entered the arms industry as *diversifying entrants*. We also controlled for the yearly percentage of *weapons exports* relative to total weapons sales. Firms touched by *scandal* in the recent past were also identified with a dummy coded one. Scandals were identified by a search on each sampled firm's name next to the word 'scandal*' in press articles published in the twelve dailies listed previously. We looked for scandals in the last 6 years because this was the mean tenure length of the expert defense

[13] We content-analyzed U.N.S.C 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*' is almost always associated with one of the three types of categories (e.g., where the arms come from, to whom they were sold, to what extent they can be considered 'military'). In the years before 9/11, the categories associated with 'arms' relate to industry (22%), customer (59%), and country (19%). After 9/11, the proportions are 10%, 77%, and 13%. Only the difference at the country level is not significant at the 10% level. This is in line with our qualitative research about pre-post 9/11 variation in saliency.

journalists we interviewed (see Table 1 above), so our article search was for the 1991-2006 period. We also controlled for firm *media visibility*, computed as the logged number of articles mentioning the firm each year. Most articles not expressing disapproval were neutral in nature, reporting facts about product launches or interorganizational relationships. Virtually no article was approving of arms producers except some commenting on financial performance. Finally, we used a *strategy change* dummy to capture major changes in firm strategy as reported by InfoBase analysts.

At the industry level, we used industry *segment* dummies (aircraft systems, marine systems, ground systems, services) to control for unobserved heterogeneity. At the institutional level, as country status on the international scene may affect how arms producers are perceived, we added a dummy variable for firms headquartered in a single country with membership in the U.N. Security Council (*UNSC*) or *NATO*. To capture the fact that stakeholder expectations may be lower for firms based in countries with weak norm enforcement, we controlled for the size of the *black market* economy (an average was used when firms had multiple home countries). This control also ensures that we isolate the effect of a lack of transparency in our measure of stigma dilution across country categories. Finally, we captured historical and institutional trends using *region* dummies (America, Europe, ex-USSR, Asia), and included *year* dummies to account for time-varying omitted variables.

**Model choice**

The data consist of a panel of 210 firms over twelve years (2,046 observations). Panel data analysis enables researchers to isolate individual effects ($\mu_i$) for each firm before estimating the coefficients of the explanatory variables, some of which vary over time ($X_{it}$), while some 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 to control at the firm level for time-invariant omitted variables by using a fixed effects (FE) or a random effects (RE) estimator. The FE estimator assumes the endogeneity of all the regressors with

the firm individual effects and relies on a demeaning process that prevents parameter estimation of the time invariant variables $Z_i$ (Hausman & Taylor, 1981). 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 analysis relies on a Hausman test to choose between FE and RE. However, the traditional Hausman test is not robust to heteroskedasticity or clustered standard errors, so we 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=31.4, p=0.26), which can be interpreted like a Hausman statistic, led us 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, we used the feasible generalized least squares (FGLS) estimator, which is the best linear unbiased RE estimator given the data and sample size (Greene, 2008).

A remaining concern in the data is the possible endogeneity of some of the regressors. For example, customer stigma dilution could be correlated with the unobserved firm effect if political pressures interfere with a firm's customer base. Baltagi, Bresson and Pirotte (2003) argue in favor of 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 (Hausman & Taylor, 1981). The HT estimator is essentially a RE 2-stage GLS estimator which 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, we computed a test of overidentifying restrictions after tagging possibly endogenous regressors in the

regression. We failed to reject the null (SH=8.5, p=0.77) that the instrumented variables are valid, so we 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 for all the tested models, we only report HT GLS estimations because they are more conservative. Lagged independent and control variables were used to enhance causal inference. The most problematic source of endogeneity is reverse (or simultaneous) causality (Baltagi, 2005; Bascle, 2008), but our use of both lagged independent variables and instruments make causality-induced endogeneity very unlikely in our models.

*--- Insert Table 2.2 about here ---*

**Results**

All models reported in Table 2.3 below use the international measure of disapproval as the dependent variable and display standardized coefficients on the stigma dilution variables to enhance comparability. Model 1 only includes control variables. Disapproval decreases with performance but increases with the existence of past scandal and with media visibility ($p<.01$). These two latter variables seem to prime expert journalists in a way that makes them more likely to disapprove of particular firms. The coefficient on *publicly-held* is never significant at the 10% level in the models, consistent with the field research finding that categorization based on ownership is only marginally salient among arms industry stakeholders.

*--- Insert Table 2.3 about here ---*

Models 2, 3 and 4 provide strong support for H1: stigma dilution across industry, customer and country categories all decrease disapproval significantly ($p<.05$). Put differently, the predicted dilution of stigma across categories is observed for all categories that are salient to arms industry

stakeholders. Specifically, a 1% increase in stigma dilution across industry categories (i.e.., a 1% increase in the civilian to weapon production ratio) 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 positive coefficient significant at the 0.1% level (model 3). Using the same transformations as above, we find that a 1 s.d. increase in this variable decreases disapproval by 0.82 article. For instance, such a decrease in disapproval could be achieved by an arms producer that would substitute Finland for Ethiopia in an average, balanced portfolio of two customers in a given year (owing to the gap in PTS that exists between the two countries). Finally, model 4 shows the significant impact of straddling across country categories ($p<.05$). For example, a Russian defense contractor selling 50% of its shares to a Canadian firm would decrease its disapproval by roughly 1 article per year. *Ceteris paribus*, by becoming 'Russian-Canadian' in the eyes of expert journalists, that company would dilute half of the 8 point gap in transparency that exists between the two countries. In the full model (model 5), the three coefficients of interest are simultaneously significant at the 10% level or less, which means that stigma dilution effects can accumulate across different types of categories.

To test hypothesis 2, we run two separate models for the pre- and post-9/11 periods and report the results in models 6 and 7[14]. As predicted, diluting stigma across customer and country categories decreases disapproval more after 9/11, while the opposite effect is observed across industry categories. In fact, after 9/11, straddling the civilian industry category to a larger extent does not significantly affect the disapproval of arms producers. In other words, firms cease to receive additional penalties as they reinforce their categorical association with the stigmatized weapons category, consistent with the fact that the 'civilian' and 'weapon' categories have become less salient to stakeholders. This decrease in saliency is further illustrated by the quasi-cancellation of the effect

[14] The period running from 9/11/01 to 12/31/01 is lumped together with the pre-9/11 period in the analysis because only yearly data were available. The effect of 9/11 on dimension saliencies was probably not instantaneous, so this 3½ months delay in the observation of the post-9/11 period should only have a limited impact on the estimated coefficients.

of *weapons export* on disapproval after 9/11. Conversely, as customer and country categories become more salient, the effect of stigma dilution across the latter becomes stronger.

We assessed the significance of the changes in coefficients across periods in three ways. First, we compared the distribution of values across the two periods. The three variables have very similar means, standard deviations, skewness, kurtosis, minimum and maximum values before and after 9/11. For example, across the two periods, the three variables' standard deviations change only by a small factor comprised between 1.009 and 1.016. It is thus unlikely that observed differences are caused by changes in value distribution. Second, we computed one-tailed t-tests and found that the pre-post 9/11 differences were significant for customer and country categories ($p<.05$) but not for industry categories ($p=.17$). Third, we run regressions on the full sample that interact each of the three variables with a dummy that takes the value '1' after 9/11. P-values for the interaction terms indicate the extent to which pre-post 9/11 differences reflect true differences in the population. The three coefficients were in the expected direction and p-values were as follows: .03 for customer, .08 for country, and .14 for industry. Overall, hypothesis 2 receives strong support.

**Substantive significance of the results**

The reader should keep in mind that our reference point is articles published in 12 press outlets, that is, we only observe the tip of an iceberg of disapproval. A database like Factiva compiles more than 15,000 publications. Based on a very rough extrapolation of the findings, one could argue that 1 article published in 12 publications may well be accompanied by a proportional number of similar articles in the 14,988 others (i.e., 1 article 'observed' in this paper = 1250 articles actually published). One could also argue that our set of articles proxies what other media, such as radio, TV, or web blogs, say about arms producers. Therefore, the consequences of stigma dilution across categories are potentially substantial, on top of being statistically significant. Put differently, categorical associations do make a difference and substantially influence the social evaluations received by firms.

**Robustness checks**

***Model specification.*** We run regressions of the untransformed count dependent variable using the negative binomial specification, which accounts for overdispersion (Greene, 2008). Results did not change, and several p-values on the coefficients of interest were actually lower. However, because in this context the negative binomial estimator is less capable of handling serial correlation, heteroskedasticity, and endogeneity than the HT GLS estimator, we deemed it safer to discuss only the most robust results. As an alternative to the log-transformation of the count dependent variable, we also used the inverse hyperbolic sine transformation recommended by Burbidge, Magee, and Robb (1988), with four different values for the $\theta$ parameter[15]. The most significant changes observed in the results are a slight decrease in the effect size of dilution across customer and country categories (respectively -0.18 instead of -0.21, and -0.11 instead of -0.13 in the full model; significance levels remain the same), and a slight decrease in the significance level of dilution across industry categories ($p<.05$ instead of $p<.10$ in the full model).

***Alternative measures of stigma dilution***. An alternative measure of stigma dilution across industry categories was constructed by computing the ratio of civilian to weapon system types in which the firm conducts business. For instance, if a firm produces three types of weapon systems (e.g., missiles, tanks, and bombers) and two types of civilian systems (e.g., elevators and MRI scanners), this ratio is 2:3, and the variable takes a value of 0.66. We rerun the regressions using this new measure, whose correlation with the former one is above .65, and found similar results. We also added a dummy variable that takes the value '1' for each of the ten firms that are suspected to produce either landmines or cluster bombs during the period of study because these two types of products have received a lot of media attention. Results did not change and the coefficient on the *alleged cluster bomb production* dummy was not significant ($p=.34$).

[15] The inverse hyperbolic sine transformation is $f(x)=\log[\theta x+(\theta^2x^2+1)^{1/2}/\theta]$. We used four values for $\theta$: 0.2, 0.5, 1, 1.5

An alternative measure of stigma dilution across customer categories was constructed by taking into account ties to customers rather than sales amounts. A 'firm that sells weapons to Sudan' may well be criticized to the same extent no matter how many weapons it sold. Practically, this measure was computed by replacing the ratio of customer sales to total sales in the original measure by a dummy variable equal to '1' when a given country was a customer of the focal firm in year *y*. Regressions results did not change significantly with this new measure, except that the coefficient on dilution across industry categories ceased to be significant at the 10% level in the full model ($p=.16$). However, model fit also decreased as measured by chi-square differences. Thus, stigmatization is best examined in a non-binary way, consistent with the idea that categories are more or less stigmatized rather than either completely stigmatized or nonstigmatized.

An alternative measure of stigma dilution across country categories was constructed by using CPI weighted by how peaceful each country is, using the Global Peace Index. The Global Peace Index has only been available for the three last years (Institute for Economics & Peace, 2007-2009), but despite slight variation over time in a given country's peace index, the structure of the ranking remains the same (e.g., Scandinavian countries, New Zealand, Japan, Canada, and Ireland consistently appear at the top of the ranking, while Angola, Sudan, Somalia, Lebanon, or Colombia appear at the bottom). We divided the 2007 ranking in 6 equal groups of 20 countries, and gave a score ranging from 6 for countries in the most peaceful group to 1 for those in the least peaceful. Countries at war in a given year were given a score of 1 to control for time-varying trends in peace not observable in the 2007 ranking (e.g., former Yugoslavian countries were at war until 1999). Results based on this measure did not change substantially despite a decrease in significance for the country variable in the full model ($p<.05$ instead of $p<.001$).

## 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. This paper connects the categorization and stigmatization literatures to explain cross-firm variation in disapproval using a parsimonious attention-based mechanism. After 9/11, customer and country 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 non-weapons started to blur. As a result, stigma dilution across customer and country categories decreases disapproval more after 9/11 and we observe the opposite effect across industry categories.

Industry stakeholders use a few salient categories – some of which are stigmatized to various extents – to classify organizations, which typically have multiple categorical associations. The paper argues and demonstrates empirically that category straddling, when it deflects stakeholder attention away from stigmatized categorical associations, decreases disapproval. This finding could 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, our robustness checks show that the strength of the categorical associations and the extent to which each category is stigmatized matter a lot, so stakeholder attention, rather than simply being overwhelmed by numbers, is affected in more subtle ways. In particular, the values embedded in organizational categories and their saliency play important roles that prior works have largely overlooked.

The finding that category straddling can decrease disapproval should not be seen as contradicting past results showing that it decreases approval (Zuckerman, 1999; Hsu, 2006), but rather as a complement to our theories of categorization. Putting the two pieces of the category straddling puzzle back together, we 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 generate evaluations that are less extreme or, equivalently, more neutral – and this is true for all types of social evaluations, positive and negative. This general finding, in fact, is consistent with the attention-based mechanisms detailed both in prior works and in this paper: when an audience is confused, it is less likely to generate outlying evaluations.

Future research should take a closer look at the chronology underlying stigma dilution effects. 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 in health care? The order with which firms make strategic decisions matters because certain trajectories seem to be irreversible at the resource and capability levels (Kaplan & Orlikowski, 2005; Teece, Pisano, & Shuen, 1997). Future management research should take this insight into account to explain heterogeneity in social evaluations despite similarities in straddling across 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 paper's findings go against such common wisdom at three levels. First, we find that membership in a stigmatized industry is a poor predictor of firm-level disapproval. 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 seem to be aware of that fact, try to keep disapproval a low level. Third, if the story was simple as in 'firms get stigmatized for selling weapons', then the largest arms producers would be the most disapproved of, which is not what our results suggest.

It is only by distinguishing between stigmatization as a category-level property and disapproval as a firm-level outcome that we can explain how stigmatized industries manage to survive as wholes over centuries (e.g., the arms trade is 4,500 years old). If we mistakenly equate stigmatization with disapproval, then we 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; Hannan & Carroll, 1992). But if we recognize that stigmatization of industries contributes to their relative isolation from the rest of society, thereby turning secrecy and discreetness into assets, we can easily understand how the category of 'merchants of death' can thrive, provided they exclude the publicly-criticized black sheep that represent too big a threat for the industry's future.

In prior works on organizational stigma, the distinction between stigmatization and negative social evaluations has not been made clearly. Devers et al. (2009) define stigma at the firm level as a discrediting label and a negative social evaluation, but they also argue 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 about 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.
The paper argues that to avoid circular reasoning and account realistically for the evolution of 'evil' industries, stigmatization and disapproval need to be distinguished. Besides, we demonstrate that stigmatization causally affects disapproval, albeit in complex ways, because of category straddling and saliency differences across categories.

**Category evolution**

Understanding how categories evolve is an objective that most scholars interested in categories attempt to achieve (Kaplan, 2011), as it relates to how industries change (Rao et al., 2005; Garud et

al., 2011) and manage to generate new types of 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, as was the case in gastronomy during the rise of the 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 demonstrated by Fleischer (2009) in her study of brokerage firms. This paper sheds light on a third factor that affects category evolution, namely exogenous shocks. Rather than arguing that categories can appear out of the blue or vanish at once, we demonstrate that categories can be more or less salient to industry stakeholders, and that exogenous shocks such 9/11 in the arms industry can dramatically modify category saliency.

Formally, it cannot be denied that 'firms whose name starts with letter A' form a category, unless we assume *a priori* that to be recognized a true category, a group of firms must be salient to industry stakeholders. Thus, our theories need the notion of saliency to account for the fact that 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 we define them from the start as being salient). By the same token, our theory offers a simple answer to the question of how categories appear or disappear. Specifically, rather than positing that categories appear or vanish, we just recognize that the set of all possible categories is infinite, and that a category 'appears' when its saliency rises above zero, and 'vanishes' when its saliency decreases to reach zero again. A category's saliency goes above zero when it is used by (at least) some industry stakeholders to classify firms. In the case of the arms industry, we showed that industry, customer, and country categories have achieved high saliency, unlike ownership-based or alphabetical categories. We also showed that 9/11 had an asymmetric impact on the saliency of the three types of categories, yet none vanished.

Future works on category saliency could profitably define and measure category saliency based on two important features of stakeholder classification schemes: how frequent a category is used, and how high it is in the hierarchy of embedded categories (Porac & Thomas, 1994). For instance, in the movie industry, genre categories and country categories are used almost every time to classify productions. Yet, judging by how the Internet Movie DataBase organizes information, a movie's genre is always indicated before its country of origin, so we can hypothesize that genre categories are located higher than country categories in this particular industry's classification hierarchy. If we applied our theory to the movie industry, we would expect straddling across genre categories to be more consequential than straddling across 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*.

**Validity of the results and methodology**

Our hypotheses do not make any specific assumption about the type of categories at stake. Our findings support the proposed theory at multiple levels of the arms industry's classification scheme as we examined straddling across industry, customer, and country categories. Our 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 examine cross-sectionally one industry within regional or national boundaries (Sutton & Callahan, 1987; Hudson & Okuysen, 2009; Porac & Thomas, 1994), which raises the triple issue of generalizability of the findings to other time periods, industries, and national contexts. Because this paper is based on an extensive longitudinal dataset on a global industry, it already addresses two thirds of the problem, therefore significantly increasing the study's external validity relative to prior works.

For the sake of simplicity, we first theorized about the dichotomy between stigmatized and nonstigmatized categories, but we clearly showed in the empirical section that stigmatization is often best conceptualized as a continuous rather than a binary variable. Thus, a boundary condition for the applicability of our theory to other industries is the existence of a measurable stigmatization gap across salient categories of firms. In the financial industry, at least since the subprime crisis, there are such gaps as we 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 we think of businesses like '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 paper are thus likely to generalize to other industries, including those not typically tagged as 'stigmatized'. In fact, this paper shows that, instead of speaking of stigmatized industries as wholes, we should conceive of industries as embedded sets of categories conveying stigmas to various extents. Rather than wondering whether a particular industry is stigmatized in absolute terms or not, we should devote more resources trying to understand why disapproval of firms varies across players in that industry.

The methodology proposed in this piece offers guidelines for studying categories in basically any industry. By combining qualitative and quantitative approaches, our research design 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 genre matters and country does not (or does less). While exogenous shocks with an effect on categories have been identified in many industries (Rao et al., 2003; Garud et al., 2011), a before/after design is not the only way to capture variations in category saliency. When a centralized database compiles, over time, an exhaustive and standardized set of social

evaluations about industry members (e.g., as in IMDB), more direct measures of category saliency can probably be computed.

**Managerial implications**

The paper's findings have implications for strategic management. To contain disapproval, managers should pay particular attention to the way industry stakeholders categorize them. Which categories are salient or stigmatized varies across industries, so highly diversified firms need to navigate heterogeneous cognitive frames to manage social evaluations, a situation that generates additional complexity for them. In industries where country categories are salient, headquarter relocation or foreign subsidiary creation are strategic choices that directly affect disapproval, as suggested by Devers et al. (2009) in the context of the 'Made in China' label. Recent research has highlighted that home countries affect firm profitability (McGahan & Victer, 2010), so this paper adds to our understanding of home country effects by specifying on what conditions social evaluations of firms can also be affected.

Understanding the categorical structure of an industry can be very helpful to make strategic decisions. For instance, in the arms industry, it appears that the arms producers which most benefited from the saliency effects of 9/11 on disapproval are found in Scandinavia, and their strategy combines three elements: a high specialization on weapons (which ceases to be a liability after 9/11), a relatively small proportion of dodgy customers in their address book, and a relatively transparent home country (two features with a stronger negative impact on disapproval after 9/11). This may sound rather counterintuitive, given that the post-9/11 discourse of the clash of civilizations originated on the other side of the Atlantic – which is exactly why categorical analysis can be helpful. An interesting avenue for future research would be to estimate precisely the impact of disapproval on firm performance to inform strategic decision making more finely.

In sum, this paper contributes to the literatures on organizational stigmatization, categorization, and social evaluations by addressing the issue of how categorical associations and category straddling affect stakeholder evaluations of firms.

# Chapter 3

# (Essay 3)

# CHAPTER 3 – DODGING THE BULLET: FIRM RESPONSE TO PUBLIC ATTACKS OF RIVALS IN THE GLOBAL DEFENSE INDUSTRY (1996-2007)

*This chapter, co-authored with Rodolphe Durand, will be under review at Administrative Science Quarterly as of April 2011.*


## ABSTRACT

When a firm's rivals are publicly attacked for an alleged violation of industry norms, it may benefit from a temporary advantage but also bear a risk of contamination when audiences infer that the criticisms generalize to other members of the industry category. In this paper, we suggest that the intensity of, and consensus around the public attacks of rivals make focal firm response more likely with respect to avoiding contamination. As the threat of contamination increases, firms tend to dissociate themselves from the tainted industry category by altering their business portfolio. We use panel data on the global defense industry between 1996 and 2007 to test our hypotheses, and results support claims that public attacks of rivals drives a firm dissociation from the targeted industry. They also highlight how two mechanisms, generalization and categorical inference, moderate this main effect.



**Keywords**: public attacks, categorization, industry dissociation

## INTRODUCTION

When a firm is publicly attacked for an alleged violation of industry norms, it tends to lose legitimacy and reputation in the short term, and its stakeholders may perceive the violation as a breach of trust (Hudson, 2008). The attacked firm's partners are likely to withdraw from transactions and such 'retraction of support can exacerbate performance failures simply by disrupting critical resource flows' (Suchman, 1995:597). In response, targeted firms usually try to repair legitimacy, restore reputation, and reassure their partners by engaging in a variety of actions often coined as 'impression management' (Elsbach and Kramer, 1996; Hudson and Okhuysen, 2009). Responding to public attacks is a process that can be very costly both in time and resources, as firms may need to invest heavily in corporate communication, customer payback programs, CSR campaigns, or even in substantial legal settlement fees to shorten the duration of damaging public exposure. The outcomes of such attempts are uncertain and may even have adverse effects as they increase public scrutiny and may be deemed hypocritical by firm audiences.

For firms operating in the same industry, public attacks of rivals represents a significant strategic opportunity. While the attacked rivals divert time, attention, and resources away from their economic activities not to lose face, the focal firm can enjoy a relative and temporary advantage since it remains focused on its cash-generating business (Ferrier, Smith and Grimm, 1999; Jensen, 2006; Roberts and Dowling, 2002). For instance, following violation of safety norms, Toyota devoted substantial resources in communication and product recall programs to reassure core stakeholders such as customers and expert journalists whereas GM and Ford took advantage of Toyota's troubles on their domestic market. Indeed, as some of the attacked firm's strategic resources get depleted (e.g., reputation), its competitors gain a relative advantage among industry audiences for whom social evaluations matter, that is, suppliers, investors, rating agencies, and customers (Deephouse and

Suchman, 2008; Hsu, Hannan, and Kocak 2009; Oliver, 1991; Rindova and Fonbrun, 1999). Put simply, public attacks of rivals can contribute to a firm's competitive advantage – at least temporarily.

A distinct research stream sheds a different light on public attacks by looking at how audiences link cognitively competitors operating within the same industry category. Industry categories are classification schemes that simplify complex organizational landscapes by grouping together firms that share certain attributes (Porac, Wade, and Pollock, 1999; Kennedy, 2008). For instance, within the broad set of 'eating places', both consumers and expert journalists distinguish between fast-food restaurants and regular restaurants, which form two separate industry categories. At a cognitive level, audiences generalize from discrete observable events and infer consequences about whole categories, which is why public attacks have the mischievous tendency to contaminate similar firms. As such, within a given industry category, firms that are more similar to the attacked face a higher risk of contamination (Jonsson, Greve, and Fujiwara-Greve, 2009). From this perspective, public attacks of rivals do not readily represent a strategic opportunity because the negative consequences of the attacks can spread to others. According to this view, when audiences attack McDonald's for serving standardized junk food that spreads obesity and other diseases among the poorer social layers of society, other fast-food companies, such as Burger King and Wendy's, should not see it as a driver of their own competitive advantage because consumers are likely to generalize and apply the same negative attributes onto them.

The strategic and categorical views seem to lead to very different conclusions about firm response to public attacks of rivals. On the one hand, the strategic view highlights incentives for firms to exploit the opportunity and turn it into a market advantage (Ferrier et al., 1999). On the other hand, the categorical view insists on the risk of contamination associated with public attacks of rivals, and advocates withdrawal from transactions and severing of ties with peers that resemble the targeted rivals. Put differently, while the former view would recommend a stronger involvement in

the industry where the strategic opportunity appears, the latter view would advise dissociating from the industry category where the contamination risk is spreading. While past research has extensively studied within-industry isolation of vilified firms from their customers, suppliers, and peers (Sutton and Callahan, 1987; Jensen, 2006; Sullivan et al., 2007; Jonsson et al., 2009), it has not investigated industry dissociation, that is, the possibility that firms may want to distance themselves from the whole industry category to avoid contamination. Such a move would go against the strategic view of competition, which predicts that as rivals get publicly attacked, the focal firm enjoys a relatively increasing competitive advantage in its industry category (Ferrier et al., 1999).

To fill this gap, this paper proposes and tests a theory of firm response to public attacks of industry rivals, which seeks to predict whether firms dissociate from the industry category in which they operate (rather than merely dissociate from their within-industry rivals). At a theoretical level, the following builds on categorization research, and suggests that firms have incentives to loosen the categorical ties that bind them to a particular industry when peers in that industry are publicly attacked. First, we argue that audiences are more likely to generalize targeted criticism to a whole category of firms when the public attacks are intense and consensual. Second, when a whole category becomes scrutinized by audiences, firms that are more prototypical of that industry category face a higher risk of contamination. In other words, focal firm prototypicality feeds categorical inference, a mechanism that moderates the main effect of public attacks on industry dissociation.

The hypotheses are tested using a unique dataset on the global defense industry (1996-2007) that tracks over time the public attacks conveyed by expert journalists about 210 final defense system producers in a wide range of international newspapers. Expert journalists form a core audience in the global defense industry as they represent the main intermediary for conveying social perceptions of defense contractors to the general public. They have an expert knowledge of industry norms and of the defense firms' activities, which they built over time through frequent interactions with the

defense community (e.g., during arms trade fairs, international conferences, and press conferences with company executives or military officials). The defense industry consists of a cognitively identified category that includes several product segments, such as military aircraft, missile, and armored vehicle (SIPRI, 2009). Defense contractors, on average, realize 43 percent of their turnover outside the defense industry, that is, in the so-called 'civilian industry'. The hi-tech nature of the defense sector makes it relatively easy for contractors to diversify outside their core industry category, so weakening their association to the latter is a feasible option as a response to public attacks of rivals. Empirically, we will thus examine how defense contractors navigate between two industry categories, the defense and the civilian, as a response to public attacks of rivals.

## PUBLIC ATTACKS, CATEGORICAL INFERENCE, AND GENERALIZATION

Public attacks represent the collective and public imposition of a vilifying label onto a firm, based on an alleged violation of norms (Galvin, Ventresca, and Hudson, 2004; Hudson, 2008; Devers et al., 2009). Targeted firms do not have to be guilty of anything – that is, the underlying norm violation need not be actual or proven for audiences to proceed with the attack. Independent of whether the targeted firm actually did something wrong, a public attack has negative consequences at the social, and ultimately economic level. Attacked firms face legitimacy and reputation losses (Hudson and Okhuysen, 2009), they have difficulties acquiring resources (Sutton and Callahan, 1987) and maintaining relationships with interlock board members (Sullivan et al., 2007), suppliers (Jensen, 2006), or customers (Jonsson et al., 2009). Besides, repairing legitimacy, restoring reputation, and rebuilding trustworthy relationship with business partners take time (Suchman, 1995; Rindova et al, 2005; Deephouse and Suchman, 2008). Thus, a public attack is costly; both in the short and middle terms, as substantial resources may be required to fix the issues induced by the attack that endanger a firm's economic viability.

Firms whose rivals are attacked publicly thus face a dilemma: Should they see the situation as an opportunity calling for more involvement in the industry, or (also) as a risk requiring dissociation from the industry category in which the opprobrium might spread? While past research had showed that it could represent an opportunity (e.g., Ferrier et al., 1999), the flip side of the coin has not been examined yet. To do so, we propose a theory that assesses the probable extent of peer contamination based on categorical inference and generalization. These two mechanisms relate characteristics of the vilification process to the extent of peer contamination, thereby offering a parsimonious framework to predict a focal firm's response to public attacks of rivals. The response we consider is industry dissociation, defined as a significant strategic disengagement of assets from the industry in which rivals are targeted.

**Audience generalization and public attacks of rivals: Main effects of intensity and consensus**

When a firm's rivals face temporary difficulties, the focal firm is tempted to invest additional resources in getting ahead – by innovating at a faster pace, communicating about their values, and advertising their products in a way that makes them look different (Elsbach and Kramer, 1996; Roberts and Dowling, 2002). Public attacks of rivals can be a powerful kick-start for implementing differentiation strategies at a lower cost (Deephouse, 1999), since rivals already appear different, and in a negative sense, because of the attacks. Therefore, a first line of thought considers that as rivals are attacked publicly, on average a focal firm will maintain or even increase its association with the industry in order to actualize the potential sources of advantage it represents.

This strategic reasoning holds under a number of boundary conditions which may appear limitative. First, the strategic line of reasoning is certainly valuable in situations where *one* actor occasionally and temporarily suffers from public attacks, leaving untainted rivals competing for the portion of market value left by the wounded player. Underlying this view, though, is a conception of competition as a zero-sum game where vilification of a few industry players does not decrease the

overall demand for the industry's output. A zero-sum game may depict realistically what is going on as long as the intensity of the attacks is limited, thereby making audiences unlikely to infer that the associated norm violation is a pervasive feature of the industry as a whole. However, these conditions often do not realize. In particular, when there are multiple and frequent attacks targeting a significant proportion of industry players, sometimes very intensively, it may become increasingly difficult for industry players to compete for abandoned market value by leveraging their apparent purity. It could be that the whole industry risks contamination, that demand in general will be affected, and that the overall (strategic) value of having vilified rivals will vanish.

It is against this background that the categorization literature would theorize differently about firm response to public attacks of rivals. The latter can impose additional costs on the focal firm as a result of contamination of peers that share commonalities with the vilified (Yu et al., 2008). Past research has provided ample evidence that such association costs can be traced back to inter-firm relationships, specifically through shared board members, suppliers, or customers. Jensen (2006) shows that Arthur Andersen progressively lost customers to competing auditing firms following violation of norms of accountability in the Enron case. Sullivan et al. (2009) report a significant decrease in the number of interlocking ties at the board level in firms publicly accused of violation of ethical norms. Hence, when public attacks threaten the industry category's integrity, the focal firm's peers react defensively (Barnett and King, 2008), withdrawing from mutual transactions and actively avoiding association with rivals for fear of spillover (Jonsson et al., 2009).

We wonder whether public attacks of rivals can go as far as to affect the focal firm's industry dissociation, inciting it to move away from the whole industry category to avoid contamination. So far, there is only anecdotal evidence which points toward industry dissociation as a strategic option available to firms. Hudson (2008), for instance, believes that the strategic move of Philip Morris out of the tobacco producer category – implemented through diversification in the food industry – finds

its source in the intense public attacks targeting tobacco producers. Industry dissociation takes the form of significant strategic moves that attenuates a firm's connection with the industry wherein rivals are attacked publicly. Divesting businesses from the (potentially) contaminated industry category or investing in unrelated sectors both pertain to industry dissociation because they credibly increase the observable distance between a firm and the endangered industry, thereby reducing the risk of damaging generalization.

Generalization is a process whereby audiences come to believe that an organization possesses an attribute based on the organization's association with a category whose members are known to possess that attribute (Tajfel and Turner, 1986). A vilifying feature, once attributed to one or more organizations in the same category, is particularly prone to further generalization (Jonsson et al., 2009). When public attacks of rivals become intense, they start damaging the integrity of an industry category and may contaminate all its members (Adut, 2005; Hudson, 2008). The more there is suspicion that industry norms have been violated by members of a category, the more audiences will generalize the alleged norm violations to other members of that category. Norm violation can end up being understood as a pervasive, routine feature of the whole industry category. By contrast, audiences may be more lenient if the reported violation is an exception or only concerns one single black sheep in the industry, in which case the vilified feature is unlikely to appear prototypical of the whole industry (Hudson, 2008; Jonsson et al. 2009).

In order to avoid the negative consequences of contamination (e.g. in terms of reputation, postponed sales or overall legitimacy), firms can prevent undue generalization by dissociating themselves from the industry category. Hence, the negative spillover imposed upon a firm by public attacks of rivals can be such that the firm implements dissociation from the industry category where contamination is likely to spread. In line with past research which shows that more intense public

attacks are more consequential for firm strategy (Sullivan, Haunschild, and Page, 2007), our main effect hypothesis is as follows:

> *H1: The more a firm's rivals are targeted by public attacks in a given industry category, the more the firm will dissociate from that industry category*

Independent of the intensity of the public attacks, there can be varying degrees of agreement among industry audiences about the nature and extent of norm violations. Consensus among audiences reinforces the perception of prototypicality for a particular attribute of social entities (Leary and Schreindorfer, 1998:15). Research on categorization has demonstrated that more prototypical attributes of similar entities tend to become defining features of the category under which such entities are subsumed (e.g., Porac et al., 1995). The mechanism underlying this phenomenon is generalization: when there is a large consensus among audiences about the need for public attacks, the perception that the latter are justified increases and the underlying norm violation becomes more prototypical of the category as the whole, thereby increasing the risk of contamination for any member of that category. Therefore, firms are also more likely to implement industry dissociation when there is a greater consensus around public attacks of their rivals.

> *H2: The more consensual the public attacks of a firm's rivals in a given industry category, the more the firm will dissociate from that industry category*

**Categorical inference and public attacks of rivals: Moderating effects of firm attributes**

Audiences rely on categorical inference to formulate social evaluations about firms. Categorical inference is a judgment about the extent to which an organization is associated with a category (Corter and Gluck, 1992). It is an important mechanism to understand social evaluation spillovers, as contamination occurs more readily for members having a stronger association with the category (Devers et al., 2009; Jonsson et al., 2009). Once audiences see the alleged norm violation underlying a targeted public attack as a prototypical attribute of the whole category, they infer its possession by a given organization based on the extent of its membership in the category (Porac et al, 1995).

Not all firms react with the same intensity to public attacks of rivals: the negative consequences of the latter contaminate peers in the industry category heterogeneously because of their idiosyncratic characteristics (Jonsson et al., 2009). Each firm's characteristics lead industry audiences to infer membership in the category to a certain extent, that is, categorical inference depends on firm-level properties and on how prototypical they are of the category as a whole. For audiences, some attributes are more prototypical than others of a given category (Porac et al, 1995). The prototypicality of a particular attribute can be a function of how many members of the corresponding category possess it, or of institutional patterns related to the history of the category (Rosch, 1975; Rosch and Mervis, 1975). For instance, a woody flavor is more prototypical of red wine than of white wine because more members of the red wine category express it. Also, the members that have it (e.g., merlot and cabernet have it more than zinfandel) tend to be more prominent in the red wine category for historical reasons (e.g., they were used earlier and in larger quantities). When an attribute signals prototypicality of an individual in a category, audiences are more likely to infer that other category-level attributes also apply to that individual (e.g., one is more likely to expect a woody flavor prior to tasting a wine that looks red).

In an industry category, some firms are more prototypical than others of that industry category, what Hannan, Polos, and Carroll (2007) have called grade of membership (GoM). A high GoM indicates a high correspondence with what can be expected by audiences from being categorized from a member of a category. Possessing a high GoM makes members more attractive, appealing, and legitimate in their category (Hsu, Hannan, and Kocak, 2009). Therefore, being prototypical strengthens the categorical inference between a firm and the category, and the negative spillover effects tend to be more pronounced for those peers that look more similar to their attacked rivals – because of proximity in organizational form, characteristics, or attributes related to the attack (Jonsson et al., 2009). As public attacks of rivals become more intense, being highly prototypical of

the industry category leads audiences to associate the focal firm with its vilified rivals. Eschewing the negative outcome of categorical inference needs substantial effort for the prototypical firm, so we expect to observe more pronounced industry dissociation as a response. Conversely, less prototypical firms, whose GoM is further away from the industry's average GoM, will dissociate relatively less:

> *H3: The greater the gap between the focal firm's grade of membership (GoM) in the industry category and the industry average, the weaker the effect of public attacks of rivals on the firm's industry dissociation*

Audiences do generate robust social evaluations about players with a mixed or changing identity (Hsu et al, 2009; Durand, Rao, and Monin, 2007). Competitors that entered the industry at founding participate in early industry categorization (Kennedy, 2008) and share more features with the industry category since they negotiated their identity as the whole category was in the process of achieving legitimacy (Navis and Glynn, 2010). These players are closer to the core definitional attributes of what it means to be a member of a category. By contrast, *de alio* players which entered the category from an adjacent or more distant industry carry other codes, labels and symbols; they enact different practices and participate to other categorization processes. When audiences are prompted to formulate evaluations of industry players as a response to pervasive public attacks, original players are then more likely to be strongly associated with the category's core, while late entrants in the industry bear a smaller risk of contamination. Being a diversifying entrant, thus, provides a relative protection against direct categorical inference. Therefore:

> *H4: For diversifying entrants, the effect of public attacks of rivals on the firm's industry dissociation will be weaker.*

The figure 3.1 below summarizes the theoretical model, mechanisms, and hypotheses.

*---- Insert Figure 3.1 about here ----*

## DATA AND METHOD

### Empirical setting: The global defense industry (1996-2007)

The paper examines industry dissociation following public attacks of rivals in the global defense industry between 1996 and 2007. We chose this setting for several reasons. First, there are numerous instances of public attacks in this industry and it is subject to thorough scrutiny by external audiences, including several non-governmental organizations such as the Stockholm International Peace Research Institute (SIPRI) or Campaign Against Arms Trade (CAAT). Information about the industry is available weekly in specialized press (e.g., Defense News), which enabled us to collect rich data to test our hypotheses. Second, most firms involved in arms production are also involved in civilian production of high-tech products, so they belong simultaneously to two broad yet very distinct industry categories – the defense industry and the civilian industry. Besides, there are numerous resources and capabilities in the defense industry that can be deployed at reasonable cost in civilian activities, for instance in civilian aerospace, electronics, medical equipment, or infrastructure & facility management (Brauer and Marlin, 1992; Frankenstein, 1995). So this empirical setting represents an opportunity to test whether public attacks of rivals in the defense industry leads firms to dissociate from it by refocusing resources in civilian businesses. Third, public attacks in the defense industry are substantially more frequent than in civilian sectors of the economy. This asymmetry makes our empirical setting particularly well suited to test our hypotheses because it reduces the amount of noise coming from public attacks related to the civilian business units of the sampled defense firms. For instance, arms producer Boeing can be attacked publicly in relation with its commercial aircraft business, yet on average most of the attacks faced by arms producers stems from their defense activities.

The defense field is regulated by several international treaties and export control rules, and the U.N. plays an important role at regulating weapon flows during and between political conflicts. A diffused set of international norms have set similar rules of the game for all global players: for instance, initiatives such as the 1997 OECD Convention on Corruption and Bribery apply equally to

virtually all regions of the world where major defense firms operate (DAC/Transparency International, 2008). These international rules and norms represent a consistent set of behavioral guidelines which facilitate cross-national comparison. There are only a limited amount of final system providers in the global defense industry, which are well identified (Defense News, 1997-2007).

## VARIABLES AND ESTIMATION

### Data collection

We used the two leading sources about the defense industry, SIPRI and Defense News (1997-2007), to identify final weapon system producers operating at a global level. Data about defense firms were systematically available from 1996 onwards, a date which coincides with the formalization of a normative consensus in the industry, as visible in the OECD Convention on Bribery. Any defense firm listed by SIPRI or Defense News on any year between 1997 and 2007 was included in our sample, which eventually contained 210 firms. Industry experts provided with our list of sampled firms estimated that we covered at least 90 percent of all known final weapon systems providers. We collected firm-level data for the period 1996-1997 at SIPRI headquarters in Sweden and from Information Base, a specialized U.S. provider of competitive intelligence for defense professionals; additional data sources included company websites and 10-K's, reports by Transparency International and Amnesty International, and the Factiva and Lexis-Nexis international press databases. At the firm-year level of analysis, 40 percent of observations concern North-American firms, 29 percent European firms, 9 percent Russian firms, 6 percent Japanese firms, and 4 percent Israeli firms.

### Dependent variable

Our dependent variable, *arms industry dissociation,* captures the intensity of a focal firm's strategic dissociation from the arms industry. Two types of substantive changes can loosen a firm's

association with the category of defense firms: divestiture of a defense business unit, which decreases corporate-level involvement in arms production (relative to civilian production), and acquisition of a purely civilian business unit, which increases corporate-level involvement in non-military production (relative to arms production).

Data on acquisitions and divestitures mainly come from two sources: Information Base, which reports all known acquisitions and divestitures on a yearly basis; and annual company reports, which compile similar information, albeit sometimes less exhaustively and less consistently (e.g., less information is available for privately-held firms). When information was available from both sources, the coding procedure showed high reliability, with the same event mentioned in both sources on the same date in more than 90 percent of the cases. When the two sources diverged, we searched for press articles in Lexis-Nexis and Factiva to confirm the actual occurrence of an event, or its date. Information Base was our main data source for firms not legally obliged to publish many details on corporate events. Based in Washington, D.C., the firm is the leading and most exhaustive competitive provider of corporate level intelligence on defense issues, its primary customers including the major defense contractors worldwide, so we are very confident in the reliability of our data. We coded acquisition and divestiture events that represented at least five percent of firm turnover to capture only substantive changes that are likely to affect perception of a firm's categorical boundaries.

We computed the dependent variable, at the firm-year level, as the number of defense divestitures and civilian acquisitions. As significant acquisitions and divestures are relatively rare events, *arms industry dissociation* ranges from 0 to 3, has a mean of 0.11 and a standard deviation of 0.36. Higher values of the variable clearly represent more intense levels of industry dissociation, but the intervals between values are not necessarily equal, i.e. industry dissociation is an ordinal rather than a continuous or count variable. Note that in less than 3% of observations, firms both acquired

and divested business units in the same year, either in the defense or civilian industry. To capture actual dissociation when this occurred, we took into account the number of excess defense divestitures (over that of defense acquisitions) and the number of excess civilian acquisitions (over that of civilian divestitures).

**Independent variables**

***Public attacks of rivals.*** Consistent with past research (Adut, 2005; Deephouse and Carter, 2005; Sullivan et al., 2007), we use press outlets to collect data on public attacks. Our media sources included 12 high-circulation, independent, and authoritative daily newspapers based across the five continents, as well as two leading specialized defense newspapers.[16] Arms producers can be attacked for a variety of reasons, such as the values they convey, their discourse, the nature of their business, or their behavior when they interact with stakeholders such as customers, authorities, or NGOs. In our database, apparent motives behind public attacks of arms producers include embezzlement, corruption, cronyism, human rights violations, embargo violations, violations of sovereignty, sex scandals, and so forth.

To compute *public attacks of rivals*, we first created a *public attacks of focal firm* variable. We used appropriate keywords (e.g., 'complain*', 'blame*', 'critic*', 'scandal*', 'unethical') in combination with the sampled firms' names and their variants to search for articles wherein any of the sampled firms is attacked for the period 1996-2007. For every such story attacking a particular firm about its alleged activities, values, or behavior, we added 1 to the *public attacks of focal firm* variable in the year the article was published. Of the roughly 3,000 articles extracted, 1,166 attacked one of our sampled firms.

[16] The final list of daily newspapers used for article search was established based on the circulation, authoritativeness and independence of the press outlets that were consistently available in Factiva or Lexis-Nexis between 1996 and 2007. We chose at least one newspaper per region of the world where the sampled firms had headquarters to have at least 1 local media source for each firm. The final list included: *The Financial Times*, *The New York Times*, *The Wall Street Journal*, *The Independent* (UK), *Turkish Daily News*, *Jerusalem Post*, *The South China Morning Post*, *The Australian*, *The Moscow Times*, *The Hindustan Times* (India), *Kommersant* (Russia), and *Business Day* (South Africa).

When a random sample of 10 percent of the extracted articles was recoded by an independent coder, the agreement level was over 93 percent, a very acceptable level. Typical excerpts include: 'Firm X should be sanctioned for…' or 'the public should be aware of the danger represented by Firm Y'. Hence, *public attacks of focal firm* is the yearly total number of articles attacking the focal firm.[17]

*Public attacks of rivals* represents the extent to which a focal firm's rivals in the industry are vilified in a given year. It is computed as the yearly sum, across all firms, of the values taken by *public attacks of focal firm* minus that value for the focal firm:

$$Public\ attacks\ of\ \ rivals_{jt} = (\sum_{i \neq j} public\ attacks\ \ of\ \ \ focal\ \ firm_{it})$$

The average value of *public attacks of rivals* in the defense category is 103.8 (s.d.=50.37). Weighting each coded unit by the readership size of the newspaper did not change the subsequent results. Public attacks variables are lagged in all models to enhance causal inference[18].

***Consensus.*** To measure consensus across attacking audiences, that is, across the twelve daily newspapers used to code to the public attacks variables, we used Fleiss's kappa ($\kappa$), which is a robust measure of inter-rater agreement that takes into account the probability that agreement occurs by chance (Fleiss, 1971; Gwet, 2010). $\kappa$ essentially relates the observed degree of inter-rater agreement to the maximum degree of agreement attainable above chance. It takes values between 0 and 1, 1 meaning perfect agreement. We considered that two newspapers agreed in attacking a firm in a given year when they both attacked it at least once during that year. We did that because public attacks are relatively rare events occurring in less than 20% of firm-year observations, so what truly matters is whether a firm is attacked or not, rather than to what extent it is attacked. Also, because newspapers

[17] We coded separately attacks related to the defense and civilian activities of firms; unsurprisingly, more than 90% of the coded material fell into the former category. Adding civilian-related attack variables as controls did not affect the results, and the coefficients were never significant at the 10% level. Thus, for the sake of simplicity, we did not include these variables in the reported models.

[18] Consistent with that, defense experts could recall stigmatizing events that had occurred during the past year very well in interviews conducted by one of the authors, but had much more difficulty remembering older stories in detail.

tend to cover certain firms more extensively (e.g., local firms receive more coverage), it seemed more appropriate to capture a newspaper's decision to attack a firm in a binary way to mitigate unobservable amount of bias associated with each newspaper-firm dyad. $\kappa$ is calculated for each year across all sampled firms and all newspapers; it has a mean of 0.24 (s.d.=0.18), a signal of 'fair agreement' (Landis and Koch, 1977).

***Moderators.*** Hypotheses H3 and H4 moderate the main effect between public attacks of rivals and industry dissociation. To test H3, we created a measure of relative grade of membership, *Relative GoM,* which captures how far away a firm is from the industry average. Based on the categories used by defense experts at Infobase, SIPRI, and Defense News, we identified 11 product categories in the defense industry: electronic warfare, artillery & missile, aircraft, helicopter, armored vehicle, space technology, ships & submarines, propulsion, training & simulation, defense logistics & services, and unmanned vehicle. We computed measures of grade of membership (GoM) at the firm and industry level. In this context, GoM captures the extent of a firm's product specialization (Hannan, Pólos, and Carroll, 2007): a firm associated with a single category has a GoM of 1 for that category; a firm associated with two has a GoM of 0.5 for each of the two, etc. Given our inability to discriminate intensities of memberships above and beyond assignment or non-assignment of firms to each of the 11 categories, we proceeded as in Kovács and Hannan (2010) with binary measures of assignments. A firm's relative grade of membership was computed as the absolute value of the difference between a firm's average grade of membership (GoM) in the 11 categories and industry GoM, computed as the average GoM across all firms in the industry.

$$relative\ GoM_{it} = \left|\ firm\ GoM_{it} - industry\ GoM_{t}\ \right|$$

Higher values are found among defense firms that are less prototypical members of the defense industry because they are either much more or much less specialized than the industry average. Both

GoM and industry GoM have a theoretical minimum of 1/11 and maximum of 1, so *Relative GoM* is bounded between -10/11 and 10/11, and its absolute value between 0 and 10/11.

Eventually, to test H4, a firm was coded as a *diversifying entrant* if it was not a defense contractor at founding. This variable is binary, and a value of 0 means that a firm always was a defense contractor. In our data, there are no instances of firms being defense contractors at founding that later exited defense altogether to later reenter the industry. We relied on various data sources to code this variable, including Infobase, SIPRI, and company histories as found on websites and in annual reports. As already discussed, on average we expect diversifying entrants to dissociate more from the defense industry since their history is not imprinted with defense industry membership, and their resources are probably less specific (main effect). However, because they are less prototypical of the industry, we expect them to dissociate relatively less from the industry as public attacks of rivals become more intense – because contamination is less threatening for them (interaction effect hypothesized in H4).

**Control variables**

***Firm level controls***. We included several firm-level control variables that are likely to affect the values taken by the dependent variable. Data sources for measurement of the following variables include Infobase, SIPRI, Factiva, Lexis Nexis, as well as company reports, 10K's, and websites. Because older and larger firms may be more inert and less likely to fail, they can be less prone to respond to public attacks of rivals, so we controlled for *age* and *size* using logged measures of years since incorporation and of total sales. We controlled for ownership type by adding a dummy coded 1 for *publicly-held* firms. Because high-performing firms might be shielded from public attacks, we controlled for *performance* as measured by ROS (ROA was not consistently available across sampled firms because of differences in national accounting standards).

More specifically, we controlled for several strategic aspects of firm trajectories. The international scope of a firm's activities may affect its sensitivity to contamination, so we controlled for *internationalization* measured as the percentage of weapons a firm sells outside its home country. To account for the fact that firms that are not always prime contractors in defense programs may be less exposed to public attacks, we included a *subsystem production* dummy which takes the value '1' when a final weapon system producer is also significantly involved in the production of weapons subsystems (e.g., targeting radars for air defense systems). Firms involved in military *research* may be more at risk in the face of public attacks because they represent 'the brain behind the trigger'. Firms that *manufacture* most of the final weapon systems they sell may also be more at risk, even though extensive ownership of production facilities imposes constraints when it comes to dissociating from an industry.

To capture experience and learning effects regarding response to public attacks, we controlled for firms' *CEO experience*, measured as the number of different defense contractors for which CEOs have worked prior to their current appointment. To control for alternative antecedents of industry dissociation, we added three dummies coded '1' when one of the following events occurred in the previous year: *ownership change* (e.g., the firm has a new parent company), *name change* (e.g., Blackwater becomes Xe), and *reorganization* (e.g., Boeing announces a massive internal reorganization of its business units). All three events are likely to signal a change in strategy and precede a new industrial focus, which might affect the values taken by the dependent variable.

Finally, we made sure that *political pressures* were not the true cause of industry dissociation by adding a dummy coded '1' when any press article attacking the focal firm reported an intervention by government officials demanding that the firm followed a particular course of action.

***Industry level controls***. To account for internal defense industry dynamics, we included *subindustry dummies* (air force, navy, army) to reflect the variety of customers served by defense contractors. We

also included *year dummies* to control for time varying omitted variables at the industry and environment levels. Among other things, year dummies capture trends in global military spending.

***Institutional level controls***. The defense industry is deeply embedded in world politics, so various institutional factors can affect firm strategic behavior. To account for them, we used six regional dummies to capture heterogeneity in firms' original region of incorporation (North-America, Europe, Russia, Japan, Israel, other). Each regional block represents a relatively homogeneous institutional context wherein regional firms interact intensively to conduct joint R&D, manufacturing, and product testing activities. Instead of using these variables directly in the models, to capture the regional specificities, we clustered our estimation by regions as detailed below. However, because more localized institutional pressures may affect firm response to public attacks of rivals, we controlled for the local tolerance to deviant economic behavior by including in the models the size of the *black market economy* in each firm's home country (as percentage of GDP). Table 3.1 reports summary statistics and correlations.

----- *Insert Table 3.1 about here* ----

**Model choice**

Our dependent variable represents ordered categories, so we opted for an ordered logistic regression model which assumes that higher values on the dependent variable imply higher outcomes (Long and Freese, 2006). We computed all standard errors with the robust Huber-White sandwich estimator to correct for heteroskedasticity. In addition, we used a two-way clustering procedure to account for the fact that error terms may be correlated within firms, but also within regions because of historical trajectories (e.g., there are region-specific patterns of coopetition among European, American, Japanese, Russian, and Israeli defense firms) (Miller, Cameron, and Gelbach, 2010). Six firms were dropped from the subsequent models because of missing data or because only one firm-year observation was available. To report more conservative results, we also excluded one influential

outlier whose Pregibon's leverage values were more than twice the sample average. We tested the models' specification validity using STATA's linktest program and found no evidence of misspecification or omitted variable bias. Table 3.2 below reports our regression results.

*---- Insert Table 3.2 about here ----*

## HYPOTHESIS TESTING AND ROBUSTNESS OF THE RESULTS

### Results

Model 1 reports the effects of the main predictor and control variables. Looking across all models, the effect of *public attacks of rivals* on industry dissociation is positive and highly significant ($p<.01$), as predicted by hypothesis 1: each additional article attacking rivals increases the odds of industry dissociation, for the focal firm, by a factor comprised between $e^{.015}=1.015$ (model 1) and $e^{.023}=1.023$ (model 4). Firms that are attacked themselves are also more likely to dissociate from the defense industry, and so are diversified entrants. Larger firms tend to dissociate more over the period of the study, while older, high-performance, and internationalized firms do it less. As expected, *ownership change*, *name change*, and size of *black market economy* all significantly and negatively impact industry dissociation (but *reorganization* does not). Importantly, the models explain a fair share of the variance in industry dissociation as visible in pseudo-$R^2$ statistics, the three cut points are all significant at the 1 percent level, and they are equally spaced on the latent scale modeled in the logistic regressions, increasing our confidence in the results of the ordered logistic models.

Model 2 includes the *consensus* variable, which has the expected positive and significant effect ($p<.05$): the more attacking audiences agree, the more the norm violations appear prototypical of the industry, and the more likely firms are to dissociate from the contaminated industry category. This provides strong support for hypothesis 2. Model 3 tests hypothesis 3 and finds, as predicted, a significant negative effect ($p<.05$): when peers are attacked, the further away a firm's GoM from the industry average, the less prototypical it is of the industry, and the less it needs to dissociate to avoid

contamination. In model 4 (full model), we test hypothesis 4 and find empirical support significant at the 5% level: when rivals are attacked, diversifying entrants, which are less prototypical of the industry, dissociate less from it.

**Robustness**

Given the non-linear nature of the ordered logistic model, we should be extremely cautious with the interpretation of the results about interaction effects (Hoetker, 2007). In logistic regressions, the magnitude and sign of the marginal effects can differ across observations, and the significance of interaction coefficients is insufficient to draw robust conclusions. Also, for 'cross-group differences in logit coefficients to be meaningful, each group must have the same amount of unobserved variation, that is, the variation in outcomes beyond that explained by the independent variables' (Hoetker, 2007:337). We used Allison's (1999) statistic to test for the equal residual variation hypothesis and failed to reject the null that residual variation differs between diversifying entrants and industry players involved in defense since founding ($p=0.68$). 'Because controlling for more variation leaves less unobserved variation to vary across groups' (Hoetker, 2007:339), the fact that we included many controls at the firm, institutional, industry, and scandal levels readily explains why this potential issue does not arise in our data.

To check for the robustness of significance levels, we rerun the full model using a feasible generalized least squares specification (FGLS). The FGLS model is linear, so significance levels can be readily interpreted. Besides, FLGS regressions correct for the biases induced by heteroskedasticity and serial correlation (Greene, 2008), which we modeled as a firm-specific AR(1) process. Model 6 reports the results of the FGLS regression. The direction and significance of coefficients, broadly speaking, are consistent with the results of model 5. Notable exceptions include the interaction effect on *diversifying entrant*, and the coefficients of *performance*, *research*, and *ownership change*, which are no longer significant at the 10% level. On the other hand, the coefficients on *subsystems production* and

*political pressures* become significant again, like in models 1 and 2. Overall, these results suggest that using a linear model to regress our ordered dependent variable does not substantially bias the estimates, and that we should not be concerned too much with the potential effects of autocorrelation and heteroskedasticity . However, based on models 5 and 6, empirical support for hypothesis 5 appears slimmer, whereas support for hypotheses 1 to 4 is very strong.

## DISCUSSION

When a firm's rivals are publicly attacked, does the focal firm see it as an opportunity to accentuate its participation in an industry category, or as a danger requiring industry dissociation? While prior works have examined the opportunities generated by attacks of rivals (Ferrier et al., 1999), this paper is the first to shed light on the flip side of the coin, by showing that public attacks of rivals also create incentives for the focal firm to move away from the industry where the attacks happened. We explained why firms threatened by public attacks of rivals tend to dissociate by investing in other businesses or divesting from the tainted industry category. More intense and more consensual attacks precipitate industry dissociation because audiences may generalize the norm violation underlying the attack to all members of the category. However, depending on factors that favor categorical inference about each firm's membership in the industry category, the main effect of public attacks of rivals on industry dissociation is mitigated. Firms with business portfolios that do not resemble the industry average and diversifying entrants bear a lower risk of categorical inference and hence tend to dissociate relatively less as a response to public attacks of rivals. Interestingly, both generalization and categorical inference are driven by the notion of prototypicality – in the case of generalization, what matters is how prototypical a norm violation is purportedly with respect to the industry category, while categorical inference is about how prototypical each firm is of the industry category as a whole.

This paper provides evidence that public attacks of a firm's rivals are antecedents of strategic change worth studying in themselves. Public attacks drive the redistribution of immaterial and material resources at the firm level and across industry segments. Therefore, pressures exist that bear on firms which are complementary to behavioral cues (e.g. past performance), resource characteristics, and field constraints. This paper contributes to contextualizing strategic management within a broader environment that includes categorization processes used by various audiences to map activities, agents, and industries (Porac and Thomas, 1990). In an industry category such as defense, where the norm violations underlying public attacks have become a central feature of the business as it is perceived by audiences, owing to categorical inference and generalization, the strategic view equating attacks of rivals with business opportunities is not sufficient and needs to be complemented by the categorization perspective proposed here. By providing evidence that firms react to public attacks of rivals in a substantial manner, this paper improves our understanding of how categorization influences strategic positioning in industries (Rao et al., 2005). At the industry level, this points towards an incremental evolution of industry boundaries driven by reactive sequences of attacks and strategic adjustments in response to spillover threats.

A dominant thesis in neo-institutional literature holds that deviant firms are sanctioned by field members (peers, critics, analysts, etc.), suffer illegitimacy discounts, and must accept penalties to retain their participation in a given field (Deephouse and Suchman, 2008). However, while previous works have emphasized the role of critics in shaping industry categories in creative sectors (Rao, Monin, and Durand, 2005; Hsu, Hannan, and Koçak, 2009), this paper shifts attention towards the role of aggressive criticism (rather than constructive critique), and highlights the strategic role of peer organizations in redefining firm and industry boundaries. Specifically, this paper provides evidence that a perceived deviance from norms leads to strategic decisions for other firms in the industry. Whereas past research highlighted a 'brighter' side of paying a tribute – a discount, a downgrade – to

still be accepted as an industry player, our paper emphasizes industry dissociation as an outcome that is likely to alter the identity and strategic positioning of all the firms in the industry. It follows that organizational decisions and industry evolution may not just be shaped by border-patrollers and gate-keepers, as research has shown so far, but also that norm transgressions and their consequences play a fundamental role that has been somehow overlooked by researchers.

This paper is not without limitations. We focus in this article on one core audience, expert defense journalists, as the conveyor belt to broader society. One may need to extend our results with caution to more distal audiences. Because firms in defense industry possess activities in civilian industries, findings are likely to generalize to other industry categories from which it is possible to dissociate at a non-prohibitive cost. However, as is usually the case when the chosen empirical setting is perceived as unusual, one wonders about how far our findings can be generalized to other industry contexts. There is only one way to find out - by pursuing research in a variety of empirical settings, and using different methodologies. However, there are two reasons why we have some confidence that our results will apply elsewhere. First, because of the widespread assumption that the defense industry is immune to public protest and that 'business as usual' will continue whatever happens, our choice of empirical setting is a conservative one with respect to the theory offered here: if public attacks are followed by substantial firm response even in this sector, one might conjecture its effects would be even greater in less hard-bitten contexts. Second, most empirical papers examine one industry within national boundaries, thereby raising the double issue of generalizability to other industries and to other national contexts. Because this paper is based on extensive international data on a global industry, it already addresses half of this problem, which is likely to enhance, rather than decrease, its external validity.

But this paper leaves an important question unaddressed: how do firms that dissociate fare in the longer term – are their chances of surviving and prospering enhanced? One is instinctively

tempted to assume that public attacks are more detrimental to prototypical organizations – but our study shows that prototypicality is likely to evolve over time due to the investments and divestments going on in an around the industry category. Thus, scholars should seriously consider the possibility that certain firms can proactively leverage unexpected peer-stigmatization events to implement change strategies that would otherwise be resisted – and could benefit a lot from it.

# CONCLUSION

The objective of this dissertation was to investigate how firms can strategically deal with disapproval and stigmatization. Because audiences tend to group similar firms in categories to simplify a complex organizational landscape, the stigma associated with stereotypical features tend to spill over to lookalike firms within organizational categories, independent of whether firms actually did something wrong or not (the same is true of stigmatized groups of individuals in micro-level research). Managing disapproval and stigmatization, thus, is not only important for firms that do "bad things" (Mishina et al., 2010), but for firms that risk being associated with them. As a consequence, the relevant strategies for firms interested in decreasing disapproval and containing stigmatization ought to affect the categorical associations inferred by audiences about industry members. While past research has considered that following industry norms was enough to avoid disapproval (Sullivan et al., 2009), and that communication tactics were the key to appeasing public attacks (Sutton and Callahan, 1987), this dissertation proposes a framework that explains why all industry members, rather than the black sheep only, should and can implement a variety of strategies, beyond impression management, to deal with disapproval and stigmatization. In addition, the scope of this work is international, unlike previous accounts, and several methodological advances are suggested to improve measurement of core constructs in social evaluation research beyond national borders.

**Answering the research question**

The question this dissertation seeks to answer is: To what extent can firms strategically influence how industry audiences categorize them, in order to decrease disapproval and contain stigmatization?

Broadly speaking, firms can implement two types of strategies to decrease disapproval and contain stigmatization: anticipation strategies, aimed at decreasing future disapproval, and response strategies, aimed at containing subsequent damage to the focal firm once public attacks have targeted rivals.

In chapter 1, I propose a way to measure and compare disapproval levels over time and across firms. In addition, I show that anticipation strategies such as building ties through certification (e.g., Baum and Oliver, 1992) or adopting (symbolically) a code of ethics fail to improve the social evaluations of firms operating in a contested industry. More effective anticipation strategies can be implemented, though. In chapter 2, I suggest that firms, when associated with a stigmatized category, can decrease disapproval by straddling additional, unstigmatized categories – a phenomenon called stigma dilution. This finding was empirically supported along the three salient dimensions along which global arms producers are categorized (at the output, customer, and home country levels). Importantly, the finding readily explains why one can observe so much variation in disapproval across firms operating in the same industry. Moreover, how salient each dimension is in the eyes of industry audiences appears to be a crucial moderator of the effect of stigma dilution on disapproval. In sum, three sets of phenomena need to be accounted for to predict disapproval: 1/ a firm's categorical associations; 2/ the distribution of stigmas across organizational categories, and 3/ the relative saliency of the dimensions of categorization used by audiences to make sense of the industry structure. Importantly, while the choice of categorical associations falls within the scope of organizational strategic agency (De Rond and Thiétart, 2007, Durand and Vaara, 2009), both the distribution of stigmas and dimension saliency are industry-level properties (Durand, 2006) that no single competitor can influence on its own. Thus, despite the presence of three distinct factors driving disapproval, only one seems to be strategically manoeuvrable in the short-term by a particular firm: categorical associations. Modifying them represents a crucial category-level anticipation strategy not directed at

competition per se, but at broader industry audiences such as rating agencies, expert journalists, or NGOs, all of which mediate the link between firm behavior and its perception among the general public (Durand and McGuire, 2005).

Chapter 3 provides insights about another type of strategies that can mitigate disapproval and stigmatization *ex post*, namely response strategies. The chapter argues that firms threatened by contamination caused by public attacks of rivals engage in a graduated response, and that beyond communication tactics undertake substantive changes in their resource base to influence how audiences categorize them. In the findings, there is ample evidence that more intense attacks trigger more intense industry dissociation. Public attacks thus trigger a response that is heavily influenced by the category-level constraints imposed by the focal firm's stakeholders. Owing to the divestitures implemented as a response, public attacks modify over time the categorical boundaries of the industry at two levels. At the business unit level, it determines who is in and who is out of a particular industry segment, and at the corporate level, it shapes the overall diversification portfolio of firms. Therefore, a firm's ability to respond to public attacks appears to be an important force shaping how selection pressures apply in industries (Durand, 2001).

The combined findings from chapter 1 and 3 show that firm strategies can be more or less effective, depending on whether they are anticipative or responsive. A symbolic adoption of a code of ethics does not decrease disapproval *ex ante*, but industry dissociation implemented has the potential to do so *ex post*, once public attacks has hit the firm's rivals. Although this latter relationship is not tested per se in chapter 3, empirical data seem to suggest that firms implementing industry dissociation are able to decrease disapproval in a short amount of time. The combined insights from chapter 2 and 3 show that diversification can be both a cause and an effect of disapproval. Put differently, the

negative social evaluations granted by industry audiences have a significant impact on the structure of competition at the output level. In contested industries, we may even observe a cyclical pattern: first, public attacks of rivals drive diversification and thus makes industry boundaries more blurry (Rao et al., 2005); second, as disapproval levels decrease, firms can refocus on stigmatized output categories, thereby increasing the future likelihood of public attacks, and so forth. Thus, the industry-level distribution of firm choices across anticipation and response strategies might change over time as industry cycles interact with public attacks cycles.

**Contributions to research streams**

*Strategic management literature.* The first broad contribution of this dissertation concerns the strategic management of disapproval and its effects of corporate trajectories. Public attacks do not touch every firm that deserves social sanction: some firms violate norms without ever being targeted, and attacks often occur without any norm violation (e.g., media bashing campaigns). So the occurrence of attacks is just one of the many impactful contingencies that managers have to deal with, from time to time. This dissertation adds to previous works that highlight the importance of contingency in the trajectories followed by firms (De Rond and Thiétart, 2007; Baum and Korn, 1999). Public attacks force firms to react quickly. In the short term, only a limited set of opportunities are available, so firms that wish to diversify rapidly to dissociate from the tainted industry category may take decisions that are not optimal from a resource-based or transaction cost perspective. Their motivation to diversify does come from economies of scope, and the choice to organize new activities within the same firm cannot be explained by the wish to economize on transaction costs. Facing a contingent series of attacks, firms may simply intend to dilute stigmatized activities in a broader portfolio to regain legitimacy in the short term, as suggested in chapter 3. Thus, public attacks may be a systematic antecedent of diversification that prior diversification research focusing on market

imperfections, international competition, resources, or monitoring cost cannot really explain (Hoskisson and Hitt, 1990). Future research on the antecedents of diversification should include public attacks as a control variable, if not theorize formally about its effects.

By distinguishing anticipation and response strategies, this dissertation adds to the management literature by depicting a time horizon bounded by singularities (e.g., 9/11, waves of public attacks) which have a real impact on the mechanisms underlying strategic decision making. As already argued by others (David, 1985; Zott, 2003), the timing of events is not neutral in strategic management (Teece, Pisano, and Shuen, 1997). Importantly, singularities do not only affect firm-level strategies, but also the causal power of industry-level properties: 9/11, for instance, dramatically modifies the effect of stigma dilution on disapproval via its sudden impact on category saliency (chapter 2). This is consistent with a view of organizational selection as a causal structure that is partly driven by the properties attached to industries, capabilities, or resources, rather than by their intrinsic nature (Durand and Vaara, 2009; Newbert, 2008).

*Organizational evolution literature.* Building on the idea that strategy is about managing and controlling the selection criteria that guide industry evolution (Durand, 2006), this dissertation draws attention to the fact that at any point in time, the selection criteria at work are not only the aggregate outcome of firm, stakeholder, and audience actions, but also that of a series of contingencies. While the timing of their occurrence is largely unpredictable, their consequences and the consequences of the response strategies they trigger seem to be predictable (e.g., chapter 3 shows that more intense attacks trigger more resource-intensive responses). Strategy, thus, does not only require a theory of what firms ought to do under 'normal' conditions (leaving the rest to 'chance' explanation), but also a theory of how chance events impact those normal conditions, how firms can exploit the

opportunities this creates and avoid the pitfalls it generates. Although we do not have any systematic evidence that this is the case, we still suspect that firms might use public attacks of rivals to implement changes not required by it – in other words, to use it as a justification for a desired strategic action that previously lacked a rationale. Public attacks, for instance, may represent a good opportunity for a CEO to convince the board that diversification is necessary, or for a board to fire a CEO asking for too much autonomy.

The conception of strategy implied by this dissertation is thus "evolutionary" (Van de Ven and Poole, 2005) because variation-creating singularities (e.g., 9/11, attacks) are distributed probabilistically along industry trajectories. However, since firms do not anticipate or respond to such singularities in the same way, the variations introduced in an industry environment do not have homogeneous consequences across firms in terms of performance or survival. Clearly, this dissertation grants a larger role to firm strategy than population ecology (Hannan and Freeman, 1977) or theories relying on a blind variation-selection-retention model (Campbell, 1994), because the variations introduced in the environment, while contingent and unpredictable, are not equally dealt with across competitors. From the firms' point of view, such variations are not 'blind' – in fact, each firm might see them in a different light, applying different rules to make sense of what is going on and derive strategic implications. This dissertation also highlights the importance of anticipation strategies, thereby pointing at something else than an adaptive view of strategy (Siggelkow, 2001): because they can anticipate, firms are not just reactive entities adjusting to unforeseen variations.

Finally, this dissertation provides a boundary condition for the idea that strategy is about choosing to align or disalign with selection criteria (Durand, 2006). When something like 9/11 suddenly occurs, who can tell to what extent and in what direction selection criteria are going to change in the short

term? Singularities such as exogenous shocks (affecting all industry members) or public attacks (affecting a subset of industry members) impose a limitation on our ability to define or identify selection criteria, and thus, on the firms' ability to determine their strategy based on their knowledge of those criteria. Should we then adopt a punctuated view of strategy (Tushman and Romanelli, 1985), recognizing that between the occurrences of singularities, selection criteria remain relatively stable? It would probably be a theoretical stretch since not every singularity affects every competitor in an industry – notwithstanding the fact that singularities are enacted upon by competitors in different ways. More broadly, thus, this dissertation implies a view of strategy as a sequence of more or less constrained decisional episodes, whose rational underpinnings are crucially affected by the various contingencies that modify firm- and environment-level properties, including the categories used by industry audiences.

*Categorization literature.* Another important contribution of this dissertation is to categorization research (Fleischer, 2009; Hsu, Hannan, and Koçak, 2009; Pontikes, 2009; Zuckerman, 2000). In fact, the paper goes back to the original insight of Porac et al. (1989) and pursues it in new directions, some of which are identified by Kaplan (2011). While the contribution to categorization research is already exposed in detail at the end of chapters 2 and 3, here I take a step back to sum up its main component. This dissertation depicts the categorical landscape in more complex terms by distinguishing categories (loaded with values) and dimensions of categorization (characterized by varying degrees of saliency). Such complexity is not added to the theoretical picture just for the sake of providing more detailed accounts of what is going on, but because it appears necessary to understand how some firms can benefit from category straddling (Hsu, Hannan, and Koçak, 2009, Zuckerman, 2000), and why association to stigmatized categories is not equally bad for every firm. Importantly, while only Porac and colleagues have previously described the multidimensional nature

of categorization, this dissertation goes further by delving into its evolutionary properties – how it changes over time and why.

Evidence suggests that 9/11 opened avenues for a renewed political discourse that reinforced the preexisting stigmatization of certain categories of countries, rendering customer and home country categorization much more salient in the arms industry, which generated an advantage for some firms and a serious liability for others. Typically, Scandinavian arms producers selling their products regionally ended up with the largest decrease in disapproval after 9/11 (so, interestingly, the main beneficiaries of the U.S.-driven post-9/11 discourse on the clash of civilizations were not U.S. firms, at least not in terms of disapproval). The dissertation's findings on categories have the potential to contribute to research on strategic groups (Peteraf and Shanley, 1997; Ferguson, Deephouse, and Ferguson, 2000) by underlining the probable existence of multiple ways to group firms depending on the point of view adopted. For Peteraf and Shanley (1997), strategic groups exist based on the mutual understanding and recognition among managers. From this perspective, French arms producers may form a strategic group: their managers studied in the same elite schools (e.g., Polytechnique) and have been exposed to the same historical and political developments (e.g., the progressive privatization of the French arms industry since the 1980s). However, adopting the point of view of external audiences may lead to a slightly different distribution of firms across strategic groups. For instance, chapter 2 shows that external audiences such as expert journalists and NGOs group together arms producers with similar customer profiles – and managers are not necessarily aware of that fact, although it clearly affects the disapproval levels of their firms. Thus, independent of whether they are French or not, firms which provide weapons to Malaysia and Indonesia form a strategic group, just as firms which provide weapons to NATO countries. As a consequence, depending on the kind of outcome we wish to study at the strategic group level, it may more useful

to adopt the perspective of a specific industry audience rather than the perspective of managers. In particular, while Durand, Rao, and Monin (2007) argue that a stronger identification with a strategic group increases external evaluations, chapter 3 demonstrates that dissociating from a group may also be a good strategy for firms to increase their external evaluations when they are threatened.

The importance of adopting the point of view of the relevant audience (Mitchell, Agle, and Wood, 1997) is also demonstrated by a careful examination of the consequences of 9/11 on the arms industry. The reaction of remote industry stakeholders, such as politicians, journalists, and the media, had a dramatic impact on the categorical structure of the industry after the 9/11 attacks From a strategic management perspective, it clearly means that competitive advantage or disadvantage can be derived from the ultimate consequences of industry stakeholder reactions to environmental contingencies. In short, no industry is an island. This insight adds to previous works on the institutional determinants of competitive advantage (Oliver, 1997) but emphasizes the role of contingent events in maintaining competitive advantage, rather than that of intentional institutional work.

*Stigmatization literature.* This work also adds to the organizational stigmatization literature (Devers et al., 2009; Hudson, 2008) by showing the interest of conceptualizing stigma as a continuous, rather than binary variable. Selling a few AK-47 to China might be stigmatizing, yes, but selling cluster bombs to North Korea is probably even more stigmatizing – not to mention selling chemical grenades and torture equipment in even larger quantities to even more dreadful dictatorships (if there are any). Stigmatization is thus gradual and occurs along multiple dimensions, because organizational stigmas flourish within organizational categories, themselves distributed along several dimensions. This result connects with the broader literature on social movements, activism, and social protest

(Ingram and Rao, 2004; Lenox and Eesley, 2009; Soule, in press), and future research could profitably explore those connections with more depth. Finally, this dissertation implies a view of stigmatization as an active process led by multiple audiences, suggesting a more dynamic view of stigmatization than in previous accounts (Hudson, 2008; Devers et al., 2009).

**Managerial implications**

Several managerial guidelines emerge from this dissertation. First, not all anticipation strategies for containing disapproval and stigmatization work equally: adopting a code of ethics in a contested industry is interpreted by audiences as lip service. More effective is a careful examination of how the firm is categorized in the industry: if you know who your closest peers are, then you can probably expect similar amounts of disapproval (in the arms industry, it would be your domestic competitors with similar customer profiles and similar diversification scope). Expected levels can be modified by associating with a different set of categories (of customers, for instance). Second, a public attack is not only a bad thing, but also an opportunity to respond strategically. Some attacks deserve more than just a series of press releases denying facts or apologizing. More credible responses are likely to be more effective; they also require more resource involvement. By implementing a categorical analysis of their industry, where firms are classified along the very dimensions used by audiences to generate social evaluations, managers could assess future social evaluation risks and better anticipate disapproval levels. From this angle, in the arms industry, the relevant benchmark for a French firm selling military and civilian aircraft would be the set of firms based in equally peaceful countries, with similar customer profiles, and which are diversified in civilian activities to the same extent (but they would not have to be aircraft manufacturers).

**Limitations**

This dissertation has several limitations that should be mentioned (on top of those already detailed at the end of each chapter). First, the choice of the empirical setting, the global arms industry between 1996 and 2007, may impose some restrictions on the potential for generalizing the results to other contexts or time periods. I chose this setting because of its broad implications for issues that go way beyond business life – political, ethical, and societal. But precisely because of political oversight, ethical considerations, and the involvement of civil society in the industry, some empirical results might be idiosyncratic to this particular industry, though only replication of the studies in different contexts could confirm the sector's specificity.

Second, I wish I could have analyzed more qualitative data and with more depth to support the quantitative findings. Unfortunately, most respondents did not agree to have the interviews recorded, so I was left with incomplete hand-written accounts of my interviews at the end of the field research, rather than with an exhaustive set of transcripts amenable to systematic horizontal and vertical analysis. A nice addendum to this work on stigmatization in the arms industry would have been to conduct finer-grained interviews focusing at the individual level, to understand how arms merchants make sense of their professional identity and project their image to their colleagues, friends, and relatives. A respondent working as an engineer in electronic targeting systems once told me that his job had nothing to do with weapons since he was based in a business unit mostly focused on *defense* systems – while the (bad) guys in the next building were manufacturing *attack* systems. Such a statement, and a few others, made me think there was room for another, more qualitative study of stigmatization and the individual-level defense mechanisms used to embellish one's image. The fact that I was not able to gather enough material on that should not come as a surprise, though, since most qualitative studies of stigmatization bump into similar hurdles: the shadow of stigma tends to

elicit evasive responses or silence among respondents, rather than long, open discussions in the tea room.

More qualitative data would also have helped me unpack the assumption of intentionality underlying some parts of this dissertation. How often are managers truly aware that disapproval is more likely when the firm is classified in category A rather in category B, and that some strategic actions can be undertaken to improve the social evaluations granted by audiences? While advanced econometric modeling has helped overcome this issue with the usual rationale ("too big a correlation to have happened randomly"), it would be interesting in future research to clearly investigate what line of reasoning and strategic thinking is used by managers in stigmatized firms to improve their situation – organizational and personal.

Third, while I am able to observe systematic patterns of firm response to public attacks, I am not yet able to examine their ultimate consequences. Some firms seem more aware than resource-intensive responses are necessary when the attack is intense, but does it really help them in the long run? Do they perform better? Do they fail less often? While intuitively we might be tempted to answer "yes" to all three questions, so far I only have anecdotal evidence to support the claim. Certainly the dataset would require additional years of observations to study the longer-term impact that each type of response to public attacks has on firm trajectories, so I will unfortunately leave those research questions answered at the moment.

**Final word**

Overall, this dissertation adds to the strategy and organization theory literatures by unpacking the anticipation and response strategies available to firms that wish to decrease disapproval and contain

stigmatization. Because external audiences act as providers of disapproval (or lack thereof), and because the latter use categories to make sense of the organizational landscape, the relevant strategies for firms are located at the level of categories: by manipulating categorical associations at the industry and subindustry levels, firms are able to have audiences make more favorable categorical inferences about their social evaluations – independent of whether they are deserved or not.

## SUMMARY OF FINDINGS & CONTRIBUTIONS

**To what extent can firms strategically influence how industry audiences categorize them, in order to decrease disapproval and contain stigmatization?**

| | Chapter 1 | Chapter 2 | Chapter 3 |
|---|---|---|---|
| **QUESTION** | How to measure and compare social evaluations across firms based in different countries within an industry? | What explains cross-firm variation in disapproval? How is disapproval affected by multiple categorical associations across several dimensions in the presence of stigma? | Why do firms differ in their responses to public attacks? What affects how they manipulate the strength of their association to the industry category threatened by contamination? |
| **EMPIRICAL FINDINGS** | • media-based measures of social evaluations perform better than others<br>• international contexts do not prevent comparability of social evaluations across firms within a given field<br>• firm visibility decreases legitimacy in the arms industry<br>• disapproval of arms producers increases significantly after the adoption of a code of ethics | • association to stigmatized categories increases disapproval<br>• arms producers dilute stigma and decrease disapproval by straddling unstigmatized categories<br>• 9/11 increased saliency of country & customer categories but decreased that of industry categories<br>• after 9/11, arms producers less diversified in civilian activities are less disapproved of; those with dodgy customers are more | • firms respond gradually to public attacks of rivals by dissociating from the tainted industry. Sharper attacks lead to more resource intensive responses<br>• more prototypical firms respond more intensively because they face a greater risk of contamination |
| **THEORETICAL CONTRIBUTIONS** | • organizations are not legitimate (or illegitimate) in general, they are legitimate (or illegitimate) *for* something, that is, along a particular dimension.<br>• organizational legitimacy is a theoretical aggregate of four distinct dimensions: environmental legitimacy, competitive legitimacy, accountability legitimacy, and transactional legitimacy<br>• methodological contribution: the (RLV) is a high validity measure that can be used to capture most aspects of symbolic performance | • firms are categorized along a few salient dimensions, each containing several categories, some of which are stigmatized. This explains variations in disapproval.<br>• the effect of category straddling on audience evaluations is contingent upon the values embedded in the straddled categories<br>• stigma dilution is an effective stigma management strategy<br>• diversification has a cognitive dimension since industry categories can be more or less stigmatized | • public attacks are antecedents of organizational change<br>• while public attacks are linguistic events, firm response to the attacks go beyond discourse<br>• firms strategically manipulate their categorical association with an industry to mitigate the negative externalities generated by public attacks within that industry. At an aggregate level, this explains category evolution |

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# TABLES AND FIGURES

**Figure 1.1 – A three step methodology to measure organizational legitimacy: the Raw Legitimacy Vector (RLV)**

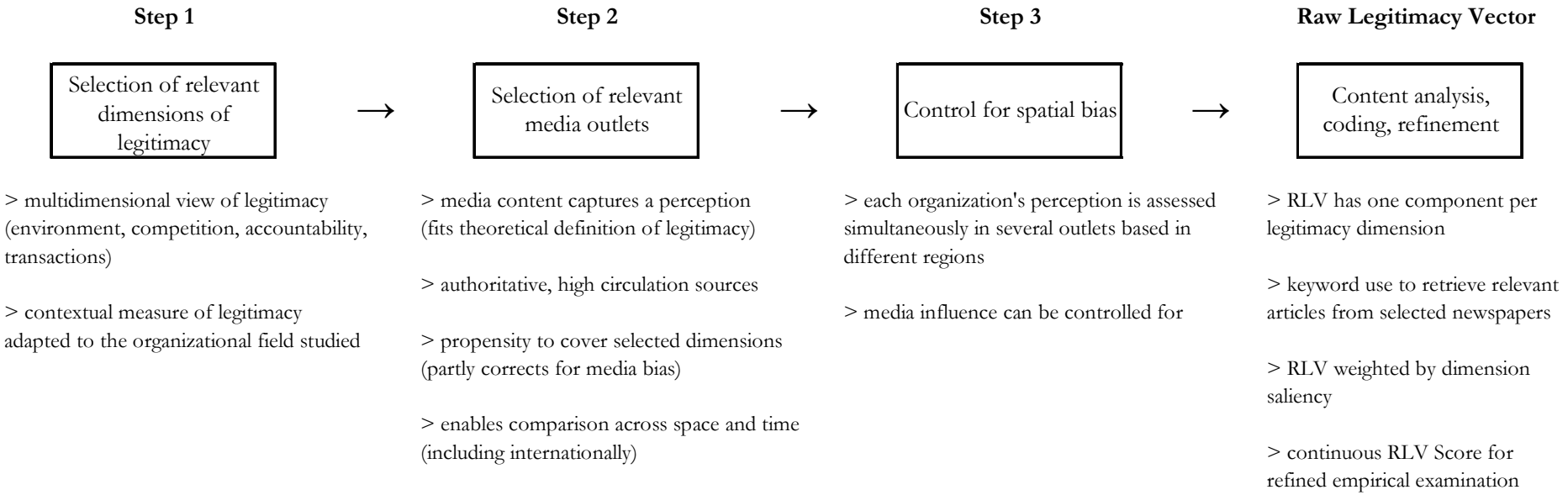


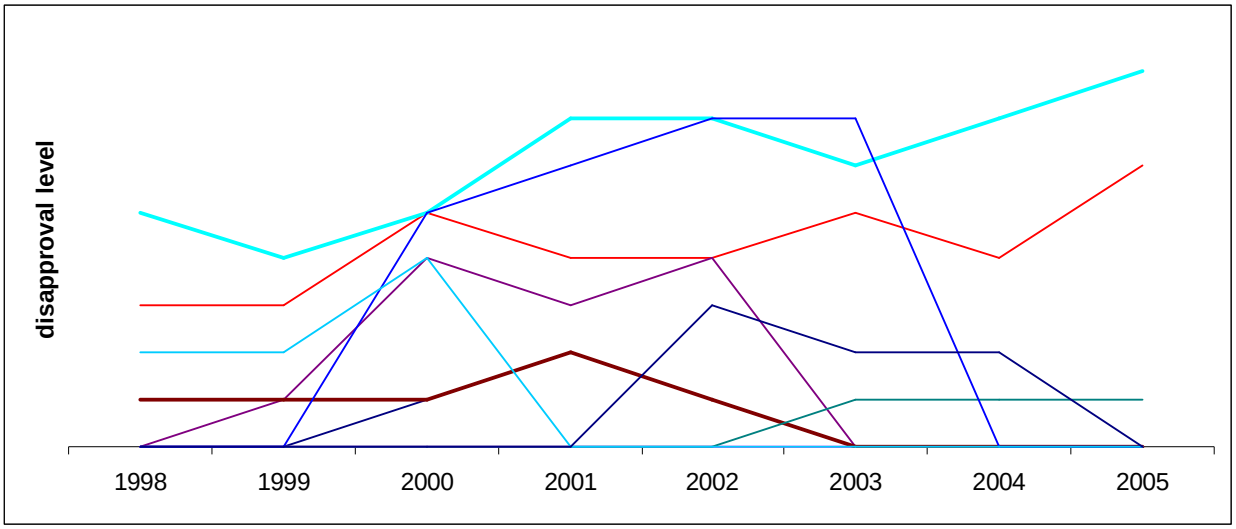
**Table 1.1 – Random effects panel negative binomial regression predicting legitimacy**[a]

| Model | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Age | | .221** | | .165* | | .017 |
| | | (.080) | | (.084) | | (.037) |
| Performance | | 1.12*** | | .980*** | | .103 |
| | | (.346) | | (.358) | | (.111) |
| Conformity | | .790*** | | .556*** | | -.033 |
| | | (.212) | | (.208) | | (.056) |
| Size | | -.260*** | | -.304*** | | -.073*** |
| | | (.054) | | (.061) | | (.017) |
| Research orientation | -.124 | .158 | .299 | .457† | -.310** | -.229* |
| | (.291) | (.279) | (.308) | (.284) | (.100) | (.100) |
| Arms production intensity | -.388*** | -.316*** | -.443*** | -.328*** | -.005 | .020 |
| | (.072) | (.071) | (.072) | (.074) | (.017) | (.018) |
| State ownership | -.640** | -.593* | -.346 | -.465† | .766*** | .692*** |
| | (.235) | (.251) | (.237) | (.247) | (.086) | (.088) |
| Membership ties | .019 | -.104 | .450† | .261 | -.162† | -.127 |
| | (.230) | (.225) | (.255) | (.239) | (.083) | (.084) |
| Year & industry dummies | Included | Included | Included | Included | Included | Included |
| Constant | 3.42*** | 3.60*** | -5.92 | -5.80 | -1.40*** | -1.12*** |
| | (.501) | (.607) | (9.62) | (13.37) | (.152) | (.197) |
| Observations | 2046 | 2046 | 2046 | 2046 | 1629 | 1629 |
| Number of firms | 210 | 210 | 210 | 210 | 206 | 206 |
| Log-likelihood | -1423.01 | -1400.91 | -920.92 | -902.21 | -10293.3 | -10283.5 |
| Wald Chi $^2$ | 87.32*** | 140.94*** | 76.93*** | 122.06*** | 138.14*** | 161.21*** |

[a] As a dependent variable, models 1 and 2 use RLV Score, models 3 and 4 use RLV Score weighted by newspaper circulation, and models 5 and 6 use linkage measure.

† $p<0.1$ * $p<0.05$
** $p<0.01$ *** $p<0.001$

**Figure 2.1 : Persistent cross-firm discrepancies in disapproval within a stigmatized industry***




* The Y axis represents the level of disapproval faced by 15 arms producers randomly selected among the Top50 largest. Only 8 curves are visible as seven firms have not been disapproved of at all during the period of observation. Details about how disapproval is measured can be found in the section on measurement.

**Table 2.1 : Summary of the interviews conducted and respondent characteristics**

| respondent type | # of interviews | # of nationalities | mean years of experience | mean interview length (min) |
|---|---|---|---|---|
| defense economists | 7 | 4 | 5.5 | 52 |
| political scientists | 5 | 3 | 8.3 | 33 |
| international security experts | 6 | 4 | 7.3 | 31 |
| expert journalists | 5 | 4 | 6.4 | 36 |
| industry executives | 21 | 7 | 12.7 | 24 |
| **Total** | **44** | **11** | **8.1** | **36** |

## Table 2.2 – Descriptive statistics and correlation matrix

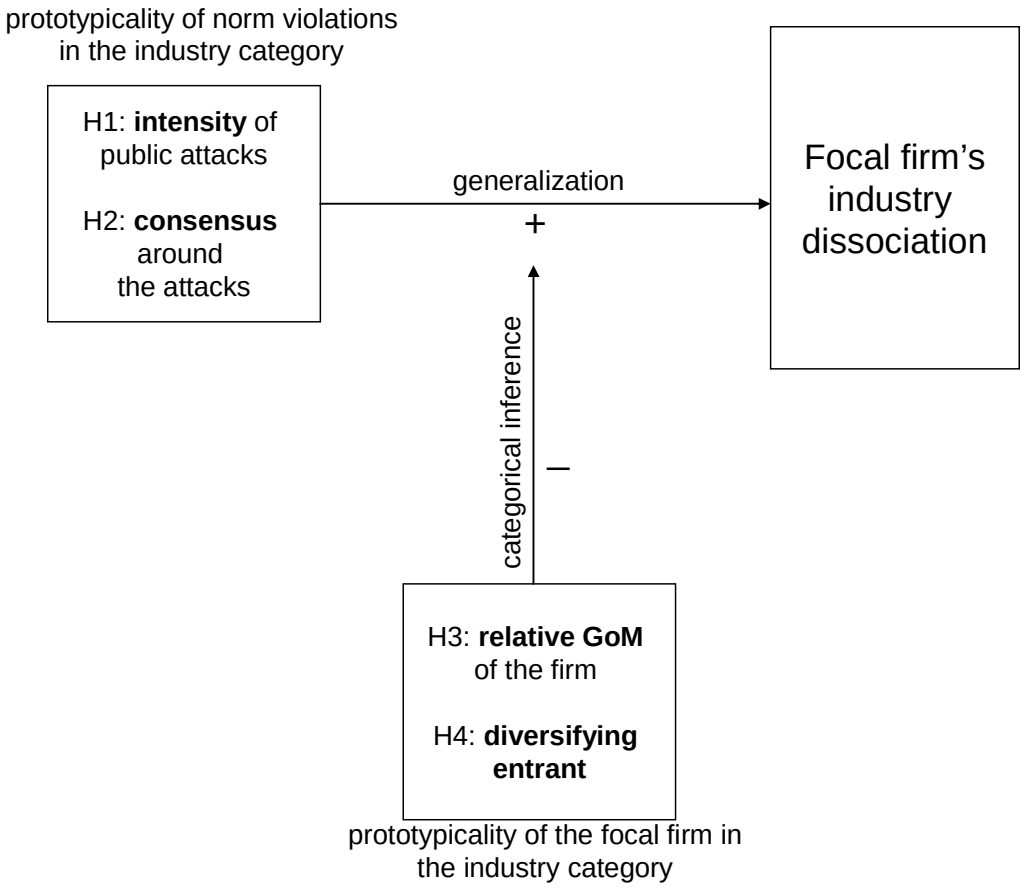
| | | Mean | S.D. | Min | Max | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | disapproval | 0.17 | 0.49 | 0 | 3.43 | 1.00 | | | | | | | | | | | | | | | | |
| **2** | stigma dilution (industry cat.) | 48.25 | 33.38 | 0 | 100.00 | -0.02 | 1.00 | | | | | | | | | | | | | | | |
| **3** | stigma dilution (customer cat.) | 7.93 | 1.98 | 0.40 | 10.00 | -0.28 | 0.22 | 1.00 | | | | | | | | | | | | | | |
| **4** | stigma dilution (country cat.) | 19.77 | 11.17 | 1.53 | 70.93 | -0.03 | -0.07 | -0.12 | 1.00 | | | | | | | | | | | | | |
| **5** | size | 6.13 | 1.55 | 0 | 10.39 | 0.24 | -0.13 | -0.17 | 0.15 | 1.00 | | | | | | | | | | | | |
| **6** | age | 3.65 | 1.06 | 0 | 5.95 | -0.04 | 0.21 | 0.10 | -0.02 | 0.08 | 1.00 | | | | | | | | | | | |
| **7** | performance | 0.03 | 0.12 | -2.20 | 0.70 | -0.08 | 0.01 | 0.03 | 0.02 | 0.08 | 0.10 | 1.00 | | | | | | | | | | |
| **8** | publicly-held | 0.71 | 0.45 | 0 | 1 | -0.01 | 0.36 | 0.17 | 0.19 | 0.08 | 0.05 | 0.05 | 1.00 | | | | | | | | | |
| **9** | lethal | 0.30 | 0.31 | 0 | 1 | 0.00 | -0.17 | -0.20 | -0.11 | 0.05 | -0.07 | -0.02 | -0.16 | 1.00 | | | | | | | | |
| **10** | Research contracts | 0.89 | 0.31 | 0 | 1 | 0.02 | 0.10 | -0.09 | 0.05 | 0.26 | -0.10 | -0.03 | 0.03 | 0.05 | 1.00 | | | | | | | |
| **11** | diversifying entrant | 0.37 | 0.48 | 0 | 1 | -0.02 | 0.39 | 0.15 | 0.00 | 0.05 | 0.48 | 0.03 | 0.23 | -0.15 | 0.01 | 1.00 | | | | | | |
| **12** | military exports | 0.32 | 0.31 | 0 | 3.56 | 0.10 | -0.18 | -0.36 | -0.08 | 0.03 | -0.03 | 0.07 | -0.16 | 0.18 | 0.00 | -0.11 | 1.00 | | | | | |
| **13** | UNSC/NATO | 0.80 | 0.40 | 0 | 1 | 0.00 | -0.02 | 0.05 | 0.01 | 0.07 | 0.08 | 0.00 | 0.09 | -0.06 | -0.05 | 0.09 | 0.02 | 1.00 | | | | |
| **14** | black market | 16.80 | 11.90 | 8.00 | 49.00 | 0.03 | -0.34 | -0.24 | -0.47 | -0.22 | -0.03 | 0.04 | -0.44 | 0.22 | -0.08 | -0.20 | 0.50 | -0.08 | 1.00 | | | |
| **15** | past scandal | 0.06 | 0.23 | 0 | 1 | 0.35 | 0.00 | -0.17 | -0.05 | 0.16 | -0.09 | -0.01 | -0.03 | -0.01 | 0.02 | -0.01 | 0.08 | -0.02 | 0.06 | 1.00 | | |
| **16** | past strategy change | 0.06 | 0.24 | 0 | 1 | 0.05 | -0.01 | -0.04 | 0.02 | 0.00 | -0.03 | -0.08 | -0.03 | -0.02 | 0.01 | 0.01 | 0.00 | -0.01 | -0.03 | 0.02 | 1.00 | |
| **17** | media visibility | 1.93 | 1.45 | 0 | 6.27 | 0.34 | 0.22 | -0.13 | 0.12 | 0.40 | 0.12 | -0.04 | 0.19 | -0.06 | 0.04 | 0.17 | -0.07 | -0.03 | -0.24 | 0.29 | 0.03 | 1.00 |

## Table 2.3 – Hausman-Taylor random-effects GLS regression of disapproval

| | (1) control | (2) | (3) | (4) models testing H1 | (5) | (6) | (7) models testing H2 |
|---|---|---|---|---|---|---|---|
| stigma dilution across | | | | | | | |
| …industry categories | | -0.065** | | | -0.048* | -0.099** | -0.025 |
| | | (0.03) | | | (0.03) | (0.05) | (0.06) |
| …customer categories | | | -0.20*** | | -0.21*** | -0.15*** | -0.29*** |
| | | | (0.02) | | (0.02) | (0.04) | (0.03) |
| …country categories | | | | -0.061** | -0.13*** | -0.11*** | -0.19*** |
| | | | | (0.03) | (0.03) | (0.04) | (0.05) |
| Size | 0.0071 | -0.00095 | -0.0034 | 0.0069 | -0.0098 | -0.0028 | -0.013 |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.02) | (0.03) |
| Age | -0.0050 | -0.0030 | -0.00086 | 0.0098 | 0.025 | 0.032 | 0.10 |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.05) | (0.09) |
| Performance | -0.29*** | -0.27*** | -0.27*** | -0.28*** | -0.24*** | -0.32** | -0.33*** |
| | (0.09) | (0.09) | (0.08) | (0.09) | (0.08) | (0.1) | (0.1) |
| publicly-held | 0.052 | 0.052 | 0.060 | 0.054 | 0.062 | 0.063 | 0.12 |
| | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) | (0.07) | (0.1) |
| lethal weapons | 0.075 | 0.025 | -0.018 | 0.053 | -0.090 | 0.0054 | 0.75* |
| | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.4) |
| research contracts | -0.0014 | 0.017 | -0.032 | 0.0069 | -0.0100 | -0.046 | -0.023 |
| | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) | (0.10) | (0.2) |
| diversifying entrant | -0.065 | -0.012 | 0.037 | -0.16 | -0.084 | 0.032 | -0.18 |
| | (0.1) | (0.1) | (0.2) | (0.1) | (0.2) | (0.2) | (0.3) |
| weapons exports | 0.17** | 0.18** | 0.12* | 0.19*** | 0.15** | 0.30** | 0.0059 |
| | (0.08) | (0.08) | (0.07) | (0.08) | (0.07) | (0.1) | (0.1) |
| UNSC/NATO | 0.0090 | 0.028 | -0.042 | -0.023 | -0.100 | -0.080 | -0.20 |
| | (0.09) | (0.09) | (0.1) | (0.10) | (0.1) | (0.2) | (0.2) |
| black market | -0.0081 | -0.0072 | -0.0058 | -0.013* | -0.016** | -0.016* | -0.031** |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.010) | (0.01) |
| past scandal (6 years) | 0.55*** | 0.55*** | 0.47*** | 0.55*** | 0.46*** | 0.43*** | 0.36*** |
| | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) | (0.09) | (0.09) |
| past strategic change | 0.044 | 0.041 | 0.032 | 0.045 | 0.031 | 0.038 | 0.078 |
| | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) | (0.06) |
| media visibility | 0.15*** | 0.15*** | 0.12*** | 0.16*** | 0.14*** | 0.069 | 0.16*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.05) | (0.06) |
| segment dummies | included | included | included | included | included | included | included |
| region dummies | included | included | included | included | included | included | included |
| year dummies | included | included | included | included | included | included | included |
| Constant | 0.090 | 0.078 | 0.11 | 0.20 | 0.34* | 0.31 | 0.23 |
| | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.3) | (0.4) |
| *N* | 2046 | 2046 | 2046 | 2046 | 2046 | 981 | 1065 |
| chi2 | 275.7 | 282.1 | 358.1 | 279.5 | 381.7 | 115.8 | 175.4 |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Coefficients on variables implying firm-level decision-making were estimated using instrumental variables to correct for potential endogeneity.

**Figure 3.1: Model summary, mechanisms, and hypotheses**



## Table 3.1 – Descriptive statistics and correlation coefficients

| | Variable name | Mean | SD | Min | Max | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | industry dissociation | 0.11 | 0.36 | 0 | 3 | 1.00 | | | | | | | | | | | | | | | | | | |
| 2 | public attacks of rivals | 85.4 | 34.2 | 17 | 152 | 0.05 | 1.00 | | | | | | | | | | | | | | | | | |
| 3 | public attacks of focal firm | 0.44 | 1.34 | 0 | 16 | 0.09 | 0.07 | 1.00 | | | | | | | | | | | | | | | | |
| 4 | diversifying entrant | 0.35 | 0.48 | 0 | 1 | 0.12 | 0.00 | 0.00 | 1.00 | | | | | | | | | | | | | | | |
| 5 | age | 3.71 | 1.12 | 0 | 5.63 | -0.06 | 0.08 | 0.03 | -0.23 | 1.00 | | | | | | | | | | | | | | |
| 6 | size | 5.71 | 2.06 | 0 | 10.39 | 0.12 | 0.28 | 0.17 | 0.07 | 0.18 | 1.00 | | | | | | | | | | | | | |
| 7 | performance | 0.03 | 0.11 | -2.2 | 0.7 | 0.00 | 0.09 | -0.03 | 0.04 | 0.04 | 0.08 | 1.00 | | | | | | | | | | | | |
| 8 | internationalization | 20.7 | 32 | 0 | 100 | -0.12 | 0.02 | -0.14 | -0.09 | -0.04 | -0.10 | 0.04 | 1.00 | | | | | | | | | | | |
| 9 | research | 0.85 | 0.36 | 0 | 1 | 0.08 | 0.00 | -0.03 | 0.06 | -0.03 | 0.09 | -0.04 | -0.18 | 1.00 | | | | | | | | | | |
| 10 | manufacture | 0.87 | 0.33 | 0 | 1 | -0.05 | 0.02 | 0.01 | 0.02 | 0.13 | 0.02 | 0.04 | -0.06 | -0.09 | 1.00 | | | | | | | | | |
| 11 | subsystems production | 0.43 | 0.5 | 0 | 1 | 0.01 | -0.02 | -0.03 | 0.15 | -0.33 | -0.07 | 0.03 | 0.06 | -0.05 | -0.29 | 1.00 | | | | | | | | |
| 12 | publicly-held | 0.71 | 0.47 | 0 | 1 | 0.13 | 0.01 | 0.03 | 0.22 | -0.17 | 0.11 | 0.06 | -0.08 | 0.06 | 0.00 | 0.24 | 1.00 | | | | | | | |
| 13 | ownership change | 0.03 | 0.16 | 0 | 1 | -0.03 | 0.03 | 0.00 | -0.02 | -0.02 | 0.00 | -0.02 | 0.06 | -0.02 | -0.02 | 0.03 | 0.06 | 1.00 | | | | | | |
| 14 | name change | 0.04 | 0.18 | 0 | 1 | -0.04 | 0.08 | 0.05 | 0.12 | 0.10 | 0.03 | -0.04 | 0.05 | -0.05 | 0.01 | -0.19 | -0.06 | 0.01 | 1.00 | | | | | |
| 15 | black market economy | 16.8 | 11.9 | 8 | 49 | 0.16 | -0.02 | 0.01 | 0.20 | -0.11 | 0.18 | -0.04 | -0.23 | 0.10 | -0.19 | 0.34 | 0.44 | 0.07 | -0.21 | 1.00 | | | | |
| 16 | CEO experience | 0.51 | 0.82 | 0 | 4 | -0.04 | 0.04 | 0.01 | -0.11 | 0.12 | -0.03 | 0.02 | 0.05 | -0.18 | 0.01 | -0.12 | -0.24 | -0.02 | -0.03 | -0.14 | 1.00 | | | |
| 17 | political pressures | 0.07 | 0.25 | 0 | 1 | 0.12 | 0.02 | 0.28 | -0.01 | 0.02 | 0.13 | -0.04 | -0.17 | 0.02 | 0.06 | -0.06 | -0.01 | -0.01 | -0.04 | -0.03 | 0.05 | 1.00 | | |
| 18 | reorganization | 0.05 | 0.23 | 0 | 1 | 0.02 | -0.02 | 0.06 | -0.01 | -0.01 | 0.08 | -0.04 | -0.03 | 0.03 | 0.00 | 0.03 | -0.02 | -0.03 | 0.04 | 0.05 | 0.00 | 0.06 | 1.00 | |
| 19 | consensus | 0.24 | 0.18 | 0.14 | 0.63 | 0.00 | -0.33 | -0.04 | -0.01 | -0.08 | -0.49 | -0.03 | -0.03 | 0.00 | -0.02 | 0.02 | -0.02 | -0.03 | -0.08 | 0.01 | -0.01 | -0.04 | -0.07 | 1.00 |
| 20 | relative GoM | 0.28 | 0.16 | 0 | 0.66 | -0.07 | 0.02 | -0.09 | 0.06 | -0.04 | -0.17 | 0.00 | 0.13 | -0.11 | 0.05 | 0.14 | 0.10 | 0.03 | 0.14 | -0.24 | 0.07 | -0.09 | -0.05 | -0.01 |

**Table 3.2 – Two-way clustered ordered logistic (1-4) and FGLS (5) regressions of industry dissociation**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Public attacks of rivals | 0.015*** | 0.019*** | 0.021*** | 0.023*** | 0.0017*** |
| | (0.003) | (0.005) | (0.004) | (0.004) | (0.001) |
| Consensus | | 2.79** | 2.79** | 2.81** | 0.29** |
| | | (1.296) | (1.138) | (1.172) | (0.132) |
| …X relative GoM | | | -0.0082** | -0.0074** | -0.0014** |
| | | | (0.003) | (0.003) | (0.001) |
| …X diversifying entrant | | | | -0.0028** | -0.000036 |
| | | | | (0.001) | (0.000) |
| Public attacks of focal firm | 0.035*** | 0.037*** | 0.084*** | 0.086*** | 0.0084** |
| | (0.009) | (0.010) | (0.006) | (0.004) | (0.004) |
| Relative GoM | -0.48 | -0.43 | -0.34 | -0.33 | -0.020 |
| | (0.600) | (0.611) | (0.612) | (0.614) | (0.043) |
| Diversifying entrant | 0.58** | 0.55** | 0.60** | 0.62** | 0.12*** |
| | (0.203) | (0.224) | (0.234) | (0.249) | (0.022) |
| Age | -0.20** | -0.22** | -0.22*** | -0.22*** | -0.043** |
| | (0.065) | (0.070) | (0.066) | (0.067) | (0.018) |
| Size | 0.013 | 0.066* | 0.061* | 0.062* | 0.016** |
| | (0.028) | (0.036) | (0.036) | (0.036) | (0.006) |
| Publicly-held | 0.64** | 0.64** | 0.63** | 0.62** | 0.052** |
| | (0.226) | (0.245) | (0.249) | (0.251) | (0.027) |
| Performance | -1.22** | -1.33** | -1.30** | -1.36** | -0.045 |
| | (0.559) | (0.599) | (0.576) | (0.545) | (0.086) |
| Internationalization | -0.016*** | -0.015*** | -0.015*** | -0.015*** | -0.00092** |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.000) |
| Subsystems production | -0.43* | -0.42* | -0.43 | -0.42 | -0.046* |
| | (0.257) | (0.258) | (0.265) | (0.269) | (0.025) |
| Research | 0.96*** | 0.94*** | 0.96*** | 0.97*** | 0.059 |
| | (0.119) | (0.121) | (0.115) | (0.115) | (0.045) |
| Manufacture | -0.75*** | -0.74*** | -0.78*** | -0.79*** | -0.095** |
| | (0.129) | (0.126) | (0.114) | (0.112) | (0.036) |
| CEO experience | -0.00059 | -0.0083 | -0.00013 | 0.0011 | 0.0035 |
| | (0.045) | (0.049) | (0.050) | (0.049) | (0.008) |
| Ownership change | -0.92*** | -0.90*** | -0.90*** | -0.93*** | -0.031 |
| | (0.085) | (0.110) | (0.114) | (0.111) | (0.042) |
| Name change | -0.19** | -0.19*** | -0.20*** | -0.20*** | -0.023** |
| | (0.060) | (0.055) | (0.061) | (0.058) | (0.011) |
| Reorganization | -0.100 | -0.066 | -0.11 | -0.091 | -0.0018 |
| | (0.130) | (0.120) | (0.136) | (0.139) | (0.028) |
| Political pressures | 0.92* | 0.88* | 0.88 | 0.88 | 0.073** |
| | (0.510) | (0.524) | (0.553) | (0.566) | (0.030) |
| Black market economy | -0.13** | -0.13** | -0.13** | -0.13** | 0.010*** |
| | (0.052) | (0.054) | (0.053) | (0.053) | (0.003) |
| Subindustry dummies | Included | included | included | included | included |
| Year dummies | Included | included | included | included | included |
| Cut point 1 (or Constant) | 13.9*** | 15.7*** | 16.0*** | 16.2*** | -0.93*** |
| | (4.221) | (3.693) | (3.633) | (3.623) | (0.267) |
| Cut point 2 | 16.1*** | 17.9*** | 18.2*** | 18.4*** | |
| | (4.133) | (3.635) | (3.569) | (3.557) | |
| Cut point 3 | 18.4*** | 20.3*** | 20.6*** | 20.8*** | |
| | (4.421) | (3.790) | (3.757) | (3.757) | |
| Observations | 1993 | 1993 | 1993 | 1993 | 1993 |
| Region clusters | 6 | 6 | 6 | 6 | n/a |
| Firm clusters | 203 | 203 | 203 | 203 | 203 |
| Adjusted $R^2$ (Wald Chi2) | 17.2 | 17.4 | 17.8 | 17.9 | 273*** |

Standard errors in parentheses. * p<.1, ** p<.05, *** p<.001

# APPENDIX 1

**Sample items**

A sample item for the environmental legitimacy dimension is "Many observers are concerned about *Firm Inc.* factory's radioactive discharges". A sample item for the accountability legitimacy dimension is "*Firm Inc.* is suspected of passing untraceable revenues to a foreign subsidiary". A sample item for the competitive legitimacy dimension is "Last year, *Firm Inc.* orchestrated a smear campaign to harm *Company Ltd*'s business." A sample item for the transactional legitimacy dimension is "A *Firm Inc.* manager received a payment in cash to favor an applicant in the recruitment process." A sample item for reputation is "*Firm Inc.* still needs to improve its customer service."

**Respondent categories**

Our respondents included executives who graduated from three different leading business schools (n=76) and scholars with an expertise in institutional theory (n=28). A third of our respondents had a non-European, non-North-American nationality. We conducted two series of 15 t-tests to compare mean scores on each item-dimension across groups of respondents (scholars vs. executives, Europeans & North-Americans vs. non-Europeans, non-North-Americans). We found significant differences in mean scores at the 5% level in only 6.6% of the tests. Only one difference was significant at the 1% level (i.e., "*Firm Inc.* has been working hard to reach a state of monopolistic domination" had a larger score among Europeans & North-Americans along the competitive dimension). These results demonstrate two important things. First, RLV is equally meaningful to institutionalists and practitioners. Second, it is very reasonable to assume that RLV enables comparison across space (e.g., across countries) within a given organizational field.

**Results of factor analyses**

Table 1.2a below reports the fit statistics of the three CFAs conducted for validity assessment.

**Table 1.2a – Fit statistics for proposed and alternative models**

| Model | $\chi^2$ | *df* | CFI | NFI | RMSEA | AIC | BIC |
|---|---|---|---|---|---|---|---|
| *Convergent validity* | | | | | | | |
| Proposed 4-factor | 62.4 | 48 | 0.989 | 0.954 | 0.059 | 122 | 196 |
| Alternative one-factor | 1050.3 | 57 | 0.235 | 0.236 | 0.448 | 1092 | 1144 |
| *Discriminant validity* | | | | | | | |
| 4-factor with reputation | 105.4 | 80 | 0.982 | 0.931 | 0.060 | 185 | 284 |

*Note.* CFA=comparative fit index; NFI=normed fit index; RMSEA=root mean square error of approximation; AIC=Akaike information criterion; BIC=Bayes information criterion. In the proposed 4-factor model, correlations between factors range from -0.4 (between environmental and accountability dimensions) and 0.04 (between competitive and accountability dimensions). Factor item loadings are all significant ($p<.001$) and range from .79 to .98.

Table 1.2b and 1.2c below report the factor loadings for the EFAs. Fabrigar et al. (1999) advise the use of maximum-likelihood factor analysis when the variables' skewness and kurtosis statistics are inferior to 2 and 7, respectively. In our data, skewness never exceeds 1 and kurtosis never exceeds 2.4. We used an oblique rotation of the factor matrix, which does not assume factor orthogonality. We used a scree test and the Kaiser criterion to select the number of factors.

**Table 1.2b – Convergent validity estimates of factor loadings for RLV**

| item | environmental legitimacy | accountability legitimacy | competitive legitimacy | transactional legitimacy |
|---|---|---|---|---|
| e1 | **0.91** | -0.10 | -0.10 | -0.06 |
| e2 | **0.87** | -0.13 | -0.14 | -0.11 |
| e3 | **0.92** | -0.07 | -0.10 | -0.04 |
| a1 | -0.14 | **0.91** | -0.08 | -0.02 |
| a2 | -0.16 | **0.91** | -0.01 | -0.04 |
| a3 | -0.05 | **0.93** | 0.06 | 0.03 |
| c1 | -0.06 | 0.01 | **0.90** | -0.09 |
| c2 | -0.10 | 0.05 | **0.93** | -0.01 |
| c3 | -0.09 | -0.08 | **0.91** | 0.04 |
| t1 | -0.08 | -0.01 | 0.02 | **0.91** |
| t2 | -0.07 | 0.05 | 0.05 | **0.91** |
| t3 | -0.11 | -0.06 | -0.04 | **0.89** |

*Note.* Variance explained=92%. Loadings above 0.4 are reported in bold.

**Table 1.2c – Factor loadings for the EFA of RLV and reputation items**

| Item | environmental legitimacy | accountability legitimacy | competitive legitimacy | transactional legitimacy | reputation |
|---|---|---|---|---|---|
| e1 | **0.60** | -0.32 | -0.32 | -0.27 | 0.12 |
| e2 | **0.60** | -0.30 | -0.34 | -0.29 | 0.10 |
| e3 | **0.61** | -0.30 | -0.33 | -0.28 | 0.15 |
| a1 | -0.23 | **0.82** | -0.11 | -0.18 | 0.22 |
| a2 | -0.22 | **0.84** | -0.10 | -0.08 | 0.17 |
| a3 | -0.17 | **0.82** | -0.10 | -0.04 | 0.24 |
| c1 | -0.12 | -0.12 | **0.80** | -0.11 | 0.34 |
| c2 | -0.14 | -0.06 | **0.81** | -0.15 | 0.29 |
| c3 | -0.03 | -0.14 | **0.82** | -0.07 | 0.31 |
| t1 | -0.24 | -0.12 | -0.20 | **0.83** | 0.15 |
| t2 | -0.24 | -0.06 | -0.14 | **0.81** | 0.20 |
| t3 | -0.12 | -0.07 | 0.01 | **0.82** | 0.06 |
| r1 | 0.27 | -0.01 | 0.01 | 0.07 | **0.81** |
| r2 | -0.08 | -0.05 | -0.18 | -0.09 | **0.92** |
| r3 | **0.92** | **0.44** | **0.40** | 0.35 | 0.17 |

*Note*. Variance explained=88.7%. Loadings above 0.4 are reported in bold.

Note: A pre-test of the survey led to a modification of the dimensional structure of legitimacy, from five to four dimensions, since what were originally called the "ethics" and "social" dimensions did not appear empirically distinguishable in factor analyses, and so were grouped together into the "transactional" dimension.

As a robustness check, each of the four legitimacy dimensions was forced to stand alone in a separate factor, and instead the reputation dimension was included in the legitimacy construct. These additional four models fitted the data poorly. Other model specifications (e.g., with three factors) can be investigated in the future if further theory development suggests new alternatives.

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## PLAYING WITH FIRE: CATEGORY-LEVEL STRATEGIES FOR DEALING WITH PUBLIC DISAPPROVAL. THE CASE OF THE GLOBAL ARMS INDUSTRY (1996-2007)


### Summary

Using qualitative and quantitative data, this dissertation investigates the anticipation and response strategies used by firms to deal with public disapproval and stigmatization. External audiences rely on organizational categories to make sense of the industry landscape. Categories are combinations of linguistic, symbolic, and substantive features that shape how social evaluations, positive or negative, are conveyed. Thus, association to certain categories can increase or decrease disapproval levels, and so can category straddling. To decrease future disapproval levels, firms can manage strategically the categories with which audiences associate them. Specifically, in the global arms industry, the categories that matter most are located at the home country, customer, and output levels. However, anticipation strategies are not always enough. Firms can be targeted by corporate scandal, a very stigmatizing form of disapproval. The dissertation demonstrates that in such cases firms implement response strategies that also modify categorical associations at the industry level, with the aim of loosening the ties that connect the targeted firm to the scandal, and the scandal to the rest of the firm's partners in the industry. The dissertation contributes to strategy and organization theory, especially to research streams on industry evolution, categorization, and stigmatization.



**Keywords**: international strategy, disapproval, scandal, categories, stigma


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## JOUER AVEC LE FEU: STRATEGIES CATEGORIELLES POUR FAIRE FACE A LA DESAPPROBATION PUBLIQUE. LE CAS DE L'INDUSTRIE DES ARMES DANS LE MONDE (1996-2007)


### Résumé

A partir de données qualitatives et quantitatives, cette thèse examine les stratégies d'anticipation et de réaction que les firmes peuvent mettre en place pour faire face à la désapprobation publique et à la stigmatisation. Les audiences externes se reposent sur des catégories organisationnelles pour se repérer dans une industrie. Ces catégories sont des combinaisons d'éléments linguistiques, symboliques et substantiels qui façonnent la manière avec laquelle les évaluations sociales – positives et négatives – sont relayées par les audiences. Ainsi, le fait d'être associé à certaines catégories peut accroître ou décroître le niveau de désapprobation, et il en va de même pour les associations hybrides. Pour décroître leur niveau futur de désapprobation, les entreprises peuvent manipuler stratégiquement les associations catégorielles utilisées par les audiences. Spécifiquement, dans l'industrie des armes, les catégories qui comptent se situent au niveau des Etats d'origine des firmes, de leur portefeuille client et de leur production industrielle. Parfois, les stratégies d'anticipation ne suffisent pas, notamment lorsque la firme est touchée par un scandale – une forme particulièrement stigmatisante de désapprobation. Cette thèse démontre qu'en cas de scandale, les firmes utilisent également des stratégies de réaction qui modifient aussi leurs associations catégorielles au niveau de l'industrie, avec l'objectif de desserrer les liens qui les associent au scandale, et qui associent le scandale à leurs partenaires au sein de l'industrie.



**Mots-clés**: stratégie internationale, désapprobation, scandale, catégories, stigmate