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Organizational reputation and risk regulation: The effect of reputational threats on agency scientific outputs

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This article aims to explain the variation in the scientific risk assessments conducted by two regulatory agencies: the European Food Safety Authority (EFSA) and the French Agency for Food, Environmental and Occupational Health and Safety (ANSES). To explain the merits of scientific risk assessments that have caused polarization within the EU, this article draws on bureaucratic reputation theory. The theory argues that regulators are political organizations that are active in protecting their unique organizational reputations. The findings obtained from interviews, direct observations, and primary documents yield support for this framework: depending on reputational threats, agencies choose to emphasize either their role as guardians of the prevailing social values, or send strong professional signals by delivering a scientifically rigorous risk assessment.

1 | INTRODUCTION

Scientific risk assessments are designed to provide an analytical instrument for assessing scientific knowledge regarding potential hazards to humans and the environment (Peel 2010). For this reason, risk assessors' duties are deemed to be a highly scientific pursuit, predominantly rooted in the technical-instrumental use of scientific knowledge and technical data. However, the regulation of risks and hazards is highly polarized. Scholars observe that regulatory agencies' scientific practices—that is, the ways in which scientific knowledge is used in risk assessments—vary considerably (Jasanoff 1995; Rothstein et al. 1999; Rimkutė 2015, 2016). The debates between independent regulators become even more heated when it comes to environmental, chemical or foodstuff policy-making (Lodge and Wegrich 2011; Lofstedt and Schlag 2017). For instance, independent regulatory agencies take a different scientific stance on pesticides, endocrine disruptors, air pollutants, and genetically modified organisms.

More recently, heated debates have emerged among independent regulators taking contrasting positions on the Bisphenol A (BPA) issue, where one group of regulators argues for a stringent regulatory approach while another

group suggests that BPA is safe for all consumer groups (Lofstedt and Schlag 2017). Bisphenol A is a chemical substance widely deployed in food contact materials. It has been a matter of concern to national and supranational regulators for several years, as BPA is linked to an increased risk of a variety of medical conditions including obesity, diabetes, cardiovascular disease, immune system dysfunction, neurodevelopmental disease, and reproductive disorders. In recent years, the risk assessments and risk management practices of BPA have been marked by substantial incompatibilities between different regulators in the EU. France, for instance, introduced a law suspending the use of all food packaging containing BPA. Such a precautionary stance towards BPA was not introduced in any other member state and contradicts the formal stance of EU-level regulators. As a response to this, several member states—the Czech Republic, Spain, the Netherlands, and the UK—formally expressed their concerns about the creation of unjustified barriers between member states.

At the core of these regulatory divergences is a lack of scientific consistency among independent regulatory agencies, which, in turn, resulted in the introduction of conflicting regulatory measures. In January 2015, the European Food Safety Authority (EFSA) developed a scientific opinion on the risks to public health related to the presence of BPA in foodstuffs. EFSA experts concluded: 'BPA poses no health risk to consumers of any age group (including unborn children, infants, and adolescents) at current exposure levels' (EFSA 2015a). On the contrary, the risk assessment of the French Agency for Food, Environmental and Occupational Health and Safety (ANSES) concluded that under certain conditions, the exposure of pregnant women to BPA could potentially pose a risk to the foetus (ANSES 2011). ANSES suggested that the current regulation of BPA was insufficient, that is, more stringent regulatory actions should be taken to protect consumers.

Both independent regulatory agencies—EFSA and ANSES—had high scientific capacities to produce scientific risk assessments. They both dealt with the same scientific uncertainties as they drafted their risk assessments simultaneously. However, despite the similarities in scientific uncertainties and capacities to assess the risks of BPA, the two regulatory agencies arrived at opposing scientific conclusions. This, in turn, raises the question: what explains the substantial variation in the scientific risk assessments across two highly reputable regulatory agencies?

Given the increasing relevance of regulatory agencies in risk governance, this study proposes an explanation of how risk regulators cope with their key duties of delivering scientific advice to political organizations. Scholars in the field have observed that scientific knowledge and technical expertise can have many functions in regulatory politics (Schrefler 2010; Rimkutė 2015). However, endeavours to examine the ways in which scientific knowledge is used in risk assessments, as well as how technical expertise is advanced by regulatory agencies, have been scarce due to the limitations (1) in the conceptualization of diverse strategies to utilize scientific knowledge, and (2) the theorization of explanatory factors that account for variance in scientific risk assessments (Schrefler 2010; Rimkutė 2016).

The aim of this article is to address these research gaps by drawing on bureaucratic reputation theory. This theoretical approach offers novel insights into the context of European agency governance, the politics of risk regulation, as well as the debates on the role of scientific knowledge in regulatory politics. It does so by providing a set of assumptions, concepts, and causal explanations of how and to what extent regulatory agencies—deemed to be highly technical and primarily scientific bodies—secure their organizational reputation vis-à-vis conflicting audiences by altering their scientific risk assessments. More specifically, bureaucratic reputation theory regards regulatory agencies as politically conscious organizations that are active in protecting their unique and distinct reputations in the polity (Carpenter 2001, 2010; Maor 2007, 2011; Gilad and Yogev 2012; Maor and Sulitzeanu-Kenan 2013). To that end, agencies can engage in adaptive, strategic or even opportunistic activities if they perceive such actions as helping to gain, re-establish or maintain good bureaucratic reputations (Maor 2015). Agencies can adjust their bureaucratic and scientific practices to manage and influence the way in which regulatory audiences assess their success in carrying out regulatory roles and delivering scientific outputs (Maor et al. 2012; Gilad et al. 2013). In a similar vein, regulatory agencies are expected to carefully construct the content of their scientific risk assessments in order to advance their standing in a policy arena or protect themselves from external pressures. For instance, if agencies anticipate that their role as a guardian of social values (e.g., public health) is more important than their

technical-scientific conduct, they will rather focus on providing regulatory outputs that send strong protectionist signals instead of sending strong professional signals.

In addition to the intended conceptual and theoretical contribution, the study aims to shed light on the merits of scientific risk assessments that lay the basis for the polarization of risk management practices. It highlights that risk assessments, adopted as a foundation for risk-related decision-making, are highly controversial (Peel 2010; Rimkutė 2016). Even though risk-based regulation is designed to manage risks for people and the environment, it may also have unintended consequences (Rothstein et al. 2006b). For instance, regulatory agencies may exclusively focus on problems that are marked by high reputational threats to themselves, rather than on the risks that carry high threats to society. By doing so, they can exhibit bias in the use of the available scientific evidence to substantiate certain regulatory policy directions. The empirical findings of this study support the core conclusions of scholars in the field: the growing emphasis on scientific risk assessments can be explained not only by their analytical function, but also by their relevance as a symbol of rational decision-making (Rothstein et al. 2012, p. 217). Even though regulatory agencies are deemed to offer a scientific basis for common regulatory standards, at times agencies' scientific risk assessments can be considered to be valuable, irrespective of their actual scientific, technical, or methodological contributions.

This article is organized as follows: first, the theoretical arguments and expectations are introduced, followed by the discussion of how these propositions are approached empirically. Next, the article engages in the empirical analysis of two risk assessments of BPA that were highly contradictory between two regulatory agencies. By focusing on these controversies in the simultaneously conducted scientific risk assessments, the article investigates the conditions under which the two risk assessments were conducted. Finally, the article concludes with a brief discussion of the key implications of the findings for our understanding of scientific risk assessments.

2 | THEORETICAL APPROACH: BUREAUCRATIC REPUTATION, REGULATORY AGENCIES AND RISK REGULATION

Reputational scholars have demonstrated that bureaucracies may act in the pursuit of a good organizational reputation because successful endeavours to foster good reputations are argued to bring many benefits to bureaucratic agencies (Carpenter 2001, 2010; Maor 2007, 2011; Gilad 2008, 2009; Carpenter and Krause 2012; Maor and Sulitzeanu-Kenan 2013). The successful management of unique bureaucratic reputations may generate public support, it may foster agencies' autonomy and discretion from political superiors, it can also shield the agency from political controls and attacks (Carpenter 2002, p. 491; Maor et al. 2012) and increase the relative influence of agencies (Nicholson-Crotty and Miller 2012). As a result, regulatory agencies are careful in assessing and selectively responding to reputational threats that can potentially harm their distinctive organizational reputation.

The concept of 'reputational threats' refers to 'threats to regulatory organizations and/or the legitimacy of rules and methods of regulation' (Rothstein et al. 2006a, p. 91). Gaining, maintaining and enhancing legitimacy is particularly pertinent to regulatory agencies, as it ensures that their rules and standards that are produced are followed by those who are regulated (e.g., industry) and appreciated by those who are affected (e.g., consumers). However, cultivating legitimacy is a difficult task, as regulatory agencies have to carefully construct their practices to shape the way in which their multiple audiences assess their regulatory activities (Maor et al. 2012). Legitimacy is therefore a product of successful reputation management by selectively responding to various reputational threats.

Agencies' 'selective response' to reputational threats has been explored in terms of behavioural variation regarding regulators' decision-making processes (Carpenter 2002; Gilad 2009; Gilad and Yogev 2012; Maor and Sulitzeanu-Kenan 2013), policy and regulatory outputs (Krause and Douglas 2005; Maor and Sulitzeanu-Kenan 2015), communication activities (Maor 2011; Maor et al. 2012; Gilad et al. 2013), and inter-agency cooperation and accountability (Busuioc and Lodge 2015; Busuioc 2016). However, the core duties of risk regulators—that is, the provision of independent risk assessments—have not received attention from scholars in the field. To date, there has been very little, if

any, research carried out on agency scientific outputs vis-à-vis reputational literature that could speak to the question of 'how do reputational threats affect the scientific conduct and outputs of regulatory agencies?' This neglect is notable, given the rapid processes of agencification and the growing role of risk assessors that are formally sustained by referring to the need for more science-based risk governance. To that end, this study addresses this research gap by exploring how bureaucratic reputation theory can account for variations in scientific risk assessments. More specifically, the article assesses the potential of reputation theory to explain the patchy patterns of scientific risk assessments produced by different regulatory agencies working on the same risks and hazards.

2.1 | How do risk regulatory agencies manage their bureaucratic reputation?

The intended contribution of this section is to discuss and define the ways in which scientific risk assessment can be conducted, that is, what latitude regulatory agencies hold to manoeuvre in preserving and cultivating their reputation in terms of their scientific outputs. To that end, the study draws on the 'reputation uniqueness' concept that is used to identify the excepted roles (e.g., independent scientific experts, guardians of social welfare) and distinct contribution of risk regulators (the explanandum of the study).

Reputation refers to a distinctive characteristic of an organization that differentiates it from other similar organizations in the polity and emphasizes the agency's exclusive character and unique regulatory activities. Upon the establishment of a regulatory agency, the reputation that agency is given has to be nurtured by engaging in various reputation-balancing and protection tactics (Maor 2011; Gilad and Yogev 2012; Maor et al. 2012). The enhancement and maintenance of its unique reputation depend on the agency's functions and actions being widely acknowledged on the basis of its distinct performance (Carpenter 2010; Carpenter and Krause 2012).

Regulatory agencies are argued to possess a 'reputation uniqueness', which refers to the capability of the regulatory agency to prove that it can deliver outputs and outcomes that cannot be provided by any other organization in the entity (Carpenter 2001; Maor and Sulitzeanu-Kenan 2015), that is, the right and responsibility of the agency to engage in the tasks that exclusively belong to them. Carpenter (2001) argues that the 'reputation uniqueness' of independent regulatory agencies refers to the agency's exclusive responsibility to perform as:

1. A scientific expert by generating regulatory solutions that are based on technical expertise, scientific knowledge, and efficiency.
2. A guardian of social welfare by generating regulatory outputs that have wider moral implications, for example, the protection of the public and the environment from potential risks and hazards.

What is the 'reputation uniqueness' of risk regulators? First, regulatory agencies involved in risk governance are expected to perform distinct tasks compared to other organizations in the polity. They have an exclusive responsibility to provide risk assessments that are deemed to be independent, based on technical evidence and science-based judgements conducted by impartial (scientific) experts in the field. Independent risk assessors oversee scientific (as opposed to political) components of regulatory governance. Consequently, cultivating a good reputation for scientific expertise is regarded as particularly pertinent for regulatory agencies because the production of sound scientific risk assessments is generally regarded as their unique characteristic and their exclusive function in risk governance regimes. That is, an agency's reputation depends on the quality of their scientific risk assessments. Therefore, an agency's reputation for expertise-based performance forms the core basis for the expectations of their multiple regulatory audiences (Carpenter 2001). The reputation of an agency, for instance, can be damaged by external criticism regarding its expertise, capacity, and the quality of scientific advice and risk assessments.

Second, an agency producing scientifically sound regulatory outputs may, however, have a dubious reputation as a guardian of social welfare (e.g., public safety and health). That is, another important characteristic of the 'reputation uniqueness' of risk regulators is their responsibility to protect the public from emerging risks by issuing timely public alerts about possible regulatory risks, putting protective standards in place, regularly reviewing new scientific

evidence, and by assuring public safety (Maor 2011). In this case, a risk regulator pays special attention to the following questions when drafting its scientific risk assessments: Does it protect the interests of consumers? Does it 'exhibit compassion for those adversely affected by its decisions or those in its environment who are less fortunate or more constrained? Is it flexible with respect to human needs?' (Carpenter 2010, p. 46). To emphasize their guardian roles, agencies may send strong protectionist signals rather than scientific/technical signals. For instance, in view of scientific uncertainty, they may advocate a precautionary ban or restriction of a certain product to ensure the highest public health standards (Rimkutė 2015).

According to Maor (2011), this distinction reflects two diverse methods of bureaucratic reputation management. A reputation for scientific expertise can be cultivated by providing scientifically sound risk assessments, whereas the management of a social guardian's reputation entails providing timely public warnings, ensuring public safety, and contributing to the highest safety standards (e.g., the application of the precautionary principle). Those two distinct reputation management strategies are motivated by different reputational threats: the fear of an agency 'to appear as if it failed to provide a timely, sufficient, and effective warning, especially since that is what it is expected to do' (Maor 2011, pp. 558–59) or the fear of appearing as if it has failed to provide a scientifically sound and high-quality assessment of the available scientific evidence. Which aspects of their regulatory roles the agencies choose to emphasize—guardians of public health or scientific experts—is expected to depend on the reputational threats that agencies themselves face.

2.2 | How do reputational threats affect the choice of risk regulators to follow scientific expert or guardian roles?

When do agencies choose to emphasize their role as guardians of social welfare and when do they prefer to highlight their distinct duty to provide scientifically rigorous risk assessments? Carpenter emphasizes: '… when trying to account for a regulator's behaviour, *look at the audience, and look at the threats*' (2010, p. 832, italics in original). Public organizations face various reputational threats, as they are constantly assessed by manifold audiences possessing conflicting expectations and demands (Maor 2015).

Risk regulation regimes are often subject to diverse reputational threats, for example, interest group pressures, public attitudes, and bureaucratic preferences (Hood et al. 2001; Rothstein 2003; Rothstein et al. 2012). Health risk, for instance, is a manifold concept and has many meanings when it comes to different regulatory audiences. Therefore, tensions may arise between those who generate risks (e.g., the industry), those who are affected (e.g., consumers), and those with the power to regulate (e.g., regulatory agencies) (Rothstein et al. 2006b). Consequently, different expectations and demands prevail among the different regulatory audiences (Carpenter 2010; Maor et al. 2012). Each external audience chooses which aspects of regulatory performance they give priority to in their evaluation of the regulatory agency. However, not all regulatory audiences are equally threatening to risk regulators. Therefore, it is important to consider how and to what extent regulatory audiences exercise their demands, that is, what is the configuration of regulatory audiences (Pache and Santos 2010)? Following this line of reasoning, one would expect that different reputational threats emerge from the different configurations of private and public pressures and demands (Rothstein et al. 2012). The distinct configurations of external demands, in turn, urge regulatory agencies to carefully cultivate audiences' perceptions of their regulatory roles and reputations.

Which configurations of external audiences are the most threatening to regulatory agencies? Pache and Santos (2010) argue that the ability of regulatory audiences to exercise their authority depends on the centralization of the organizational field in which they have to perform. Centralization is defined as a power structure in a field with dominant actors that have authority to enforce certain directions of actions. Highly centralized fields normally consist of strong and mobilized regulatory audiences that possess both formalized and recognized authority in the field. Such audiences have the power and legitimacy to decide and resolve emerging disputes in the field, which, in turn, enforce relatively consistent demands on regulatory agencies (Pache and Santos 2010, pp. 457–58). In highly centralized fields, the core reputational threats to regulatory agencies come directly from the authoritative regulatory

audiences that exercise these demands. Here, the core reputational threat is a failure to address the concerns of relevant audiences in a timely and effective manner. This is the case as highly centralized fields are organized around issues that are salient. Mismanagement of salient issues, in turn, can make the agency appear as if it has failed to react adequately, or provide a well-timed and effective response to the questions that have attracted much attention and even resulted in mobilization of multifaceted regulatory audiences.

To maintain a good reputation, agencies will respond to the demands of relevant external audiences by incorporating external preferences in their outputs, rather than just automatically following common scientific and procedural standards. In this case, addressing the core demands (e.g., prevailing social values) of relevant audiences is more important than following a scientific 'gold standard' because highly centralized fields impose the prevailing logic by introducing rules that guide legitimate actions.

> *H1*: In highly centralized fields, regulatory agencies are expected to be responsive to the authoritative external audiences and emphasize their role as guardians of the prevailing social values.

On the other side of the continuum are decentralized fields (Pache and Santos 2010). They are characterized as poorly formalized and do not contain any dominant actors that possess the authority to constrain the agency's behaviour. Decentralized fields consist of conflicting demands that are not directly imposed, as organizations exerting those pressures are not strong/mobilized enough. However, even though the conflicting regulatory audiences are not powerful enough to formally coerce regulatory agencies to be fully responsive, regulators are susceptible to a wide variety of conflicting audiences. Such fields contain many conflicting demands that are powerful enough to cause severe reputational threats, that is, damage the agency's reputation and delegitimize its actions. As a result, agencies are expected to assertively respond to conflicting demands by controlling external pressures and negative external judgements. Regulators are expected to attempt to dominate the organizational field by influencing rivals in the field and by actively promoting their scientific superiority. In so doing, agencies put strong emphasis on scientific soundness, as well as the methodological rigour of their scientific processes and produced outputs. In this case, agencies will focus on the scientific 'gold standard' as it can be a powerful tool to respond to conflicting regulatory audiences that challenge their scientific outputs.

> *H2*: In decentralized fields, regulatory agencies are expected to actively object to the inconsistent demands stemming from conflicting regulatory audiences by referring to the scientific aspects of their risk assessments.

3 | RESEARCH DESIGN

The population of cases in the study is limited by the type of agency: only regulatory agencies mandated with standard setting and risk assessment responsibilities in various risk processing domains were potential agencies for case selection, for example, food, financial markets, the environment, disease prevention, aviation, medicines and chemicals. However, empirically the study focuses on the food safety sector to gauge the potential of the suggested theoretical framework. The fact that food safety regulators emerged after the major sector-specific crises (the Bovine Spongiform Encephalopathy [BSE] and Belgian Dioxin food scandals) and regularly face food scares makes them reputation-sensitive organizations, which, in turn, allows the observation of a variety of bureaucratic and scientific practices that are employed in the pursuit of reputation protection.

In the food safety sector, the use of risk assessments as the basis for risk management decisions became vital in 2002 with the increasing recognition of the 'Better Regulation Agenda' (Lofstedt 2011). Better regulation ideas introduced the separation between risk assessment and the risk management process to regain the trust of European citizens after the major food scandals. The separation of two regulatory processes entailed establishing an independent

supranational regulatory agency—the European Food Safety Authority (EFSA)—that was tasked with providing independent risk assessments based on the available scientific evidence. Since its inception, EFSA has been regarded as a vital contributor to supranational food safety regulation and is deemed to offer a rational basis for common regulatory standards and rules which apply across countries and therefore are considered to be European (Mathieu 2016a).

However, coordination between national and EU agencies continues to be in flux (Heims 2016; Mathieu 2016b). Even though EU agencies and transnational networks are expected to work together to tackle interdependent problems, effective cooperation between national and supranational regulators 'seems to be the exception rather than the rule' (Bach et al. 2016, p. 10). To illustrate, in spite of the establishment of the supranational regulator (EFSA), France decided to maintain its food safety agency (ANSES). Thus, the two agencies have similar tasks and sometimes produce risk assessments on the same issues simultaneously. This, in turn, provides a unique opportunity to test the core expectations of the study by comparing two European agencies that tackle the same risks in a different context, yet possess other similar characteristics. Even though EFSA and ANSES act at different governmental levels, that is, supranational versus national, the two agencies are very similar in terms of scientific capacities and resources (for instance, even though ANSES is a national agency, it recruits its external experts internationally). Furthermore, they both function under higher authorities and contribute to risk regulation decisions in a similar way. The system of food safety at the EU level, and in France, is set up in such a way that risk assessment is separate from risk management. While the duty of EFSA is to provide scientific opinions to the European Commission (DG Health and Food Safety), the European Parliament, and member states, ANSES issues its scientific outputs to the French Ministries of Health, Agriculture, the Environment, Labour and Consumer Affairs. Such a separation is deemed to ensure the independence of regulatory agencies from the European Commission (or ministries) that is becoming increasingly politicized (see, for instance, Christensen et al. 2017).

The BPA issue was selected for an in-depth analysis because focusing on one regulatory issue allows for testing the effects of the theorized factors by controlling for the influence of other potential explanatory factors: differences across various risk regulation regimes and differences in scientific uncertainty. Furthermore, the BPA case is theoretically illuminating and helps to address the main aims of the study, that is, to test novel theoretical explanations that are expected to account for variance in scientific risk assessments.

Empirical data were collected using qualitative methods and techniques: primary documents, semi-structured interviews, specialized media reports, and direct observations. Diverse and independent sources of evidence provide crucial information to gauge the response of a regulatory agency to reputational threats by systematically analysing differences in scientific risk assessments across the two agencies.

The study relied on publicly available documents: formal mandates; policy documents published by the agencies and EU institutions; press releases from all relevant audiences (agencies, EU institutions, industries, NGOs); and actual scientific outputs produced by national and supranational regulatory bodies. Information and quotes from relevant actors (EFSA/ANSES staff, the European Commission, the European Parliament, and member states) were retrieved from the professional specialized journals reporting on EU risk regulation and food law: Chemical Watch (global risk and regulation news). These sources were particularly relevant for tracing the formal processes in each case. In addition, 13 semi-structured interviews were conducted with relevant stakeholders. The interviewees were selected based on their expertise and contributions to the BPA risk assessments: academic experts (six), industry experts (three), NGO representatives (one), and national and supranational agency staff (three). Interviews were conducted between March and October 2014; they were audiotaped and transcribed. The average length of the interviews ranged from 45 to 75 minutes.

The study also relies on direct observations to cross-check the validity of interview data, as well as to retrieve information that could not be obtained in the semi-structured interviews and publicly available documents. To that end, the author attended a public consultation organized by EFSA (a follow-up meeting on the public consultations on Bisphenol A in Brussels, April 2014). The meeting provided the researcher with relevant insights into the challenges that EFSA and national agencies faced and the responses they gave when their scientific opinions were confronted and challenged.

4 | EMPIRICAL ANALYSIS: A TALE OF TWO REGULATORY APPROACHES TO BISPHENOL A RISK REGULATION

BPA is one of the most tested chemicals; however, studies on the risks of BPA contamination suggested conflicting or inconclusive results. As a result, risk assessors had a challenging task. On 1 May 2011, the EU Directive introducing a ban on the use of Bisphenol A (BPA) in infant feeding bottles came into force (European Commission 2011). The ban was greatly supported by France and Denmark, who had introduced legislation banning the use of the substance in infant bottles before the EU Directive came into force. The decision to ban BPA was taken in the absence of firm scientific evidence: 'tiny amounts of Bisphenol A reach the human foetus and we do not know if it is damaging or not' (Academic Expert #7). However, regulatory activities on BPA did not stop with the prohibition of its use in baby bottles, as the most active NGOs in France saw this as a stepping-stone for further action and, ideally, a full ban on BPA in France and eventually in the EU. The most vocal NGO, the French Environmental Health Network (RES), persistently advocated for a ban on BPA in all plastics that interact with food 'to protect the most vulnerable: pregnant women and young children' (Chemical Watch 2010). Furthermore, the interviewed experts highlighted that in France 'a lot of people are really worried about hormone disrupting chemicals and are completely convinced this is extremely dangerous' (Academic Expert #8). As a result, external pressures to ban BPA in France persisted and continued to grow. Sixteen French NGOs persistently advocated for a total ban on BPA and launched a petition that aimed to influence politicians to bring forward the date for the introduction of the ban.

In turn, the Ministry of Health in France responded to the request of the united NGOs and took an active stance on this issue. It had requested ANSES to prepare several reports focusing on the different aspects of BPA risks. As one agency expert stated, 'if we are involved it's because our government requests us to produce expertise and risk assessments on Bisphenol A. That's our remit and that's why we've been publishing a lot of information and different reports and opinions' (Agency Expert #10). Such empirical observations suggest that the organizational field in which ANSES had to produce its scientific outputs was highly centralized and relatively consistent, as united NGOs, concerned consumers, and political superiors exerted strong and coherent demands on ANSES to protect the most vulnerable groups in society. The core goal of the requirement of the most vocal regulatory audiences was to introduce the highest protectionist measures, given the perceived risks of BPA.

In September 2011, ANSES made an official announcement based on its published scientific report on BPA issuing a warning regarding the existence of health effects even at low doses of BPA. This message explicitly suggested that the current regulation of BPA was not sufficient and further regulatory actions should be taken to protect all consumers. In October 2011, the French National Assembly voted to ban Bisphenol A in all food contact materials from 2014. The support for the ban was high (only two members, out of the 350 who participated, voted against). One week after the government expressed its strong support for more stringent protections against the potential dangers of BPA, the French lower house officially adopted a law that followed ANSES' scientific conclusions (Chemical Watch 2011). A year later, in October 2012, the French upper house voted in favour of banning Bisphenol A in all food contact materials starting from 2015.

The regulatory actions of the French authorities started to bring to light the strong divergences in scientific judgements: ANSES (2011) concluding that BPA poses a high risk versus EFSA (2006, 2010) stating that the current exposure levels of BPA do not pose any risks to human health. The scientific divergences between EFSA and ANSES bore higher reputational threats than just bureaucratic turf battles. The disagreements started to affect a broad range of external audiences: 'when in France it is said that the substance needs to be banned and when the substance is not banned at the European Union level, people question why this is the case' (Industry Expert #5). Furthermore, EFSA and ANSES started to pose reputational threats to each other by undermining each other's scientific conclusions and competing for the support of the relevant regulatory audiences. The interviewed experts suggested that such situations imposed considerable threats to the supranational regulator: 'If member states ignore the opinion of EFSA, it's a reason to question the entire food safety system in the EU' (Industry Expert #6).

Soon, the conflict over BPA regulatory approaches started to gain momentum and visibility at the EU level. The French government was publicly vocal with its position and further intentions: 'France's ecology minister, Delphine Batho, said her government would lobby for an EU-wide ban on the marketing of toys and baby care equipment containing (EDCs [Endocrine Disrupting Chemicals]) of high concern, in order to protect vulnerable groups such as infants and children under 14' (Chemical Watch 2013c). Furthermore, the scientific warning of ANSES was strongly advocated by French NGOs. The Environmental Health Network (RES) suggested that the French ban on BPA should lead to further action at the European level. It openly stated that ANSES reports were a clear repudiation of EFSA's scientific approach that does not ensure the safety of consumers. Furthermore, RES raised questions regarding the credibility of EFSA. The group suggested that, if EFSA did not align with ANSES' scientific judgements, the European institutions should take strong action and investigate EFSA's independence and the background of its experts, suggesting that EFSA had close ties with industry: 'There's been a lot of discussion at different levels (EU level, from NGOs and other different groups) questioning the independence of EFSA experts, on a potential conflict of interest' (Agency Expert #10).

A group of NGOs united and published a report blaming EFSA for maintaining too close ties with the industry and relying greatly on industry data and experts to make decisions on the safety of BPA (Chemical Watch 2012). EFSA was accused of being dependent on the industry and providing scientific expertise that substantiated the preferences of the industry. NGOs stated: 'Our enquiry shows that industrial interests have penetrated the heart of EFSA. The way EFSA works should be completely revised' (Chemical Watch 2012). The NGOs firmly stated that EFSA's scientific judgements were skewed towards the position of the industry. In so doing, they suggested that EFSA's scientific judgements were biased and could hardly be trusted by consumers.

The industry, on the contrary, started to question ANSES' scientific report, claiming that ANSES' scientific conclusions suggested a stretched interpretation of the existing data. The EU plastics industry blamed the French government and senators for making a political rather than a scientific decision (Europlastics Europe 2014). They accused the responsible French authorities of putting extensive efforts into trying to ban BPA as swiftly as possible rather than taking a considered science-based approach: 'no scientific reason to replace a well-tested, authority-assessed and confirmed safe product' (Chemical Watch 2011). The inconsistencies between ANSES' and EFSA's scientific opinions resulted in strong reactions from the industry: 'We still cannot follow the ANSES interpretation of the existing scientific evidence. It seems to disregard the accepted norms of European risk assessment and is in contrast to the EFSA opinion and the statements made by other regulatory authorities worldwide' (Chemical Watch 2013a).

The European regulatory system has legally established mechanisms specifying which actions have to be followed if divergences between scientific judgements occur. The Founding Regulation of EFSA specifies: 'where a substantive divergence over scientific issues has been identified and the body in question is a Member State body, the Authority and the national body shall be obliged to cooperate with a view to either resolving the divergence or preparing a joint document clarifying the contentious scientific issues and identifying the relevant uncertainties in the data' (EC Regulation 178, 2002, p. 17). Accordingly, the Commission requested EFSA to examine the ANSES reports and assess whether a revision of EFSA's opinion was needed. It required EFSA to cooperate with ANSES on a matter of mutual concern to either resolve all disagreements or draft a joint document explaining why the contradicting scientific issues prevailed.

Even though the bilateral meeting between ANSES and EFSA was intended to resolve the divergences in scientific judgements, the two regulatory agencies maintained their positions contradicting and undermining each other's scientific conclusions. To that end, on 5 March 2012, EFSA's Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids (CEF) initiated a self-tasking safety assessment of BPA. The self-tasking initiative was meant to resolve the growing discrepancies between EFSA and ANSES. One of the interviewed experts stated, 'Bisphenol A is under international observation. Many questions and results are coming up. The situation in France and ANSES' evaluation of Bisphenol A raised some questions to EFSA and questioned EFSA's scientific opinions on Bisphenol A' (Academic Expert #4).

Interviews, primary document analysis, and direct observations suggest that the organizational field in which EFSA had to produce its BPA risk assessment was highly fragmented and contained multiple conflicting requests. Conflicting positions coexisted: member state versus member state, NGOs versus the industry. However, none of them imposed strong and consistent demands on EFSA. For instance, the position of member states on the BPA issue was not consistent; only some member states, for example France, played an active role and demanded a more stringent EU-wide regulatory approach to BPA. Other member states did not join the French authorities advocating a ban. In addition, demands coming from a European-wide civil society were not strong enough, as consumer organizations at the EU level were not as organized as they were in France. That is, French NGOs that directed accusations at EFSA (e.g., the French Environmental Health Network and Générations Futures) did not reach a Europe-wide audience. In other words, they neither managed to attract public attention in other member states nor form transgovernmental networks that would further advocate a ban on BPA at the supranational level.

Furthermore, even though NGOs and the industry requested the European Commission to resolve the divergences, EFSA was not pressured by the Commission to rush into delivering its final scientific conclusions. Each time the Commission received complaints from NGOs and especially from the industry, it consistently replied that it would wait for EFSA's final scientific conclusions before making any BPA-related decisions: '[the Commission] will wait for EFSA's assessment before deciding what action, if any, to take regarding France's ban on the use of BPA in food contact materials' (Chemical Watch 2013b). The Commission did not enforce any stringent requirements: either by issuing a request for a scientific opinion on BPA or by pressuring EFSA to produce scientific outputs as soon as possible, which was demanded by the industry.

In short, EFSA and ANSES faced different reputational threats because they were exposed to the different configurations of private and public pressures and demands, as illustrated by one of the interviewees: 'There are two different political worlds regarding bisphenol A in Europe' (Academic Expert #4). ANSES performed in the organizational field, which consisted of vocal NGOs and active consumer associations. Even the Ministry of Health took a stance on the issue alongside the French parliament. They advocated and pushed for the highest protectionist measures, that is, a complete ban on BPA. The major reputational threat to ANSES appeared insensitive to the fears of consumers given the scientific evidence suggesting that BPA might pose risks to pregnant women and unborn babies. At the EU level, the configuration of pressures and demands was different. EFSA faced many fragmented demands, which were not individually strong enough to impose one specific legitimate action (e.g., a total ban). However, those demands posed considerable reputational threats to the scientific authority and credibility of EFSA and the EU food safety system. ANSES undermined the scientific authority of EFSA by questioning the independence and quality of scientific outputs of EFSA, which, in turn, raised concerns within the industry, member states, and EU institutions.

4.1 | Cultivating bureaucratic reputations: EFSA as a scientific expert versus ANSES as a guardian of prevailing public values

Empirical evidence suggests that EFSA focused on demonstrating the superior track record of its scientific conduct and on sending strong professional signals. In so doing, EFSA applied the scientific 'gold standard' to cultivate its reputation for scientific expertise and legitimize its regulatory output. On the contrary, ANSES chose to emphasize its role as a guardian of public health by sending strong protectionist signals, as illustrated below.

In January 2015, EFSA published its full re-evaluation of BPA exposure and toxicity. EFSA concluded: 'BPA poses no health risk to consumers of any age group (including unborn children, infants, and adolescents) at current exposure levels' (EFSA 2015a). This EFSA scientific conclusion was in sharp contradiction to the recent BPA risk assessments of ANSES (2011). EFSA and ANSES formally declared that the divergences occurred because 'Different approaches and methodologies were developed to select key studies and reference points to assess the risks to public health related to exposure to BPA. ANSES based the hazard identification on a decision tree for the selection

of key studies, whereas EFSA used a WoE [weight of evidence] approach to hazard identification' (EFSA and ANSES, 2014, p. 6).

Different methodological approaches were used to cultivate different regulatory roles. The French agency acted as a guardian by generating a risk assessment, which has wider moral implications, that is, the protection of the public from potential risks. ANSES carried out a hazard rather than a risk assessment, reasoning that BPA can cause damage (Lofstedt and Schlag 2017). However, ANSES did not assess the likelihood of BPA risks. Such a methodological approach highlights the uncertainties in existing scientific knowledge, which, in turn, allowed ANSES to recommend a precautionary ban on all BPA-containing food packaging (i.e., the suspension of the chemical in consideration of the scientific uncertainty). Such an approach assures the highest safety standards, as consumers are no longer exposed to the chemical.

On the contrary, in view of conflicting regulatory audiences, EFSA was particularly focused on the content and the quality of the scientific output. External conflict even encouraged EFSA to do its utmost to establish its scientific superiority since EFSA anticipated that it would be scrutinized by its opponents and various concerned groups: 'we knew what we were writing would be read very carefully' (Academic Expert #8). Experts confirmed that EFSA had strong incentives to produce sound scientific conclusions: 'I had the impression that EFSA was putting a lot of resources into getting this risk assessment really good' (Academic Expert #8). The deadlines were extended several times, as the aim of EFSA was to understand and fully consider all relevant studies and data. The entire re-evaluation process lasted almost three years.

EFSA chose to act as a scientific expert by generating regulatory solutions based on the weight of evidence (WoE) approach. This evidence-based approach is built on the appraisal of the relative weights of different sources of available information, considering aspects such as the quality and consistency of the data, the rigour of the effects, and the relevance of the data for the regulatory endpoint. EFSA emphasized that 'EFSA's experts used new methodologies to take account of the uncertainties regarding potential health effects, exposure estimates and evaluation of risks for humans. … by analysing each uncertainty one by one and combining our expert judgement the Panel was able to quantify these uncertainties and to factor them into its risk assessment and derivation of the TDI [tolerable daily intake]' (EFSA 2015b). To defend against the charge of inattentiveness to consumer safety, EFSA referred to the scientific accuracy and methodological quality of its risk assessment. EFSA emphasized the technical-instrumental elements of its BPA scientific opinion: 'the risk assessment of BPA has been "hugely complex" …. While we have analysed the best available evidence using state-of-science methods, we recognize that understanding in these areas is always advancing …. Therefore, our conclusions are as definitive as they can be in light of current data' (Chemical Watch 2014).

In summary, the empirical evidence yields support for the theoretical expectation of the study. Depending on the reputational threats, agencies choose to emphasize either their role as guardians of the prevailing social values by proposing precautionary measures, or send strong professional signals by delivering a scientifically rigorous risk assessment.

5 | CONCLUDING REMARKS

The study confirmed that the ways in which the same risks are assessed can vary significantly. The empirical analysis showed that in each case—ANSES and EFSA risk assessments—agencies chose to focus on different aspects of their scientific conduct and sent either professional or protectionist signals to their regulatory audiences. EFSA focused predominantly on the scientific qualities and soundness of its risk assessment. The agency put a strong emphasis on the scientific accuracy, methodological expertise, and high methodological quality of its risk assessment. Such overt adherence to the highest scientific standards was not emphasized in the BPA risk assessments of ANSES, as it concentrated exclusively on introducing the highest safety standards. To that end, ANSES suggested a complete ban on BPA in plastics following the logic of precaution.

The empirical findings suggest that the responsiveness of an agency to reputational threats is not automatic or spontaneous, but rather is based on the agency's active and strategic assessment of the types of reputational risks it faces. The study illustrated that regulatory agencies demonstrate a different response to diverse external claims. Agencies carefully assess the organizational field in which they operate. Different reputational threats arise from the different configurations of private and public demands. The diverse configurations of external demands, in turn, encouraged regulatory agencies to cautiously nurture audiences' perceptions of their bureaucratic reputations. More specifically, the study empirically illustrates that agencies react to a different set of threats and a different set of regulatory audiences exerting these threats in diverse ways. In the case of the BPA risk assessment, EFSA actively endeavoured to influence the (potential) advocates of conflicting external positions. EFSA tried to influence and control the sources of external pressures to neutralize emerging divergences. ANSES, on the contrary, chose to respond to the concerns of the authoritative regulatory audiences, that is, NGOs, concerned consumers, and the requests coming from various political superiors. ANSES faced reputational risks by appearing as if it were negligent of public concerns. It managed the threats to its reputation by demonstrating its commitment to addressing public concerns. These observations, in turn, support the core argument of the study: agencies can exercise an array of means in their responsiveness to exterior demands and pressures because different external audiences shape agency attention to its distinct reputational weaknesses.

This article has attempted to develop starting points for further research. It has introduced a theoretical model explaining the differences in scientific outputs. However, the theoretical framework has been tested by comparing two specific regulatory agencies. Case studies, while valuable in terms of nuanced insights into specific processes and cases, leave one wondering if the same outcomes occur in different cases or across a wider array of cases. It is, therefore, crucial for further research to examine how well the insights from the case studies analysed in this research travel across a broad selection of cases. Future research could focus on a wider range of regulatory agencies that are assigned standard setting and risk assessment responsibilities in various risk processing domains, for example, food, financial markets, banking, environment, migration, aviation, medicines, and railways.

Furthermore, while the empirical evidence gives support to the theoretical expectations, the result of this comparative study did not test for alternative explanations, that is, theoretical expectations originating from institutional, credible commitment, and regulatory capture theoretical perspectives. As a result, future research could focus on assessing the effects on agency scientific outputs proposed by the long-established theories versus reputational effects. For instance, one could expect that varying degrees of political insulation (rather than reputational threats) affect the way in which regulatory agencies advance risk assessments. As a result, exploring the relative explanatory power of the factors derived from the reputational literature against the established theoretical streams would be one avenue for future research.

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