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Cultivating the art of hearing and being heard: how regulators strategically use public communication in regulatory governance

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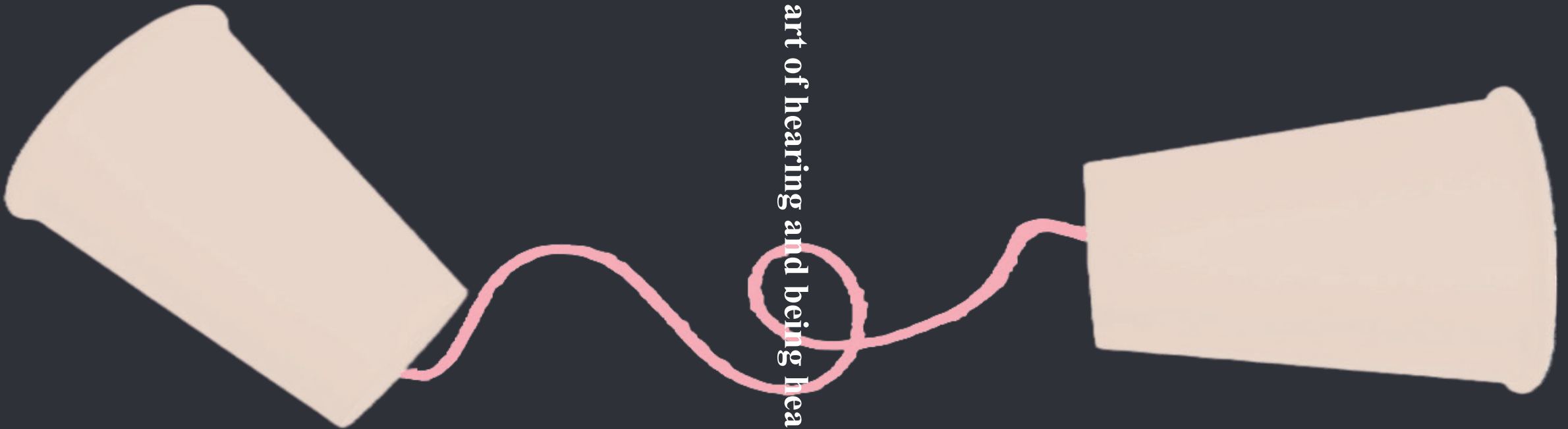
Cultivating the art of hearing and being heard

*How regulators strategically
use public communication in regulatory governance*

Cultivating the art of hearing and being heard

Moritz Müller

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By Moritz Müller

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Proefschrift

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Chapter 1

Introduction

Introduction

The power of public communication in regulatory affairs has seldomly been clearer than during the financial crisis in the European Union. On July 26, 2012, then-head of the European Central Bank Mario Draghi was giving a speech to investors. The European Union found itself in the middle of the worst financial crisis of its existence and investor confidence in the financial stability of the market was deteriorating at a dramatic rate. However, Mr. Draghi's speech contained two sentences that would become historic words in the future: "Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough" (European Central Bank, 2012). His words had an immense impact that would stretch far beyond the financial crisis: the same day, newspapers around the world would report on his speech, stating that the European Central Bank would do everything to save the Euro. Investors reacted immediately after Draghi's speech, leading to a pick-up on the financial markets and a decrease in interest rates for government bonds of those EU countries hardest hit by the crisis. Although the ECB eventually launched their bona fide bond-buying program, many argue that this financial relieve was mainly achieved purely by virtue of Draghi's verbal intervention. And interestingly, his words would even survive the crisis and be used in other difficult moments of the EU: Almost ten years later, Italian Prime Minister Giuseppe Conte said in a speech (in Italian) that the EU's efforts to financially and medically recover from the impacts of the COVID-19 pandemic should be guided by "la logica 'whatever it takes'" (Agenzia Italia, 2020).

This example shows how regulatory communication can serve multiple purposes and is often directly linked to regulatory governance. When creating, administering, and evaluating regulations, regulators consider the public discussion on these regulatory issues and can in turn influence this debate through their public statements. Scholars have shown in varying contexts that regulatory communication is used as both a reputational tool (Carpenter, 2020; Gilad, Maor, & Bloom, 2015; Maor, 2020; Maor, Gilad, & Bloom, 2013; Rimkutė, 2020a, amongst many others) and regulatory tool in itself (Blinder, Ehrmann, Fratzscher, De Haan, & Jansen, 2008; Born, Ehrmann, & Fratzscher, 2014; for central banking: Rosa & Verga, 2007; for medicine: Weatherburn, Guthrie, Dreischulte, & Morales, 2020). Both phenomena are closely linked and render regulatory communication as a central tool that is available to regulators;

regulatory communication might, for instance, signal to external audiences that a regulatory agency is unique and can provide irreplaceable contributions to the polity (Busuioc, 2016). For regulatory organizations, this signaling of the ability to provide unique services can become a tool for organizational survival by allowing them to secure public support and future funding (Gilad & Yogeve, 2012; Maor, 2020). It might also help a regulatory organizations to claim new competencies for the future, by allowing regulators to send signals to politicians and the public via the media (Gilad et al., 2015). Regulatory communication might also work as a regulatory tool in itself, for instance by helping to manage expectations and ensure trust of key audiences in the regulatory system – such as the example of Mario Draghi during the financial crisis shows.

Regulators, therefore, use communication in calculated ways to accomplish distinct goals for their organizations, either to manage their organization's reputation or in order to accomplish regulatory effects via means of communication. For instance, regulatory organizations prioritize certain reputational dimension over others in their general public communication (Carpenter, 2020; Rimkutė, 2020a; Wæraas & Maor, 2014, p. 21). If being subjected to external challenges, regulators have been shown to issue differentiated responses, depending on whether the challenge pertains to a core or developing functional area of their organization (Gilad et al., 2015). In fact, much research has stipulated that regulatory organizations should be seen as “rational agents as well as politically conscious organizations interested in protecting their unique reputations” (Wæraas & Maor, 2014, p. 21).

Depicting regulators as rational agents has led scholars to assume that these actors' public communication is guided by underlying strategies, which has given rise to research into strategic communication by regulatory organizations (Maor, 2020). While a clear definition of strategic regulatory communication is hard to find, researchers on the topic commonly understand strategic communication as such communication by regulators that serves specific purposes, follows repeatable and predictable patterns, and is targeted at specific audiences (Maor (2020) presents a summary of existing research on the matter - aforementioned features are consistent throughout this research). Previous research by regulatory communication scholars has shown that some regulators seem to follow such strategic paths in order to respond to external challenges to their organizations: For instance, Maor et al. (2013) show that Israeli banking regulators are selectively responsive to various challenges to their organization's reputation and

decide on a case-by-case basis whether they issue public statements or not. However, how do we know that regulators follow a consistent strategy rather than engaging in short-term tactics? Going back to this example, Maor et al. could identify a strategic pattern behind the regulators' responses by examining *many different external threats* and therefore providing a comparative case across issues. By comparing communicational responses across multiple issues and multiple contexts, the researchers could show that regulators follow an underlying longer-term strategy rather than short-term and very case-specific tactics.

Research such as Maor et al. (or also Gilad et al., 2015; Maor, 2020; Rimkutė, 2020b; Rimkute & Haverland, 2015) has shown that regulatory communication often follows behavioral patterns and can give us an inside view into regulatory processes. Surprisingly, we know relatively little about the underlying strategies that regulators use to communicate with the public, how the environment of regulators impacts what they say, and how their communicational output in turn influences their environment. Better understanding strategic regulatory communication can help us to make better sense of regulatory decision-making processes, communicate regulatory affairs to the public more effectively, and help regulators to be more mindful of the things they say. This dissertation, therefore, seeks to address these voids and examines regulatory communication in the EU context by asking: *How do public organizations use strategic regulatory communication in regulatory governance?*

To provide systematic research that specifically examines how regulators use communication in regulatory affairs, this dissertation puts forward three premises. Firstly, we must take into account the multi-faceted nature of regulatory communication – it can serve multiple purposes at the same time. To uncover these purposes, we have to observe regulatory communication in varying contexts that will highlight varying dimensions and types of impacts of regulatory communication. Secondly, regulators do not exist in a vacuum and are instead influenced by their environments. What they say is contingent on how they assess the current political climate, who their key audiences are and how these key audiences react to regulators' actions, and how they assess the current public mood regarding their organizations or policy issues they are responsible for. Thirdly, the body of academic research on strategic regulatory communication is quite extensive, however, it is scattered across many sub-disciplines that often do not directly talk to each other. Connecting extant literature (in various sub-disciplines of political science, public administration, and

communication research) will help us to make sense of regulatory communication and to formulate and test theoretically robust hypotheses.

By building on these three premises, this dissertation aims to provide a range of theoretical and methodological contributions to our understanding of regulatory communication. Firstly, this dissertation will examine both ordinary and special cases of public communication. Much of the existing literature focuses on various types of crises, such as an external crisis (e.g., financial crises in central banking) or reputational threats (e.g., regulatory failures) (Maor, 2020; Moschella, Pinto, & Martocchia Diodati, 2020; Wang, Hao, & Platt, 2021). We currently lack a better understanding of regulators' day-to-day communication and whether general communicational patterns that we observe in crises extend to such everyday communication. Statements in more recent research have reflected this shortcoming and urged researchers to look beyond special (typically negative) events of communication towards a broader set of situations (Salomonsen, Boye, & Boon, 2021). The subsequent chapters will, therefore, examine various types of communication situations that regulators find themselves in to reflect the full range of regulatory communication. I will do so, for instance, by observing one organization across time to highlight differences in communication in times of crisis versus ordinary 'non-crisis' times (chapter 2). Later, I will introduce variation on the issue level, by comparing politically contested and uncontested policy processes.

Furthermore, the dissertation will connect literatures from various fields to paint a coherent theoretical picture of the role, occurrence, and impact of regulatory communication in regulatory governance. The various literatures provide different explanations of why and how regulators communicate publicly, yet these findings are often complimentary to each other. This research aims to bridge the literatures on organizational reputation, public communication, and regulatory governance, to gain insights into how regulators construct public images of their organizations through communication, how they react to their environments to defend and extend these public images, and how they use communication to directly influence their environments.

The last substantial contribution of this dissertation is of methodological nature. I find most of regulatory communication in text and that comes with certain methodological caveats. Drawing causal inferences

from text sources is difficult since the empirical content of text needs to be manually quantified. To add to this, data sources or regulatory communication have become massive, as regulators now communicate via the news media, their websites, in radio, on TV, and on social media. Due to all these difficulties, many previous studies of regulatory communication have been either qualitative or relatively small in scope if they were quantitative. The emergence of novel computational methods allows us to widen the empirical scope of studies into regulatory communication, as it allows researchers to quantify the content of large datasets more easily via means of text mining and machine learning. This has been applied extensively in political science research and is increasingly being used by public administration scholars (Anastasopoulos & Whitford, 2018; Grimmer, 2014; Klüver, 2011; Klüver, Mahoney, & Oppen, 2015; some examples: Rauh, 2021; Rauh, Bes, & Schoonvelde, 2020; Rodriguez & Storer, 2020; Theocharis, Barberá, Fazekas, Popa, & Parnet, 2016). This dissertation aims to apply these new methods to research on regulatory communication and will show both the potential as well as the limitations of such methods. The following section will provide the current state of understanding of regulatory communication, more specifically how it can act as a tool for reputation management or for regulation. I will further explain the current understanding of media dynamics that moderate the interplay between regulators and their audiences. After clarifying the state of the current research on regulatory communication and identifying relevant gaps, I will describe the research approach to investigate the overarching research question of the dissertation, before outlining the data and methods that the following chapters will employ.

Setting the scene: What do we know (and not know) about regulatory communication?

What is regulatory communication and what does it do? The study of regulatory communication is a relatively new field that has only started to receive increased scholarly attention in the recent years (e.g., Gilad et al., 2015; Maor, 2020; Maor et al., 2013; Rimkutė, 2020a; Salomonsen et al., 2021; Weatherburn et al., 2020). In these recent studies, regulatory communication is understood as public communication between regulatory organizations and their manifold audiences (more on audiences will be discussed

later). Regulatory organizations discussed in this context are typically regulatory agencies (e.g., central banks, decentralized agencies, or executive agencies), mostly situated in the EU context (Busuioc & Rimkutė, 2020; e.g., Salomonsen et al., 2021), the US (Carpenter, 2002; Maor, 2011; Moschella & Pinto, 2019), or in Israel (Gilad et al., 2015; Maor et al., 2013). Public communication is understood rather broadly, ranging from news coverage (Gilad et al., 2015; Maor et al., 2013; Maor & Sulitzeanu-Kenan, 2013, 2016), social media communication (Anastasopoulos & Whitford, 2018), speeches (Moschella & Pinto, 2019), formal communication such as scientific risk assessments (Rimkutė, 2018), or communication intentions of public officials or stakeholders (Rimkutė, 2020b).

Regulatory communication as a reputational tool

Most studies within this body of work adopt a reputational framework, or, more specifically, focus on how regulatory organizations react to reputational threats (Boon, Verhoest, & Wynen, 2020; Maor, 2020). Ever since Carpenter's influential contributions (most notably Carpenter and Forging, 2001; Carpenter, 2014), the reputational approach to studying regulatory affairs has gained momentum in the recent years. According to reputation-based research, a regulatory organization's reputation is an extremely valuable asset that determines the organizations autonomy towards political principals, stakeholders, and the public, and its legitimacy. Organizational reputation is commonly defined as "a set of beliefs about an organization's capacities, intentions, history, and mission that are embedded in a network of multiple audiences" (Carpenter, 2014, p.33). In this context, reputational threats are considered to be events or statements that threaten to damage an organization's reputation, and therefore its autonomy and legitimacy. Besides being used as explanation for regulatory communication behavior, reputation-based explanations have been shown to explain - amongst others - internal organizational coordination (Blom-Hansen & Finke, 2020), cooperation strategies (Busuioc, 2016), and enforcement behavior (van der Veer, 2021),

Four larger streams can be identified within reputational regulatory communication research. Firstly, how do reputational threats impact internal practices of regulatory organizations? For instance, Maor and Sulitzeanu-Kenan (2013) show that negative media coverage of the US Food and Drug Administration's Center for Drug Evaluation and Research leads to faster response times regarding the agency's decisions

to issue warning letters related to consumer protection. In turn, positive media coverage leads to slower enforcement decisions. In subsequent research by the authors, they show that the kind of media coverage of an agency impacts the overall agency output (Maor & Sulitzeanu-Kenan, 2016). While negative coverage of an agency with below-average output tends to increase the agency's output in the following year, the effect is reversed for agencies with above-average output.

The second, and most popular stream of research relates to how regulatory organizations react to reputational threats via strategic communication. This line of research departs from the assumption that public officials are rational decision-makers that assess situations independently and attempt to issue those type of responses that will protect or bolster the reputation of their organizations. The assumption of communicational strategy of public officials has been proven correct in many different contexts. Departing from earlier studies that showed patterns of blame avoidance in the face of external criticism (Hood, 2010; Hood & Rothstein, 2001), these studies have shown when regulators comment publicly and when they remain silent instead (Maor et al., 2013; Rimkutė, 2020b), when they accept responsibility for problems (Gilad et al., 2015), when they attempt to shape their image under external pressure (Baekkeskov, 2017). Furthermore, this research uncovered that regulatory agencies emphasize various reputational and functional dimensions, based on the kind of reputational threats they are facing (Maor, 2010; Rimkutė, 2018).

Thirdly, research has shown that regulators use public communication to advance the reputation of their regulatory competencies. Most of the research on regulatory communication perceives competencies as general features or dimensions of regulatory organization, such as professional, legal-procedural, performative, and moral dimensions (Carpenter, 2014; Overman, Busuioc, & Wood, 2020). However, a branch of research on bureaucratic reputation follows a more narrow and practical definition of regulatory competencies and defines them as distinct functional areas of an agency that allow the organization to perform specific tasks (Gilad et al., 2015; Maor et al., 2013). Each regulatory organization seeks to establish a unique functional profile that sets it apart from other comparable organizations (the bureaucratic reputation literature calls a very similar observation “reputational uniqueness”, see Busuioc 2016). While these distinct functional profiles have not received much attention in the literature on regulatory governance literature, they have been argued to help private firms to gain competitive

advantages in the market (Williamson, 1999). The scant literature on functional profiles in regulatory organizations suggests that public officials within these organizations issue different communicational responses depending on the importance they attach to various functional areas. Maor et al. (2013) find that regulators often keep silent regarding public allegations in the news media related to functional areas for which they enjoy a strong reputation and regarding issues that lie outside their distinct jurisdiction. In contrast, they are more responsive regarding media comments that target weaker and evolving functional areas. These findings suggest that regulatory communication can serve to protect or advance organizational competences in the face of public contestation.

Lastly, and most recently, research has addressed the question of how regulatory organizations communicate with their manifold audiences. Regulators are constantly observed by multiple audiences that reach from political principals, over the media, to organized interest, and the citizenry (Carpenter, 2004, 2020; Carpenter & Krause, 2012; Gilad & Yogev, 2012; Maor, 2007). The expectations of these various audience often do not align and might even be conflicting. Regulators therefore must choose and balance if and how they respond to these various expectations. Their reputation management strategies are therefore greatly shaped by how they respond to their audiences' expectations. They may seek to highlight differing aspects of their capabilities when they talk to different stakeholders (Yeung, 2009). They might also undermine one aspect of their reputation when interacting with one audience in order to protect another part of their reputation that is valued by another audience that is deemed more important by the regulators (Gilad, 2008). If regulators manage to embed a favorable image of their organization within their audience networks, this image can be extremely useful and even protect the organization during subsequent reputational challenges (Salomonsen et al., 2021). The act of weighting of the importance of various audiences and whether these audience should be addressed by public organizations' communication efforts are called *audience segmentation strategies* (originating from health communication and first mentioned in the context of bureaucratic reputation by Maor, 2020). These strategies are meant to divide their audiences into meaningful groups based on what the agencies want to accomplish (Slater, 2013). These audience segmentation strategies can be based on either audience characteristics (e.g., sociodemographic attributes, closeness to political principals) or issue characteristics (e.g., what issue to focus on), or a mix of both (Grunig, 1989; Kim, Shen, & Morgan, 2011; Slater, 2013). Audience

segmentation strategies become particularly important if multiple agencies compete for similar responsibilities. In this case, communication signals are likely tailored so that two agencies do not compete for similar audiences to avoid potential defeats – that is, losing responsibilities or losing audiences (Maor, 2020).

The literature on regulatory communication that adapts a reputational angle is quite rich and provides nuanced explanations of how regulators defend their organizations from reputational threats via means of strategic communication. However, the dominant focus on regulatory communication as a reputation management tool leaves us wondering whether regulatory communication also might have different (instrumental) uses and impacts on regulatory governance. There are a number of reasons why we see a lacuna in research on regulatory communication. Firstly, most of the literature focuses on specific and often extraordinary situations that regulators find themselves in. That is, we have a reasonable understanding of how regulators react when they are confronted with reputational threats in the media (Gilad et al., 2015; Maor et al., 2013) or how they strategically communicate regarding salient and controversial regulatory processes (for example Rimkutė's (2020b) detailed study of strategic communication during the glyphosate controversy at the EU level). There is much value in knowing how regulators communicate in such extraordinary situations, as the stakes in such situations are oft extremely high. However, most of the regulators' communication is dedicated to 'run-of-the-mill' communication about everyday tasks and topics – many of which are not very salient. We lack understanding of communicational dynamics across cases and across time, meaning that our current understanding of reputational considerations in regulatory communication might be biased towards these more unusual situations (Salomonsen et al. (2021) make a similar point and argue that instead of just examining regulatory threats, scholars should also include reputational praise in their analyses).

Furthermore, the organizational focus of much of the reputational literature lays on regulatory agencies and rarely expands to other types of regulatory organizations. While this focus is undoubtedly very relevant to our understanding of regulatory communication and reputational dynamics, regulatory agencies only cover part of the regulatory landscape. These organizations are typically involved in specific stages of the policy-cycle (e.g., policy implementation or providing scientific advice to legislative and executive bodies), while other regulatory organizations with different responsibilities (for example,

executive organizations such as the EU Commission or governmental branches such as ministries) will cover stages of the policy cycle that we currently do not understand. Recently, scholars researching reputational approaches to the study of regulatory governance have started to broaden the academic gaze and have shown that the exercise of investigating different organizational contexts helps us to understand novel dimensions of regulatory behavior (Blom-Hansen & Finke, 2020; van der Veer, 2021).

A last potential reason for the gap in our understanding of regulatory communication lies in how regulatory communication is usually studied. Most research focuses on the content of what is said in regulatory affairs. Much less research examines the dynamics behind regulatory communication – that is, what are the direct impacts of regulatory communication on involved actors and how do these actors interact with each other during regulatory processes?

More than a just a reputational tool?

This dissertation sets out to address some of the outlined gaps in our understanding of regulatory communication by varying the context in which we study regulatory communication. This variance aims at identifying additional impacts of regulatory communication, namely how regulatory communication can be used as a regulatory tool in itself and as a tool to better connect with external audiences. Some previous research helps us to identify potential effects of regulatory communication that I will point out before moving to the research setup.

In specific contexts, regulatory communication serves more than just reputational purposes. By managing expectations of interested parties, public communication can serve as a regulatory and reputational tool to capture the multiple purposes of public communication in a regulatory governance context. Illustrative for that dimension of regulatory communication is the idea of forward guidance in central banking. By disclosing likely paths of future monetary policy to the public and managing external expectations, central bankers aim to create stability in the market, increase confidence of stakeholders into the medium-term monetary strategy, and ultimately support their policy decisions through complimentary public behavior. For instance, the president and the CEO of the US Federal Reserve Bank of Philadelphia stated in a

lecture: “Appropriately employed, forward guidance can help the public to form more accurate expectations about the future path of monetary policy and thus help promote stability in financial markets and the economy” (Plosser, 2013, p. 2). Proper expectation management via forward guidance can instill trust in key stakeholders and help regulators to create and implement policies more efficiently and effectively (Morgan & Sheehan, 2015).

The notion of public communication as a regulatory tool is almost never explicitly mentioned in research and is often treated as an implicit assumption. However, some research describes this functional path indirectly, which provides us with evidence that such a path between communication and regulatory governance does exist. For instance, there is a quite robust link between health communication and behavioral outcomes, showing that communication can be used as a tool for health regulation of certain populations. Earlier findings, for instance collected through the Stanford Five City Project, have shown that under certain circumstances, public communication can support public health policy campaigns (and improve health outcomes in target populations – even in the medium to long-term (Farquhar et al., 1990; Fortmann, Taylor, Flora, & Winkleby, 1993; Taylor et al., 1991; Winkleby, Taylor, Jatulis, & Fortmann, 1996). Although the effect size of public health communication is debated, many scholars find general support for the positive effect of public communication on healthy behavior (for instance to tackle smoking, obesity, or other addictions). Later research has shown that public communication in the context of public health interventions does not only impact individual-level behavior but stimulates healthy behavior by creating stronger social norms and social ties within communities. One of these examples is the US North Carolina Department of Public Health’s effort to prevent teenage pregnancies. Instead of targeting children through public communication campaigns, the department targeted parents with through TV, radio, and billboard ads with the tagline: “Talk to your kids about sex. Everyone else is” (Abroms & Maibach, 2008, p. 224). Subsequent phone surveys with parents showed that those who were exposed to the campaign were more likely to have talked to their teenage children about the matter and were also more likely to talk to their children about sex in the next month (DuRant, Wolfson, LaFrance, Balkrishnan, & Altman, 2006). We find similar patterns in other policy areas, such as central banking: stock prices tend to incorporate central bank statements within a short period of time after announcement (Rosa, 2011). On the other side, wrong information can lead to adverse behavioral

outcomes (Chary, Overbeek, Papadimoulis, Sheroff, & Burns, 2021). Large organizations such as the World Health Organization or the Dutch Public Institute for Public Health and the Environment (RIVM) have recognized the importance of communication to influence behavioral outcomes and have developed their own resources, human resources, and monitoring tools to build and maintain robust public communication channels (RIVM, n.d.; World Health Organization Europe, n.d.).

Structure, data, and methods

The chapters at a glance

This dissertation argues that in order to better understand the motivations behind regulatory communication, we need to understand communicational patterns across various different contexts. We need to widen our investitive lens to improve the external validity of previous findings in the field of regulatory communication that typically rely on either extraordinary context (e.g., responses to reputational threats), individual organizations, individual regulatory contexts, or a combination of these. The following chapters will therefore bridge across various contexts to uncover how regulators observe their environments, how they react to environmental clues, how they address various audiences, and how they do so strategically.

Chapter 2 looks at how regulators interact with the media: How independent is their communication? How reactive are they to the media? How reactive is the media to them? We find that news media and ECB are highly reactive to each other in how they focus on various topics. The chapter uses quantitative text analysis to isolate latent topics in central bank and media communication and tests whether and how they correlate. The findings suggest that there is at least a high level of reactivity to environmental cues

from the news media, if not even proactivity in how regulators talk about core issues, emerging responsibilities, and unusual measures.

Chapter 3 investigates how regulators react to the political climate surround policy-making procedures. Shifting our view to the European Commission, we look at communication of a regulator with executive powers. Using a news media dataset and a regulatory database collected within the 2-Capture research project, we test under which circumstances EU Commissioners appear in the news. We find that Commissioners are trying to use communication in a way that maximizes reputational gains and avoids reputational damages, based on how politically conflictual they see a policy proposal that the Commission published. This suggests that they not only listen to their political environment, but they also anticipate conflict and adapt their communication accordingly.

Chapter 4 builds on the prior findings and takes a more practice-oriented look at regulatory communication. Given that regulators are sensitive to their environment and seek to communicate strategically when they can, what constitutes a “good” way of communicating? Staying in the realm of EU public agencies, we test what determines the amount of attention that regulators receive on the social media platform Twitter. Using machine learning and language learning algorithms, we classify Tweets of all EU agencies present on Twitter and test whether their social media attention is predetermined by institutional factors or whether they can gain more attention via means of (effective) communication. The findings show that their general attention level on social media (i.e., number of followers of their accounts) is best predicted by the agencies’ news media salience: The more they appear in news reporting, the more people will follow them on social media. Communicational strategies can, however, play a role for their short-term social media attention: When using interactive language that attracts engagement by their audiences, agency tweets receive more reactions than tweets that do not make use of such tools.

Chapter 5 shifts the view to another audience of regulatory organizations that is often overlooked: other regulators. Using the Covid-19 pandemic as a case study, we are able to observe how 38 public agencies of the EU communicate about the same issue on Twitter. This comparative perspective enables us to investigate whether regulators are mindful of other regulators in choosing their communication strategies. Using structural topic models, we find that public agencies seem to be aware of what *other agencies* publish

and try to stay out of each other's reputational turf and carve out their own communicational niches via means of issue segmentation: Dissecting a large and complex issue into many small sub-issues that are distinctly connected to each organizations' specialties. Once they have identified their own niche sub-issues, they focus their communicational output on these topics in order to capture specific audiences that are important to them.

The concluding chapter aims to reflect on the findings of this dissertation and relates them back to the central research question. It furthermore reflects on future avenues of research and draws up implications of this thesis for academics and practitioners.

Research approach

I concluded in the theoretical section that many of the current gaps in our understanding of regulatory communication can be ascribed to the current focus and mode of study of the subject. To reiterate, much of the current literature (1) focuses solely on regulatory communication as a reputation management tool, (2) predominantly focuses on regulatory agencies, and (3) focuses mostly on the content rather than the dynamics and interactions behind regulatory communication. To assess whether and how regulatory communication can serve various purposes, the subsequent chapters vary the setting of how we study regulatory communication along multiple axes (see table 1).

In terms of data, I study regulatory in multiple communication venues, ranging from formal central banking communication and newspaper reporting to more informal social media communication. This choice was made to capture the dynamics behind regulatory communication: Every study setting allows us to measure interactive elements in a regulator's communication output. For instance, how does ECB communication interact with news media reporting (chapter 2), or how are a Commissioner's choice of public statements determined by policy characteristics (chapter 3)? Studying social media communication of regulators is particularly useful in capturing communicational dynamics, as it allows us to directly measure the reaction of the regulator's audiences to what regulators are saying.

To address the current focus on regulatory agencies, the chapters also vary the subjects of study to account for the possibility that different regulators make different use of communication. While chapter 2

examines a single organization, chapter 3 adds organizational complexity by studying the EU Commission – a multifaceted regulator with executive and legislative powers and independent organizational subunits. Chapters 4 and 5 study a large part of the European Union Agency landscape, which includes strictly regulatory organizations as well as other agencies responsible for research, information distribution, or policy implementation. This broad set of agencies allows us to measure communication across the entire policy cycle, starting from underlying research and policy formulation via policy information provision all the way to policy implementation and evaluation.

The challenge when studying regulatory communication is not data availability, but rather data collection, processing and analysis. Many newspapers report on regulatory affairs and regulators publish extensive communication themselves or discuss regulatory topics on social media. However, this information is (usually) captured in words, which makes processing and the analysis much more difficult than numerical datasets. However, relatively recent advances in computational methods have made it possible for researchers to analyze large bodies of text in a quantitative manner. This dissertation makes careful use of such methods and techniques, such as natural language processing, machine learning, and web scraping, to both process as well as quantify the information in the large amounts of text available to researchers. While these methods are still relatively new in the field of public administration, we know about the value that they can bring in answering pressing human behavior research questions (as demonstrated by computational social science research). The chapters use these tools in combination with manual coding (chapter 3) and extensive databases about organizational (chapter 4 and 5) and policy characteristics (chapter 3) that were collected via desk research. To statistically analyze the resulting data, I employ a variety of quantitative models that best suit the research question – for instance Vector Autoregression (VAR) models to measure the interplay between regulatory organization and media communication in chapter 2 or multilevel models to accommodate the nested structure of the agencies in chapter 4.

Conceptually, the chapters vary in their focus on regulatory communication as a reputational or a regulatory tool. After all, regulatory communication can have multiple purposes at the same time and many of the chapters acknowledge this by using conceptual frameworks that allow multiple functions and motivations to co-exist (specifically chapter 2 and 3). Chapter 4 and 5 focus on regulatory and reputational considerations behind communication individually to go a bit deeper into the functioning of

both. Lastly, the audiences of regulatory communication also differ across chapters. Depending on who is involved in the regulatory communication, underlying motives and strategies might differ. Observing communicational patterns between a variety of audiences allows us to better understand the various ‘flavors’ of regulatory communication.

Table 1-1: The chapters in context 1

Chapter	2	3	4	5
Case	European Central Bank	European Union Commission	European Union Decentralized Agencies	European Union Decentralized Agencies
Media platform	Formal bank communication and news media	News media	Social media (Twitter)	Social media (Twitter)
Audiences of regulatory communication	News media and their readers	News media and their readers	Social media users	Other regulatory organizations on Twitter
Purpose of strategic communication	Reputation for functional areas	Organizational reputation	Attention seeking	Niche seeking
How is communication used	As a regulatory and reputational tool	As a regulatory and a reputational tool	As a regulatory tool	As a reputation tool

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Chapter 2

Guiding or Following the Crowd? Strategic Communication as Reputational and Regulatory Strategy

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Introduction

A recently emerging literature points to the importance of strategic communication as an important instrument for regulatory agencies to foster their reputation and contribute to effective regulatory governance (Moshe 2020). Illustrative in this regard is the instrument of forward guidance in central banking. Forward guidance is a type of central bank communication about the likely path of future monetary policy and helps manage public expectations. In the words of a central banker: “Appropriately employed, forward guidance can help the public to form more accurate expectations about the future path of monetary policy and thus help promote stability in financial markets and the economy” (Plosser 2013, 2). Forward guidance is a form of strategic communication and can also be a powerful regulatory instrument when applied by a credible central bank (Morgan and Sheehan 2014). Indeed, recent studies show that *what* a central bank communicates is important to protect and advance its reputation of credibility and independence, and hence its capability of effectively implementing monetary policy (Blinder et al 2008; Gilad et al 2015; Moschella and Pinto 2018).

The example of forward guidance illustrates the potential of strategic communication as a reputational and regulatory strategy (Carpenter 2010; Coenen et al 2017; Gilad et al 2015). That is, it shows how communication can be employed by regulatory agencies as both a strategy to advance their reputation and as a regulatory instrument to enforce compliance or guide market behavior. We add to the literature on bureaucratic reputation and the role of strategic communication by explaining and assessing how patterns of strategic communication evolve over time in response to public concerns raised by the audiences of public agencies. Examining both public agency communication and public concerns raised by agency audiences helps unravel the strategic nature of agency communication.

We contribute to the literature in two important ways. First, we advance theoretical expectations regarding strategic communication as a regulatory and reputational strategy. A reputational account of public agencies assumes that they strategically communicate and engage with their manifold audience to advance or protect their reputation for distinct competencies. We advance a reputational account of agency communication by further theorizing how and when such communication patterns are likely to differ. We assume an agency to communicate more reactively or remain silent when its core competencies -

competencies mandated to a public agency that provide it with a distinctive functional profile - are at stake (Reactive Agency Hypothesis). In contrast, we expect agencies to adopt a more proactive communication strategy when an evolving competency - competencies an agency is mandated to further develop or prefers to advance in addition to its core mandated tasks – is at stake (Proactive Agency Hypothesis).

Our second contribution is a novel methodology for assessing the strategic nature of agency communication by employing a longitudinal quantitative automated text analysis that incorporates both formal communication of a regulatory agency (i.e., statements, policy documents, and information an agency has officially published) and the public concerns raised by its audiences via media attention. Our method enables us to explicitly test the interactive pattern of agency responses vis-a-vis public concerns raised by its audiences over time. It thereby allows us to more directly assess its potential as a reputational and as a regulatory strategy. In doing so, we build on recent contributions that adopt similar approaches to study agency reputation (Anastasopolous and Whitford 2018, Busuioc and Rimkute 2019; Moschella and Pinto 2018; Strauss and Vliegenthart 2017) but advance this new approach in an important way by theoretically and empirically incorporating both agency communication and public concerns. So, we fully take into account the interactive nature of organizational reputation, a process that essentially unfolds via back-and-forth communication between public agencies and their audiences.

We proceed as follows. We first develop theoretical assumptions addressing the question of how reputational concerns explain patterns of strategic communication by regulatory agencies. We subsequently test our hypotheses based on a longitudinal study of European Central Bank (ECB) communication and public concerns raised by its manifold audience via media coverage during the full life span of the ECB. In doing so, we operationalize strategic communication as frames reflecting distinct ECB competencies in ECB formal communication and via media attention.

Our analysis yields two key observations. First, we find that the ECB mainly communicates in a reactive way, but with varying intervals between the specific concerns raised by their audiences and its own response. It responds to media attention regarding evolving competencies and unusual measures quicker than to media attention regarding core competencies. This pattern seems to signal a strategic response as the literature on regulatory communication suggests (Gilad et al 2013; Maor 2020; Rimkute 2019). Second,

we find a pattern of internal frame alignment in ECB communication, i.e., attention to evolving competencies and unusual measures in times of crises often co-occurs with attention to its core competency in monetary policy. This pattern of internal frame alignment seems to indicate strategic issue linkage, i.e., strategically linking attention to new and evolving competencies to established competencies. Such issue-linkage is in line with studies on strategic framing and communication on central banking (Cross and Greene 2019; Johnson et al 2020; Princen and Van Esch 2016), on evolving reputations and the importance of strategic communication more generally (Busuioc and Rimkute 2019; Maor 2020) as well as on the importance of narratives as a strategy of institutional layering (Streeck and Thelen 2005; Johnson et al 2018; Shiller 2017). Overall, our findings yield important insights into agency responsiveness to public concerns raised by their audiences and have important implications for the democratic legitimacy of regulatory agencies.

Strategic communication as linking pin between regulatory competencies and reputation

A recently emerging literature demonstrates that strategic communication constitutes an important strategy for regulatory agencies to advance their reputation and by doing so could serve as a regulatory strategy as well (Maor 2020; Gilad et al 2015; Rimkute 2019). A well-chosen communication strategy helps agencies signal their competencies, craft its reputation as a credible and highly reputable regulator and thereby influence market and citizen behavior (and more specifically facilitate regulatory compliance). How strategic communication helps advancing a bureaucratic reputation and signaling regulatory competency is a complex mechanism involving a close relationship between regulatory competencies and bureaucratic reputation and how communication can foster this relationship.

First, the starting point for considering strategic communication as a reputational and regulatory strategy concerns actual regulatory competencies. Some conceptualize such competencies as general dimensions or features of a regulatory agency and distinguish between performative, technical or professional, legal-procedural and moral reputational dimensions, emphasizing distinct features of regulatory agencies (Carpenter, 2010; Overman et al 2020). Others apply a narrower focus by conceiving regulatory competencies mostly as functional areas, focusing instead on what agencies are capable of, rather than the more general features of an agency (Gilad, et. al 2015; Maor et. al 2013).

We conceive of regulatory competencies as functional competencies, largely in line with the literature on organizational competences, in which functional competencies are defined as a set of capabilities or traits of an organization geared towards a distinctive functional profile. Such a distinctive functional profile has been argued to help firms obtaining a competitive advantage in a market (Williamson 1999). Applied to public organizations, such a functional conceptualization of organizational competencies indicates the (perceived) capability of a public organization to address particular tasks (Andrews et al 2016). As such, organizational capabilities refer to a strategic management process by which the organizational leadership is capable of marshalling and channeling adequate resources to address certain organizational tasks (Andrews et al 2016; Beck et al 2014, 443).

An agency's leadership will consider some regulatory competencies as more important for its agency's performance and reputation than others. In the context of our analysis of regulatory agencies, the distinction between core and evolving competencies is relevant. We conceive of core competencies as competencies – tasks and activities – that have formally been delegated to the agency and render it an organizational entity with distinctive responsibilities. Evolving competencies are those tasks and activities an agency prefers to be attributed with within its current legal mandate or prefers to obtain to widen its mandate and expand its functional scope.

Although the literature on organizational competencies and capabilities emphasizes functionally distinctive traits of an organization, it also signals the perceptual nature of organizational competencies by emphasizing how such functional capabilities are determined by a judgement of an organization's multiple audiences (Andrews et al 2016, 244). This implies that the conceptualizations of organizational competencies and capabilities are closely related to a reputational account of public organizations, given their emphasis on perceived performance by an organization's audiences (Overman et al 2020). So, regulatory competencies and organizational, or more specifically, bureaucratic reputation are closely associated and share a perceptual nature given the importance of audience assessment in the conceptualization of both aspects in the literature.

This brings us to the second element of our argument on how strategic communication constitutes both a reputational and regulatory strategy, namely the importance of bureaucratic reputation. Bureaucratic

reputation is considered as a valuable organizational asset in the bureaucratic politics literature. It is often conceptualized in line with Carpenter's definition: "a set of beliefs about the unique and separable capacities, roles and obligations of an organization, where these beliefs are embedded in audience networks." (Carpenter 2010: 45; Carpenter and Krause 2012: 26). Bureaucratic reputation is seen as crucial for many aspects of agency performance, including the level of agency output (Maor and Sulitzeanu-Kenan 2016), the quality of the policy information agencies provide (Krause and Douglas 2005), how they assess risks (Rimkutė 2017), how they make decisions (Maor and Sulitzeanu-Kenan 2013), or how they allocate their attention to multiple tasks (Gilad 2016). Reputation has also been demonstrated to influence agency responsiveness to external pressures from interest groups (Arras and Braun 2017; Carpenter 2002, 2004), to public pressure exerted via the media (Carpenter 2002; Gilad et al 2015; Maor et al 2013), or the public warnings they publish (Maor 2011). Even more fundamentally, bureaucratic reputation has been argued to determine the autonomy of agencies altogether, as Carpenter noted: "the key prerequisite for bureaucratic autonomy is bureaucratic reputation" (2001: 17).

Given its perceptual nature, it follows that bureaucratic reputation is essentially crafted via communication (Maor 2020) and engagement with its manifold audience, including political-administrative principals, regulatees, organized interests, citizens and the media (Carpenter and Krause 2012; Overman et al 2020). By implication, regulatory agencies are likely to respond differently to the multiple concerns raised by their audiences. Maor et al. (2013), for instance, demonstrate that agencies are inclined to keep silent in areas where they enjoy a strong reputation, and in areas that do not constitute the core competencies of the agency (cf. Rimkute 2019). Furthermore, they show that regulators are inclined to respond to criticisms targeted at core functions for which their reputation is weak, or still evolving. In general, agencies are demonstrated to have an overall disposition to respond when media coverage is very intense or contains negative opinions (Maor et al, 2013: 582). Gilad et al. (2015) demonstrate that agencies respond differently to various types of public allegations, depending on the relative threat to their reputations.

Generally, many studies of strategic communication as a reputational strategy show that bureaucratic agencies often adopt a reactive communication strategy. That is, they strategically choose to respond or remain silent after its manifold audience has raised public concerns about their performance, usually via the media (Maor et al 2013; Gilad et al 2015; Rimkute 2019). In other cases, the entrepreneurial

assumption underlying a reputational approach to public agencies, assumes, if not implicitly, more proactive strategic behavior vis-à-vis stakeholders (McCubbins, Noll and Weingast 1989; Carpenter and Krause 2015; Wood 2017). This entrepreneurial assumption implies that an agency emphasizes certain functional areas *before* its audiences raise concerns regarding such functional areas. Maor (2011), for instance, argues that proactive public signaling might be necessary for agencies to maintain a certain reputation. Hence, agencies are expected to not only adopt a reactive strategy to advance or protect their reputation but are also likely to adopt a proactive communication strategy. The latter refers to a strategy to either preempt concerns or emphasize certain competencies in advance of concerns raised by their audiences. Communication strategies are thus considered a fundamental part of crafting a bureaucratic reputation based on a portfolio of regulatory competencies and agency preferences to hide, foster or advance these individual competencies.

Strategic communication as a reputational and regulatory strategy

Strategic communication as a reputational and regulatory strategy essentially assumes that by carefully crafting regulatory competence, a regulatory agency can foster and advance positive perceptions of such regulatory competencies and hence its reputation by its manifold audience via strategic communication. The perceptual nature of both competencies and organizational reputation implies that strategic communication cannot only serve a reputational strategy but a regulatory strategy as well. A reputation as a capable regulator will help facilitate regulatory compliance and influence market and citizen behavior more generally.

More specifically, when considering strategic communication as a reputational and regulatory strategy, it follows that agencies use communication to protect or advance their reputation by emphasizing core competencies or preferences for evolving competencies, and that they will do so via a differentiated communication strategy. We assume that agencies vary between reactive and proactive communication strategies depending on the type of competencies at stake. Agencies are more likely to employ a reactive communication strategy or remain silent when it concerns their core competencies for which they enjoy a strong reputation, or which they need to protect in order to remain being perceived as capable and credible of fulfilling these tasks. In addition, we expect that agencies are more likely to adopt a proactive

communication strategy when aiming to advance evolving competencies. These considerations result in the following concrete hypotheses.

H 1: Agencies are likely to adopt a reactive communication strategy regarding core competencies (Reactive agency hypothesis)

H 2: Agencies are likely to adopt a proactive communication strategy concerning evolving competencies (Proactive agency hypothesis).

Research design

Case selection

We test our research assumptions regarding strategic communication as a reputational and regulatory strategy with a case study of central bank communication. Central bank communication has both a reputational and regulatory component. Central banks a) communicate about objectives and strategy, b) explain policy decisions, c) provide an overview of the economic outlook and d) signal future policy decisions (Blinders et al 2008). Beyond these policy goals they also communicate about financial stability, objectives, and macroprudential supervision (Cross and Greene 2019; Born et al 2012; 2014, Masciandaro and Romelli 2017). Central bank communication has been demonstrated to affect monetary policy and financial market stability (Blinder et al 2008; Hansen et al 2019; Beaupain and Girard 2020) and is particularly effective in doing so during periods of unconventional policy, exemplified by the instrument of forward guidance (Armelius et al 2020; Cieslak and Schrimpf 2019). At the same time, the potential of effectively employing strategic communication as a regulatory instrument hinges on a central bank's credibility, and thus a central bank's reputation (cf. Moschella and Pinto 2018; Gilad et al 2015; Moar et al 2013). Central bank communication therefore constitutes a likely case of strategic communication as a reputational and regulatory strategy.

We further selected the European Central Bank to examine central bank communication. Compared to other central banks, the ECB has equivalent competencies in terms of monetary policy, albeit with a narrowly defined mandate mostly modelled on the German Bundesbank mandate (Bodea and Hicks 2015; Dietsch 2020; Fernandez-Albertos 2015; Goodhart 2010). Yet, it is unique in being a pan-European

central bank with a specific organizational and legal structure to balance both representation and expertise, signaling its distinct multi-level and hence more politicized nature than some national central banks (Clark 2015; Moschella and Diodati 2020; Van Esch and De Jong 2017). At the same time, comparative studies on central bank communication demonstrate equivalent importance of communication as policy and strategic instruments across different central banks, including the ECB (Armeliu et al 2020; Bron et al 2012, 2014; Cieslak and Schrimpf 2019). We will discuss the implications of our case selection for the external validity of our findings in the discussion and conclusion section.

To examine ECB strategic communication as a reputational and regulatory strategy, we examine ECB formal communication (in line with previous studies of central bank and regulatory agency communication; cf. Gilad 2015; Busuioc and Rimkute 2019). ECB's formal communication has been demonstrated to convey its policy agenda and priorities (Cross and Green 2019; Johnson et al 2018). By examining its formal communication, we are able to uncover how and when it emphasizes its core and evolving competencies. Importantly, to assess whether the ECB does so in response to, or in advance of, concerns raised by its audiences we additionally examine public concerns raised by ECB audiences via the media. We assume the media to be a crucial venue for assessing how public agencies respond to their audiences. More concretely, in line with Börang and Naurin (2015), we assume that agencies are attentive to political, policy and regulatory issues raised in public by a variety of stakeholders and that these issues emerge as cumulative patterns of attention in the media. This is in line with what Maor (2020, 2) concluded based on a meta-analysis of public agency communication: "[A]s an indispensable part of modern democratic life, the mass media plays a key role in channeling, and sometimes even structuring, interactions between agencies and audiences."

Case expectations

In line with our theoretical framework on strategic communication, we expect the ECB to communicate in different ways about its core and evolving regulatory competences. Based on a secondary document analysis of academic studies covering both the history and functioning of the ECB in general, and ECB

communication and transparency more specifically, we identified three distinct competences that the ECB can be expected to actively promote and defend.¹

First, in line with the reactive agency hypothesis, a *core competency* for the ECB is its role in monetary policy, with an emphasis on setting short-term interest rates to achieve long term, stable price levels. To uncover an emphasis on its core competency, we identified the terms ‘interest rates’, ‘price stability’ and ‘macro-economic outlook’ as key issues signaling ECB’s core competency. In the early stages of its lifespan, we expect the ECB to communicate more proactively regarding its core competence to establish a strong reputation – after all, the central bank still needs to develop a reputation for these core competencies in the early years. Afterwards, *we expect the ECB to adopt a reactive communication strategy regarding monetary policy and price stability*. The reasoning here is that after the bank has established a reputation for core competencies, it needs to maintain this reputation vis-à-vis its audiences and will likely only react to challenges coming from these audiences.

Second, in line with the proactive agency hypothesis on evolving competences, the literature describes two additional relevant functional areas of central banking. Given the increasing focus of the ECB’s role to take on additional supervisory functions in addition to its main price stability and monetary policy functions, we identified the terms ‘macro-prudential reform’, ‘supervisory board’, ‘banking union’ as key terms indicating *expanding competencies* as financial market supervisor. These competences can be called ‘expanding’, since the ECB is aiming to be able to implement these measures on a permanent basis, not just in times of crises. As the reputation for these competences is not developed yet, *we expect the ECB to adopt a proactive communication strategy regarding its potential role as financial market supervisor*.

Another set of competences relates to the very nature of central banking: operating in an environment of uncertainty and needing to address this uncertainty directly (Krause 2003). Central banks operate in a complex environment characterized by political pressures, the changing nature of the economy and key economic indicators that are sometimes difficult to measure and assess (Greenspan 2004). Coping

¹ studies that were consulted for this assessment: Bodea and Hicks 2015; Vourlouris 2012, Fernandez-Albertos 2015; Curtin 2017, Couré 2017, Goodhart 2010; Fromage and Ibrido 2018, McPhilemy and Moschella 2019; Orphanides 2018, Weismann 2018, Blinder et al 2008, Cukierman et al 1992; Johnson et al 2018; ‘t Klooster and Fontan 2019.

with such uncertainty represents a core dilemma for a central bank: the effect of their communication depends on the predictability of the signal. All things being equal, levels of economic and policy uncertainty will affect a central bank's communication and its proactive or reactive nature. We therefore expect a distinct pattern of engagement with media attention to ECB crisis management competencies, which constitute a separate set of competencies that is very typical for central banking and relate to *unusual measures*. Based on the secondary document analysis, we therefore included 'non-conventional measures', 'quantitative easing', 'qualitative easing', 'asset purchase programs' as terms indicating attention to unusual measures in the wake of financial, economic and euro crises. Given the need to calm down the markets in times of crises, *we expect the ECB to pursue a proactive communication pattern regarding these unusual measures*.

Data collection and measurement

We use quantitative text analysis to examine ECB formal communication and media attention to the concerns raised by its audiences respectively, in line with recent studies adopting a quantitative, machine-learning approach to the study of organizational reputation (Anastasopoulos and Whitford 2018; Busuioc and Rimkute 2019; Moschella and Pinto 2018). More specifically, we measure how the ECB addresses its competencies in its formal communication and concerns of its audiences via media attention by the occurrence of frames. We define frames as 'selected and highlighted features of reality' (cf. Druckman 1993, 91), thereby following an approach common in the literature on stakeholder engagement and agenda-setting (Börang et al 2014; De Bruycker 2017). For the purpose of our study, we operationalize frames as attention to particular regulatory competences. For the purposes of our analyses, we distinguish three frames: 1) *ECB core frame* signaling core competencies in the area of monetary policy and price stability, 2) *ECB expansion frame*, indicating evolving competencies in the area of financial market supervision and 3) *ECB unusual measures frame* signaling crisis interventions. Frames can be studied in several ways, ranging from a word-based quantitative text analysis, a manual or computer-assisted content analysis approach, and via interviews to examine the amount of attention to distinct issues. While each method has its own advantages and disadvantages, they tend to yield equivalent frames (Börang et al 2014). Frames are then measured as particular word-combinations conveying a certain competency. As such, our approach is in line with the established 'bag of words' approach, which treats words as independent observations (i.e., the order of

words does not matter for our analysis) and clusters of words indicating frames or arguments (Klüver and Mahoney 2015; Klüver and Sagarzazu 2016; Quinn et al 2010).

Based on the nature of the two datasets that are used (formal ECB communication and newspaper articles covering the ECB, see below for further details), we adopt a unique approach that uses unsupervised topic models to construct frame dictionaries for the three competence frames in question (i.e., core, expansion, and unusual measures frames). Using these dictionaries, we measure how frequently the three frames appear in each document in our two databases (more information follows in the paragraphs below). The resulting frame-occurrence-per-document data is then used for a time series analysis that lets us test the chronological sequence of frame use between the ECB and the media.

Data collection

The data that is employed to test our hypotheses consists of two text corpora. The first text corpus (“News dataset”) is constructed to examine collective patterns of attention by stakeholders via news media. For the News dataset, we collected newspaper articles in 3 major newspaper outlets reporting extensively on European Affairs (“Financial Times”, “The Guardian”, “The Wallstreet Journal”) that were published between January 1997 until the time of collection of the articles (June 2018), covering the full life span of the ECB. The newspaper outlets were selected both based on a search of which newspapers report most extensively on the ECB, but also based on the size of the readership and editorial bias of the reported content: While the “Financial Times” is generally perceived as a center-oriented newspaper, “The Guardian” and “The Wallstreet Journal” tend to have a center-left and center-right bias respectively.² By selecting major international newspapers, we ensured a high coverage of ECB related issues and a focus on collective issue attention by the main stakeholders.³ We hand coded a subset of 100 randomly selected articles to verify that they indeed referred to actions by or opinions about the ECB. 94% of the articles

² While measurement of media bias is difficult and usually subjective, media-bias ratings can be retrieved from websites such as mediabiasfactcheck.com.

³ We used the Google Natural Language Processing API on the Google Cloud Platform to detect entities in the text and hand coded stakeholders that appear in more than 1% of the media articles by assigning them to different stakeholder categories. The coverage of collective issue attention during the entire period includes both mentions and statements of private banks (roughly 20-25 percent), national central banks (roughly 25-30 percent), international organizations (5-10 percent), EU institutions (10-15 percent) apart from ECB mentions and quotes (25-30 percent) as well. As such, our analysis of media attention speaks to the concept of external audience and collective issue attention given the appearance of the multiple stakeholders together constituting the ECB’s manifold audience.

fulfilled such criteria, indicating a robust sampling strategy. After deletion of duplicates, the dataset contains 5546 newspaper articles. To capture only articles that on the one hand report specifically about the ECB, but on the other hand capture the broadest possible set of topics, we selected all articles that mention the words “ECB” or “European Central Bank” in the title. Furthermore, each article relates to European Union countries.⁴ After deletion of duplicates, the dataset contains 5546 newspaper articles.

The second text corpus, (“ECB database”) is constructed to examine ECB attention to its competencies over time for which we used all formal communication issued by the ECB during its entire life span until June 2018. To construct the ECB database, all available formal communication was scraped from the ECB’s website. After deleting duplicates, short statements, and publications in a language other than English, the ECB database contains 4139 publications, including press releases, press conferences, speeches, and interviews. Our usage of formal communication channels of the ECB to examine issue attention is in line with existing research on ECB communication (Van Esch and De Jong 2017; Coenen et al 2017). Figure 1 depicts the composition of both datasets based on the individual sources (different types of ECB communication channels and different news media outlets respectively).

⁴ We excluded articles about Cricket, as ECB is also the abbreviation for “England and Wales Cricket Board”.

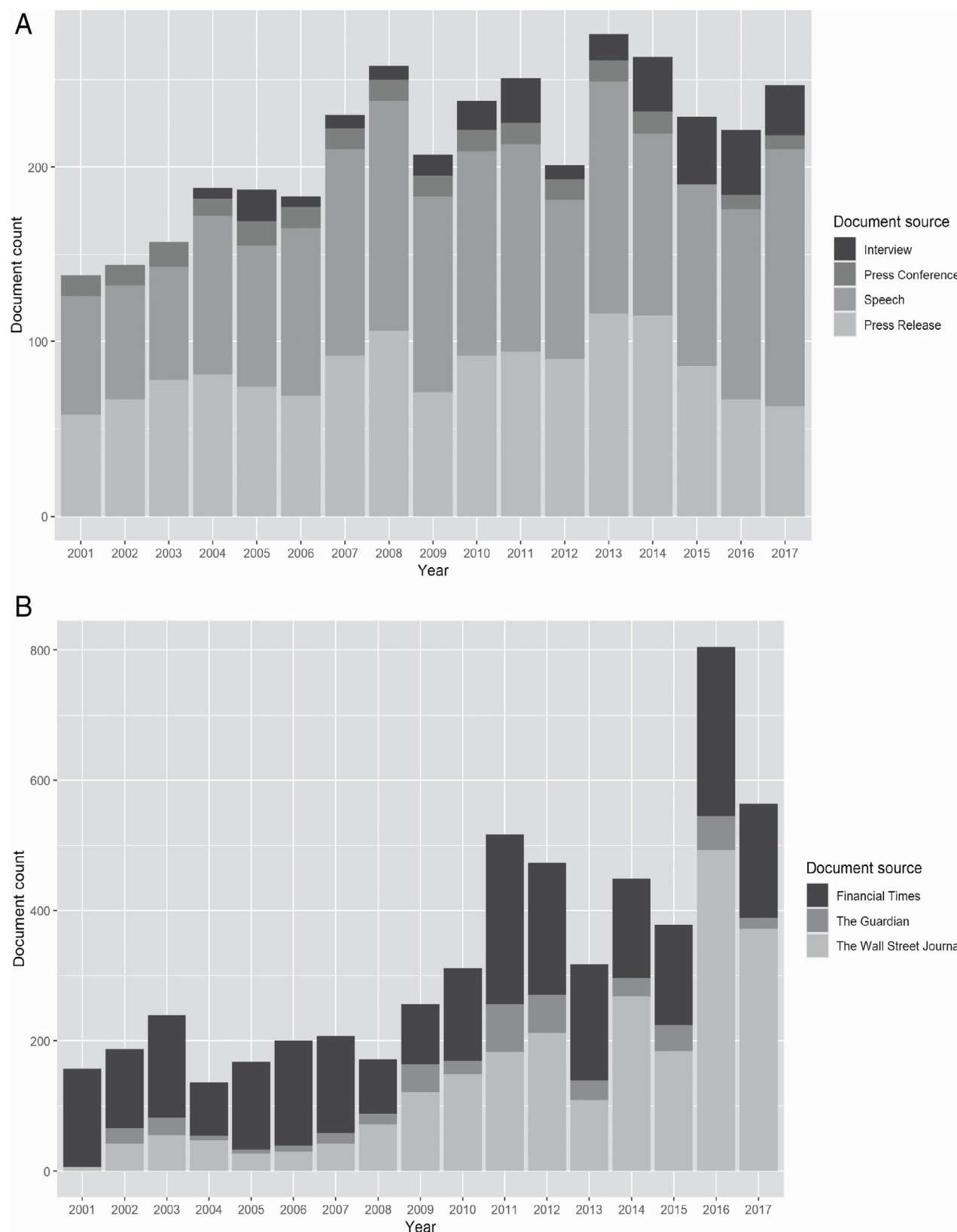


Figure 2- 1: Communication Frequency Across Sources (A: ECB database, B: Newspaper database)

Measurement of frames

Our strategy was to construct well-informed dictionaries that are based on topic models generated on the ECB corpus. We subsequently used the average word occurrence (in % of overall words) per month in both text corpora as input data for a time series analysis (VAR) to measure proactivity and reactivity in communicating these frames. After collecting the articles, several preparatory steps were required to conduct the quantitative text analysis and machine learning operations to measure frame alignment in ECB communication and in media coverage (e.g., stemming and stop word removal, see online appendix A-2 for details). For conducting the frame measurement, there are two choices with different trade-offs: either we construct dictionaries of our target frames and count the occurrences of the dictionary terms in our text corpora (e.g. Rimkutė 2019); or run unsupervised topic models and select the topics that most closely correspond to our target frames (e.g. Barberá et al. 2019). While dictionaries are easy to construct and applicable across texts of varying nature, they are very sensitive to the inclusion or exclusion of words, even when created by experts. Topic models in contrast are fitted very well to the body of text, however, that makes them very sensitive when applied to previously unseen texts. Due to the different nature of our documents, this made using them unfeasible.⁵ We therefore combined the positive aspects of both approaches into a data-driven dictionary methodology that would use the output from topic models to help us create well-informed dictionaries for later measurement.

As each source may use various terms to describe the same frame, we used an unsupervised topic modelling algorithm (Latent Dirichlet Allocation, short: LDA) to identify the vocabulary describing the frames in question (for details on both LDA and the details of our application, see online appendix A-3). This algorithm treats each document as a random mixture of multiple latent topics, with each topic constructed as a probability distribution of all contained tokens (in our case tokens are stemmed individual words, for details see online appendix A-3). This approach is in line with the approach Klüver et al. (2015, 488) discussed: “[...] words that co-occur ‘in similar contexts tend to have similar meaning’ and ‘documents that contain similar word patterns tend to have similar topics.’”⁶

⁵ We tried applying a topic model fitted to the ECB corpus to the News corpus, but the algorithm could only weakly find topics in the other text corpus.

⁶ For an impression of how closely documents within a topic align, see a sample in online appendix A-5.

To develop the topic models that would form the foundation for our dictionary, multiple LDA (Gibbs sampling) topic models with 2 to 50 topics were created from the ECB corpus (Blei et al. 2003).⁷ One difficulty of using LDA topic models is to select a reasonable number of topics. As there is not ‘one perfect’ method of determining this number, we opted for an n of topics that would both increase model perplexity⁸ while preserving human interpretability of the topics (as an “optimal” number of topics based purely on perplexity that could lead to a topic model consisting of non-intelligible topics).⁹ Finally, a topic model with 38 topics was used, as it showed both good perplexity values, and the best interpretability of the various topics. We tested interpretability in line with what Quinn (2010) defines as the different notions of validity. Topics therefore had to be both semantically valid (meaning they show coherence across the top scoring words per topic) as well as predictively valid (meaning that they correspond to real events or observed causes).¹⁰ Based on the key terms that correspond to the target frames that we identified in our secondary document analysis (i.e., core, expansion and unusual measures frames), we then located the matching topics in the key terms were most strongly associated with. We then enriched the list of search terms for each of our frames with other words that the topic model algorithms found to be also closely related to these specific topics. Importantly, we excluded terms that were strongly related to our target frames but also co-occurred in topics that we were not interested in measuring. We ran extensive robustness checks to ensure that our dictionary would actually be measuring what we are interested in. To ensure that our topic model is internally consistent, we ran an additional five topic models with the same parameters and tested the presence of our target frames in each of the topic models.¹¹ To ensure external consistency, we ran a topic model with the same parameters for the news database and tested if the topics that we detected in the ECB database would also appear in the news (with a positive outcome, see online appendix B-2).

⁷ Model run with 1000 burn-in iterations and 600 iterations for the final model, and a seed for comparability and reproducibility

⁸ For an overview, see Montgomery et al. (2012)

⁹ Models with 35-43 topics showed the best perplexity values and were checked individually for understandability of the contained topics (by looking at the top 50 terms with the highest word-per-topic probabilities and by looking at the documents with the highest topic-per-document probabilities).

¹⁰ We included the annotated topics in online appendix A-4.

¹¹ Five more topic models with 38 topics were created and checked for the existence of our target frames to validate topic stability (due to the latent nature of topic models, topics can sometimes disappear between multiple model runs if they are not stable enough). The frames were present in all validation models, although they were sometimes slightly differently distributed across multiple topics.

After constructing the dictionary of terms, we calculated the average occurrence of these terms in relation to the overall number of words in each document (after removing stop words) and averaged that value per year to get an overview of frame development across time (figure 2). After completion of the frame measurement, we aggregated the data in a time series dataset with the monthly occurrence of the target terms as a percentage of the overall number of words for both the ECB and the news datasets. When measuring the same frame with both the topic modelling and dictionary approach, we received comparable results (online appendix B-1). This shows that our method is a viable way of measuring frame occurrence in various bodies of text.

Measuring frame alignment between the ECB and collective issue attention in the media

We subsequently ran a vector autoregression model (VAR) analysis with Granger causality tests, to measure whether the ECB pays attention to the target frames reactively or proactively, i.e. whether we observed the ECB's use of frames to precede or follow the frames emerging from the media coverage. A variable x granger-causes variable y if the past values of x help to improve the predictions for y above and beyond predictions that are merely drawn from y (Granger 1969). We operationalize a proactive communication strategy as an increase of the ECB's use of a frame before the media picks up the use of the same frame. In contrast, a reactive communication strategy is operationalized as an increase of the ECB's use of a frame *after* an increase in media coverage regarding the same frame.

It is important to note that Granger causality should not be confused with actual causality; the measure does not exclude the possibility of confounding variables that influence the dependent variable. If there are no other confounding factors that might influence the value pairs in question (in the case of this paper these pairs are attention to the three different functional areas in both ECB communication and media coverage), Granger causality provides sufficient evidence for the causation in the David Humean sense of the term (Reiss 2013, 21: "All Cs are Es or, whenever C, then E"). We cannot make such a strong assumption, as we cannot rule out other potential contributing factors that influence both ECB and media communication. But even without these restrictive assumptions, Granger causality still allows the researcher to explore the dynamics between the value pairs, and to generally assess whether the two key variables empirically respond to each other (for a further discussion, see Resodihardjo et al. 2016).

To consider external factors that might account for changes in communication, we used the monthly Economic Policy Uncertainty score for Europe (Baker et al. 2016) to test an effect of levels of economic uncertainty on all ECB communication and media coverage. This measure captures the degree of economic policy uncertainty that is conveyed in news reporting of European newspapers and provides a fine-grained quantification of the European financial crisis. We included this as a dummy variable in the models to control for an independent effect of economic policy uncertainty on the patterns of ECB frames and media frames.

Results

We first offer a descriptive analysis of how the frames emerge from the ECB's formal communication and from media attention and evolve over time separately. The left panel of figure 2 depicts ECB the three frames we identified: core frame, expansion frame, and unusual measures frame. The right panel shows the coverage of the same frames by the media.

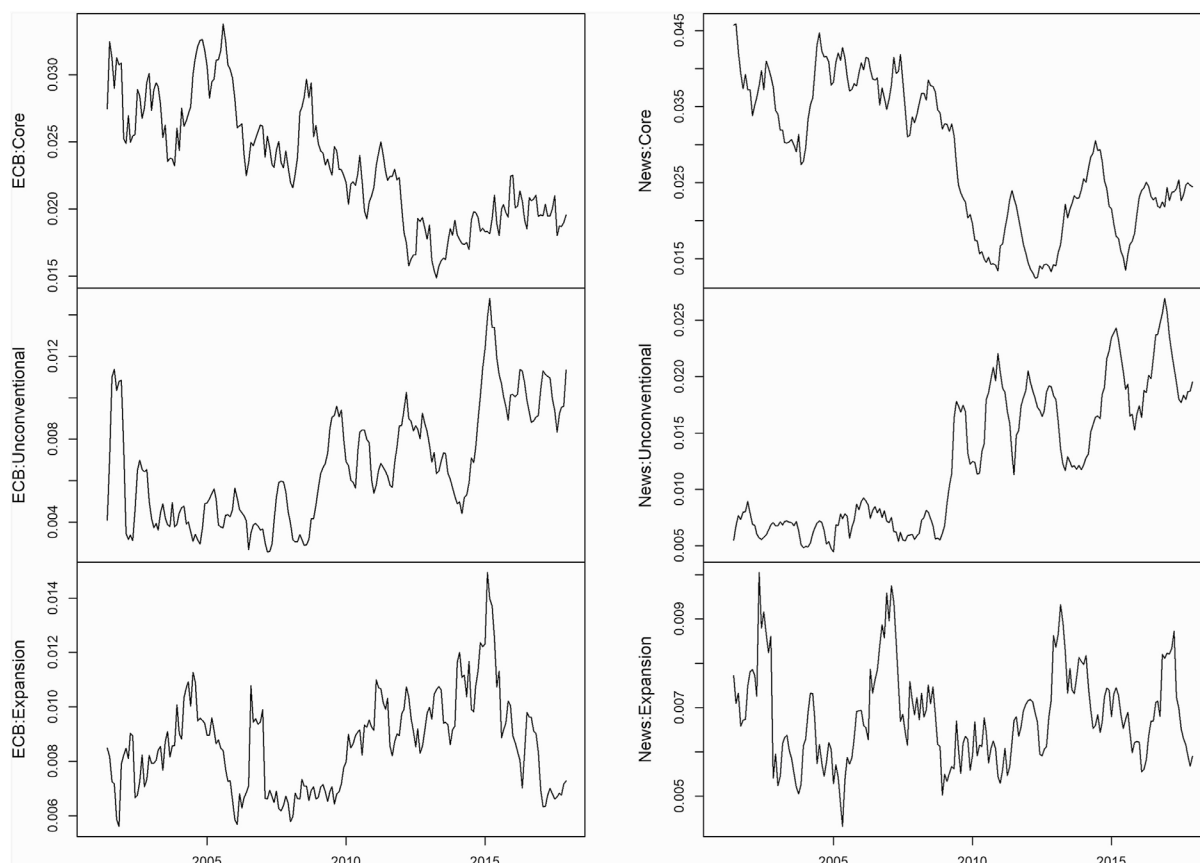


Figure 2- 2: Occurrence of target frame words in ECB communication and media coverage (smoothed, 6-month moving average). y-Axis shows the appearance of the target frame as share of dictionary word matches from overall number of words in the past 6 months (e.g., “On day X, 3% of overall used words that appeared in newspaper articles on the ECB in the past 6 months can be assigned to the topic of unconventional measures”)

Internal frame alignment in ECB communication

In line with our first hypothesis, the ECB focuses on its core competencies frame in its early years. Throughout the years, this focus diminishes and reaches a low point in 2012, one of the worst years of the European financial crisis. However, while the ECB appears to be silent, it continues to communicate its core competencies. And after 2012, this remains the focus. In general, we observe less emphasis on the expansion and unusual measures frame, as the ECB continually emphasizes its core competency.

The unusual measures frame seems to display a rather continuous level after 2008, with a slight decline in recent years, reflecting the multiple crises that the EU and the ECB faced in the past decade. For the expanding competencies frame we observe an interesting pattern: We detect an uptake after 2008 and a relative peak in attention closer to the year of 2014, when the Banking Union entered into force. Thereafter it stabilized again at the same levels as before. This pattern of frames seems to signal that the

ECB emphasized (albeit modestly) competency expansion in the period preceding the actual entry into force of the banking union. The banking union has been one of the most significant expansions of ECB competencies since its foundation, and more emphasis on these expanding competencies prior to such a major reform would be logical to expect.

The relative emphasis on such expanding competencies is less outspoken than one would expect following our theoretical framework and based on the historic nature of the reform. At the same time, such a gradual broadening of the ECB's scope seems in line with recent findings on EU agency issue prioritization over time (Busuioc and Rimkute 2019). More specifically, the patterns we observe patterns of internal frame alignment (i.e., co-occurrence of several frames), point into the direction of strategic communication as regulatory and reputational strategy. That is, a pattern of frame alignment might indicate that the ECB, while consciously emphasizing expanding competencies, has deliberately balanced this with attention to its core competency, to benefit or not jeopardize its core reputation concerning price stability. These expanding competencies signal a complicated balancing act of central bank independence and a more entrepreneurial stance, which would trigger unwelcome political contestation affecting its reputation in its core area. Frame alignment might have helped the ECB in its attempt to forge a reputation concerning those evolving competencies while protecting and benefiting from its core reputation of ensuring price stability.

The ECB core frame appearance in the media data follows a relatively continuous pattern as well but is characterized by a more volatile pattern. For the two other frames under investigation, expanding competencies and unconventional measures, we find interesting differences between the frames appearing in the ECB communication and the media. The ECB does slightly alter its focus on the expansion of responsibilities and unconventional measures over time. However, the two frames seem to develop in a parallel fashion, while attention to unconventional measures is much more dominant in media coverage than in ECB formal communication from the start of the financial crisis in 2008 until 2016. The dominant attention to the core competency frame, yet still modest, seems in line with an overall preference for an independent central bank by its major audiences.

External frame alignment between ECB communication and media attention

While ECB formal communication and media attention reveal the emergence of similar frames over time, we do observe some variation. To test the proactive or reactive nature of ECB issue attention, we conducted a vector autoregression model (VAR) analysis to test our hypotheses, assuming that the relationship between frame occurrence in ECB's communication and the media is mutual. Due to the option of testing relationships of two or more time series in both directions and the possibility to test for Granger causality (Granger 1969), VAR's suitability for analyzing dependencies between the media and other actors has been tested, used, and verified multiple times in public relations research (Vliegenthart 2014). We investigated if and when the media and the ECB were following each other's use of frames. That is, we investigated external frame alignment between the same frame in both the ECB and media data. We aggregated the occurrence of the frame words to a monthly score for both databases (i.e., ECB formal communication and Newspapers), starting from January 2001 until December 2017 (the timeframe of overlap between both datasets). This resulted in six distinct time series (three frames in each dataset). Additionally, we included the monthly Economic Policy Uncertainty score for Europe (Baker et al. 2016) to test changes in communication due to crises in the financial system. We then created three VAR models (one VAR model for each of the frames containing the frame occurrence in both the ECB and Newspaper databases) and conducted Granger causality tests to examine whether the frame occurrence in the ECB or media granger-causes the frame occurrence in the other dataset.

To construct VAR models, the time series need to be stationary. We tested all series for stationarity (no time trend: mean, variance, autocorrelation are constant over time) by using both the Dickey-Fuller and Phillips-Perron test. None of the time series was non-stationary, therefore no data transformation was needed to proceed to the VAR analysis. Lastly, the number of time lags was determined. Based on the framing cycle theory (Miller and Riechert 2001), a maximum lag length of three months was allowed.

In the following step, the VAR models were estimated with time lags chosen according to the Akaike information criterion (in some cases, the criterion suggested longer lags if no maximum lag length was set, but in these cases the model resulted in no significant correlation coefficients between the included variables). We then tested the data for the absence of autocorrelation of the residuals by means of the Portmanteau (Q) test. Two models showed autocorrelation, which disappeared by increasing the number

of time lags in the VAR model (Strauß and Vliegenthart 2017). This process resulted in 9 (bivariate) VAR models (3 models of frames in ECB and media, 3 models of media frames and crisis indicator, 3 models of ECB frames and crisis indicator).

In the subsequent step, each of the models was tested for Granger causality. In the following table we report the F-test scores of the Granger causality test within each VAR model that we have generated, including the significance levels, at the most optimal time lag (Akaike information criterion). Since reporting the coefficients of VAR models does not disclose much valuable information about the underlying size of the correlation of the response variables, we chose to report the impulse response function plots (table 1). The x-axis in these plots shows the time lags (in months) after a shock (sudden increase) in the impulse variable. The shock size of the impulse variable is taken to be one standard deviation of the disturbance term contained in the underlying VAR model. To better understand the size of effect in the response variable, we divided it by the shock size to display the percentage increase

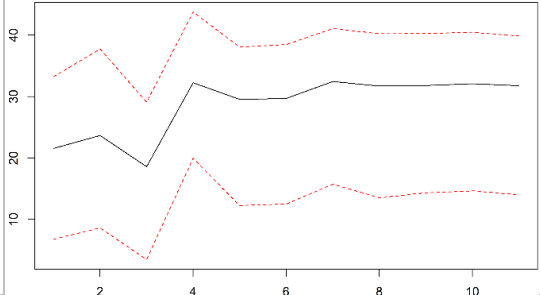
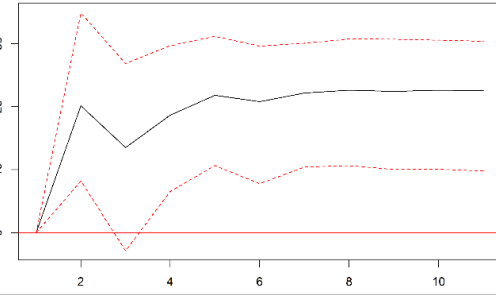
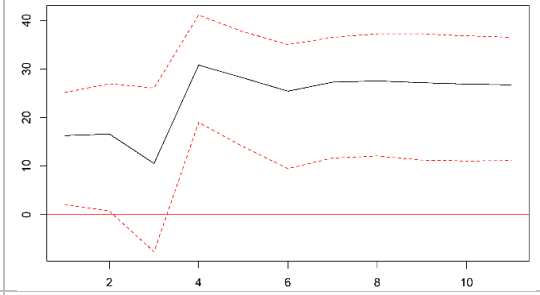
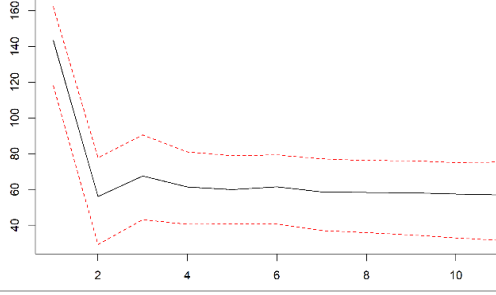
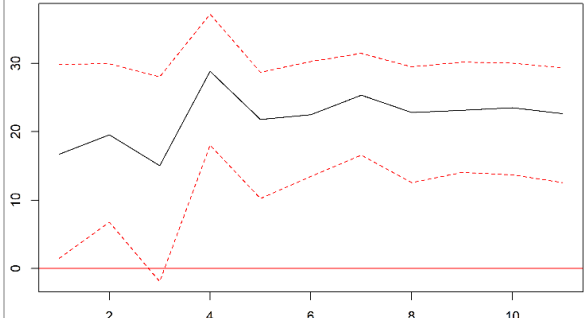
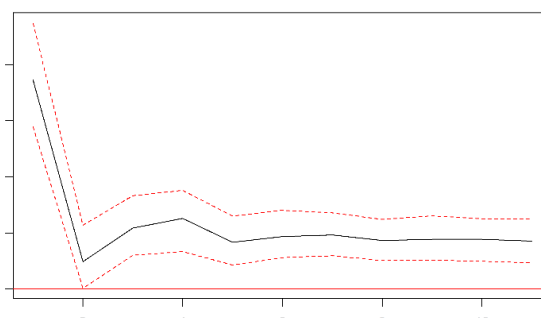
Frame	Media response to ECB	ECB response to Media	With inclusion of financial crisis as exogenous factor
core competencies	Granger, F-Test: 4.61** 	Granger, F-Test: 4.86** 	Media response: Granger F-test: 6.97*** ECB response: Granger F-Test: 4.97**
unconventional measures	Granger F-Test: 3.89** 	Granger, F-Test: 13.21*** 	Media: Granger, F-test: 3.01*** ECB: Granger F-Test: 12.54***
expanding competencies	Granger F-Test: 5.5*** 	Granger, F-Test: 8.03*** 	Media: Granger F-test: 5.08** News: Granger, F-Test: 7.15***

Table 2-1: Impulse-response functions. Note: Y-axis shows effect in response variable in percentage of shock size, x-axis shows time in months after the initial shock.

To provide an example: The top left field shows that a 100% increase in the use of the core responsibility topic by the ECB in month 0 will likely trigger a ~30% increase in the same frame in news coverage by month 4.

In terms of external frame alignment, we observe significant overlap between ECB communication and media attention. All frames show significant granger causality in both directions, so there is likely a mutual relationship between ECB communication and media coverage. The variation in response time suggests variance how the ECB responds to attention in the media. The ECB reacts relatively weak to the media when it comes to its core competences. In the month after a shock, we see no increase in the emphasis on core competencies in the ECB communication. Interestingly, the ECB autonomous communication pattern seems to indicate a steady communication pattern to reaffirm its core competencies and its credibility. However, the picture is different for both expanding competencies and unconventional measures. If the media suddenly increases their focus on such topics, the ECB reacts strongly and quickly. Perhaps unsurprisingly, we see the strongest effect for unconventional measures. If the media increases their focus on such measures by 100%, the ECB increases it by 140% in the following month. The media in contrast reacts much slower to shocks in the ECB's communication and seem to only react to it much later. This is in line with earlier observations on frame congruence between private bank communication and media attention, showing a resistance by German financial media to pick up frames adopted by major German banks (Strauß and Vliegthart 2017). It seems that a reactive versus proactive issue attention pattern can be better understood in terms of reaction time and autonomous communication, rather than in the sequential way we conceptualized the relationship based on existing reputational accounts.

In addition, when we include the economic and policy uncertainty measures as a dummy variable, the findings still hold, with marginal differences in the p-values of the Granger tests. ECB's main pattern of frame alignment does not seem to be significantly affected by economic and policy uncertainty. This seems to be in contrast to the findings of Moschella and Pinto (2018), who find evidence for an increase in frame alignment in response to uncertainty. We find a more modest pattern of external frame alignment that is not significantly affected by contextual uncertainty. This might signal the crucial importance for central banks to stay on topic as much as possible. Equally, the frame congruence between the ECB and the media is not affected by times of crises (for a rudimentary but more detailed test, see online appendix C-1).

We should also be sensitive to a selection effect by the media when interpreting our findings. Overall, the increased attention to unusual measures follows commonly adopted criteria of news value,

including conflict and drama, causing bias in news coverage (Mazzoleni and Schulz 1999). This might explain why the media's attention to unusual measures and the expanding competencies correspond to the issue attention pattern of ECB, as the multiple ensuing crises had arguably more news value than a plea for new competencies of the ECB or more generally the establishment of the banking Union.

Finally, our analyses seem to signal how the ECB alternated between varying levels frame alignment with the media, a pattern generally in line with what one might expect from a reputational account of independent agencies. Whereas we did not find evidence for overt proactive communication, the varying levels of responsiveness do indicate entrepreneurial agency behavior that goes beyond a merely reactive mode of engagement.

Discussion and Conclusion

Strategic communication can be used as a reputational and regulatory strategy by fostering and advancing a reputation for certain organizational competencies via strategic communication, and hence ensure effective regulatory oversight. From a reputational perspective, it follows that agencies strategically diversify between proactively addressing (Proactive Agency Hypothesis) or reactively responding to public concerns raised by their manifold audience (Reactive Agency Hypothesis) to cultivate their reputation and thereby ensure effective regulatory oversight, depending on whether a core or evolving competency is at stake. We tested these assumptions of strategic communication based on a longitudinal analysis of ECB formal communication and attention to ECB competencies by its audiences via media coverage. We find the ECB communication pattern to be largely characterized by internal frame alignment. That is, a focus on its core competency of price stability is a constant dominant factor in ECB communication over time. Attention to its core competencies coincides with either attention to unusual measures in the wake of the financial and economic crises, or a focus on expanding competencies, not surprisingly in 2008 during the financial crisis and afterwards in the run up to the establishment of the Banking Union, bestowing more competencies to the ECB. The patterns of media attention show more volatility, paying much more attention to the unusual measures in the wake of financial and economic crises. Our analysis of external frame alignment shows a stronger mutual relationship than we hypothesized in which the ECB seems to adopt a more reactive than

proactive communication strategy. The ECB responds more quickly to media attention to its expanding competencies and unusual measures compared to its response to media attention to core competencies. Overall, our analysis indicates a pattern of internal frame alignment in ECB communication regarding multiple competencies and external frame alignment between ECB and media attention in which the ECB adopts a reactive communication strategy at different intervals.

Before turning to the implications of our findings, we discuss several implications of our case selection. First, we selected central banks, and in particular the European Central Bank, to study strategic communication as a reputational and regulatory strategy under the assumption of selecting a most likely case. That is, given the crucial importance of expectation management, central bank communication is highly driven by both reputational and regulatory concerns. While this case selection facilitated our study of the interactive nature of strategic communication with collective issue attention, it might have resulted in certain biases as well. First, regarding the selection of central banking, it is plausible that the proactive communication pattern regarding evolving competencies is less outspoken than might be the case for other regulatory agencies, precisely because of the crucial importance of its core reputation as fully independent and therefore credible keeper of price stability or, more particularly for the ECB as the guardian of the Euro. Second, a plausible assumption for the less outspoken attention to evolving competencies would be that the ECB has taken another route to advance such additional competencies, namely via the European Court of Justice (Curtin 2017), via direct negotiations with member-state central banks, and EU institutions given the strong prevalence of domestic monetary preferences in its governing and executive council. This speaks to a third important implication of our case selection, namely the supranational nature of the ECB and European central banking. We have focused on a supranational central bank. This is not only reflected in its organizational structure to balance representativeness with expertise as noted in the research design, but also in the type of media coverage. This could have affected media attention and frame alignment between the ECB and the media. Selection of a national central bank or national independent agencies might have yielded more outspoken external frame alignment patterns given the immediacy of national media. All in all, our case study of central banking, and the ECB in particular, might have affected the likelihood of both the reactive and proactive communication patterns in a distinct way and the careful signaling of a compound reputation much more likely. This could explain the strong internal frame

alignment pattern we observed in the data combined with the less outspoken proactive pattern. It would also explain why we find the ECB to be more attentive to uncertainties in its environment (Moschella and Pinto 2018) or to focus less on its evolving competencies (Gilad et al 2015), compared to other central banks.

Our findings yield important implications for the study of strategic communication as a reputational and regulatory strategy. First, and concerning central bank communication more specifically, our study complements studies of central bank communication by revealing ECB's responsiveness to its multiple audiences. Many studies have focused on the effect of central bank communication on financial market behavior (Blinder et al 2008; Coenen et al 2017) yet largely neglected interactive patterns or engagement with concerns raised by stakeholders or only studied one source, either media-coverage or central bank communication (Gilad et al 2015; Maor et al 2013; Rimkute 2019). We contributed to this emerging literature by examining how the ECB's communication patterns are congruent with media attention by including both formal communication and media attention.

Both the internal and external frame-alignment patterns seem to signal the precarious balance a central bank should strike in its formal communication to ensure predictability and preserve its reputation for credibility and independence (cf. Gross and Green 2019; Johnson et al 2018). These findings are in line with recent studies indicating how the ECB and central banks seem to gradually expand their scope (Johnson et al 2018; Gross and Greene 2019; Heldt and Mueller 2020; Princen and Van Esch 2016). At the same time, it might also reveal potential patterns of (limited) accountability and entrepreneurial behavior vis-a-vis its multiple audiences, in line with concerns of the ECB becoming increasingly politicized and less accountable (Curtin 2017; Moschella and Diodati 2020; Streeck 2015). Understanding how the ECB engages with its audiences helps to better assess its alleged powerful position it developed over the recent decade (Streeck, 2015: 370; Gren et al 2015; Schimmelfennig 2018).

Our findings also speak to strategic communication as a reputational and regulatory strategy beyond central bank communication. European Union regulatory agencies seem to gradually expand their scope via attention to other issues or competencies (Busuioc and Rimkute 2019), suggesting a similar logic of strategic communication across multiple agencies. This pattern of internal frame alignment also fits the

idea of institutional layering as a specific type of institutional reform (Streeck and Thelen 2005) as well as the importance of policy narratives for institutional reform (Baumgartner 2013; McNamara 2006; Schiller 2018). Agencies could carefully link attention to distinct yet related competencies to emphasize both evolving competencies and their perceived capability in those areas by relying on a steady reputation for its established competencies and tasks. Our empirical method allows for larger scale comparative analyses of regulatory communication over time and across cases, facilitating both the empirical study of agency responsiveness to its external audiences, as well as the refinement of reputational theories of agency autonomy and performance. In doing so, future research should explicitly consider the observational equivalence of regulatory competencies and bureaucratic reputation. Future research to better explain such phenomena and unpack the mechanism of strategic communication as a reputational and regulatory strategy hence not only requires longitudinal and quantitative analyses, but also in-depth analyses of agency motivations to trace the causal mechanisms of strategic communication as both a regulatory and reputational strategy.

The responsiveness of independent regulatory agencies has always been a central concern in the study of bureaucratic politics. How such agencies respond to concerns and priorities voiced by their multiple audiences, reveals which issues they prioritize and how they cultivate their autonomy. By implication, how agencies respond to such concerns is a crucial instance of their democratic legitimacy (Dietsch 2020; Krause 2013). Given that the involvement of and collaboration with a variety of stakeholders is becoming more and more prominent (Abbott et al 2017; Carpenter and Krause 2012, Maor 2020, Gilad et al. 2015), understanding how regulatory agencies engage with their external audiences should be part and parcel of explaining the extent to which they are responsive and accountable and, by implication, their democratic legitimacy.

Data availability:

All coding and data analysis decisions are specified in the online supplementary data.

The data and reproduction files underlying this article are available in the DANS Easy repository, at <https://doi.org/10.17026/dans-z27-qdcp>. Due to copyrights limitations, the newspaper dataset cannot be

shared publicly. The newspaper data will be shared at reasonable request to the corresponding author via Dans Easy.

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Chapter 3

Cautious communicators:

Strategic communication of European Union
commissioners in regulatory decision-making

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Introduction

A recently emerging line of research within the bureaucratic reputation literature investigates the role of strategic communication as an important tool in regulatory governance (Maor, 2020). Regulatory organizations strategically identify, process, and prioritize multiple and often conflicting expectations among their various audiences and attempt to respond to these expectations through strategic and consistent public communication efforts (Gilad et al., 2015). Many of the valuable studies on the matter specifically focus on regulatory organizations' efforts to protect their reputation regarding their core responsibilities vis-à-vis reputational threats or examine which reputational dimensions they emphasize in their outputs (Boon, Salomonsen and Verhoest, 2019; Busuioc and Rimkutė, 2019; Maor, 2020; Maor, Gilad and Bloom, 2013; Moschella, Pinto and Martocchia Diodati, 2020; van der Veer, 2020). However, strategic communication can serve more goals than protecting an organization from reputational threats: It can serve as a reputation management tool for regulatory organizations directly involved in regulatory policymaking processes. While early reputation research has stated that regulatory organizations act strategically to protect and forge their reputations in policymaking processes (Carpenter, 2001), we know very little about the nature of their communication in the context of specific (regulatory) policy processes. Depending on the specific mandate, regulatory organizations provide scientific expertise for formulating policy options, organize stakeholder consultations, or – in the case of the European Union Commission (Commission) – even formulate initial policy proposals that will then enter the legislative stages of policymaking. Due to their close involvement, the course and outcomes of regulatory policymaking processes have direct impacts on these organizations, as they can affect both their reputation and the specific policy content.

During regulatory policymaking processes, public communication plays a central role as part of an organization's reputation-management strategy: Depending on how organizations publicly portray themselves, they can either show that they can deliver unique services to the polity or avoid visible failures (Carpenter, 2001, 2004; Carpenter and Krause, 2012; Wæraas and Maor, 2014). While we are starting to understand the intricacies of strategic regulatory communication in response to reputational threats, we do not know whether these findings also extend to regulatory policymaking processes. Given that the regulatory state is becoming increasingly responsive to the public (Koop and Lodge, 2020) and regulatory processes are becoming more politicized (Busuioc and Jevnaker 2020), we need to better understand the

role of regulatory communication in the context of regulatory policymaking and the nature and implications of the communicational strategies of regulators. This research, therefore, investigates following critical question: How do regulatory actors use communication as a strategic tool during regulatory policymaking processes?

In this article, we focus on the strategic communication during policy processes of the Commission – a strong supranational executive organization with many political ties and confronted with ever-increasing audience contestation (Blom-Hansen and Finke, 2020; van der Veer, 2020). The strong emphasis on regulatory governance in the European Union (EU) and the complex political and institutional structure render it a highly relevant case to study how regulatory actors use communication as a strategic tool during policymaking processes. As the Commission is almost exclusively publicly represented by its political principals, henceforth the Commissioners, this study will specifically examine how these elites communicate during regulatory decision-making processes. Using a dataset of 1139 newspaper articles covering 54 regulations that passed the EU's ordinary legislative procedure in 2015 and 2016, the article empirically assesses when and how Commissioners strategically communicate for reputational purposes via the news media.

Drawing on communication and reputation perspectives, we argue that Commissioners choose communication strategies that maximize the reputational benefit for the Commission and minimize potential reputational damages. The choice for a specific strategy is based on issue-specific characteristics, such as policy complexity, policy salience, and political conflict. In line with earlier research on the matter (for instance: Koop and Lodge, 2020), our findings show that the policy process appears to be (in part) politicized. Commissioners are more likely to speak up in the news in the context of more technically complex regulations, as it allows them to demonstrate the Commission's expertise by explaining and disclosing regulatory details. Furthermore, they are more likely to promote the policy preferences of the Commission if these preferences are politically supported by the European co-legislators, and use a more passive voice for policies characterized by political conflict.

We contribute to research on regulatory governance and regulatory communication in four important ways. Firstly, in line with other recent work (Blom-Hansen and Finke, 2020; Busuioc and Rimkutė, 2020; van der

Veer, 2020), we extend the empirical focus of the regulatory communication literature to the use of communication in EU policy-making, studying a ‘high-profile supra-national organization[s] beyond strictly regulatory one[s]’ (van der Veer 2020: 3). The Commission holds a quasi-monopoly to propose legislation for the EU and is a bureaucratic organization that is led by politically elected Commissioners. Compared to strictly regulatory agencies (both in national and EU contexts), the Commission is deeply involved in the policy-making process and heavily depends on a strong reputation for the creation of good legislation.ⁱ The Commission provides a suitable example to study reputational mechanisms across various policy areas within one single organization. By focusing on a single organization, albeit it being a complex one, we leverage intra-institutional insights and avoid Carpenter’s critique regarding comparability in public administration research: Comparing very different organizations directly with each other might not always be scientifically appropriate, as public servants within these organizations might follow very different routines and logics based on the policy field and nature of their work (Carpenter, 2020). Carefully selecting units and organizations of comparison or following ‘Wilsonian’ principles of analysis of bureaucratic organizations can help to avoid these unmatching comparisons and provide more appropriate and valid insights (Carpenter, 2020). Secondly, we extend the focus of existing regulatory communication literature on formal communication (e.g. reports), or crisis communication, to regulatory actors’ communication via the news media *during* regulatory policymaking processes— from publishing the regulatory proposal to the final vote of the legislators. Furthermore, the existing literature that covers media statements of regulatory organization representatives typically focuses on times of crises, which are exceptional events, whilst we cover a regulator’s everyday communication via the news media. Lastly, the findings demonstrate, to our knowledge for the first time, how regulatory actors make sense of the political climate around a regulatory decision-making process and strategically adapt their public communication accordingly. While it has been shown that the Commission anticipates levels of political opposition in the policy drafting stage (Rauh, 2020), this article asks whether this sense of anticipation also shapes communication strategies to manage the organization’s reputation during the regulatory policymaking process.

Using media coding and a multilevel analysis, we find that Commissioners are mindful of the specific context in which the Commission’s legislative proposals are discussed during the policymaking process of the EU. Commissioners are more likely to appear in the news if legislative proposals are more technically

complex. Furthermore, Commissioners seem to anticipate political conflict: For legislative proposals that pass with little political opposition, they use a confident tone and publicly promote the legislative proposal, while they use a more passive voice if a legislative proposal faces political opposition.

Reputational explanations of regulatory communication

In the past years, bureaucratic reputation scholars have highlighted the importance of regulatory communication as a strategic tool for regulatory organizations to forge a strong reputation for various organizational competencies (Busuioc and Rimkutė 2019; Gilad et al. 2015; Maor and Sulitzeanu-Kenan 2013; Moschella et al. 2020). It has been demonstrated repeatedly and in varying contexts that regulatory organizations endogenously construct their audiences and tend to act in a way that aims at minimizing negative perceptions and maximizing external support of the organization (Carpenter, 2004; Carpenter and Krause, 2012; Gilad, 2008; Gilad et al., 2015; Maor et al., 2013; Maor and Sulitzeanu-Kenan, 2013).

During regulatory decision-making processes, representatives of the Commission see themselves confronted with an environment of multi-faceted audiences and contrasting policy preferences. As this environment of competing interests and multi-faceted audiences is directly comparable to that of other regulatory organizations that are typically studied by reputational scholars, we rely on a key underlying assumption of the bureaucratic reputation literature for theorizing how executive regulatory organizations use communication for reputational purposes: Regulatory actors aim for communicational strategies that will maximize reputational benefits and minimize reputational damages, and use the news media as an important venue for doing so (Maor, 2020).

Strategic communication as a reputation management strategy

Through the shift towards more responsive and participatory modes of regulatory governance, regulatory organizations increasingly use tools to engage their various audiences. Given the central role of the news media in a regulator's public profile, regulatory communication via these media has become a key component of a regulator's reputation management strategy.

Prior research has shown that a regulator's strategic media response is guided by two general principles: (a) maximizing reputational benefits; and (b) limiting the reputational damage to their organizations. The key implication of this principle is that regulators chose differential responses, based on a trade-off between

responding or staying silent, to enhance reputational benefits and limit reputational damages (Gilad et al 2015; Maor et al 2013). Prior research has shown that regulators do not only consider the current situation for their strategic choice but also take into account potential future developments. For instance, Moschella and Pinto (2019) show that the most salient issues in the US Federal Reserve's communication are shaped by reputational concerns about future policy reversals. If central bankers anticipate policy reversals with potential impacts on their organization's reputation, they emphasis more topics for which the Federal Reserve enjoys a weaker standing. In the case of regulatory decision-making, we assume that executive regulatory organizations are typically faced with two decisions when using strategic communication for reputational purposes. Firstly, should they participate in the discussion (regulatory talk) or should they remain silent (strategic silence)? Secondly, how shall they communicate to advance their reputation?

Strategic silence vs. regulatory talk

Similar to regulatory talk, strategic silence can serve many purposes for an executive regulatory organization (Maor et al., 2013). Firstly, if an executive regulatory organization stays silent in the news, it can potentially prevent public discussions on issues that it would rather avoid to publicly discuss. This may be due to various reasons, for instance, to prevent uncovering potential existing problems or conflicts that would worry external stakeholders or stir up criticism of their organization (for an example of central banking, see Cukierman, 2009; for another example involving private organizations, see Carlos and Lewis, 2018). In some cases, deciding to talk publicly might also backfire at the organization, depending on the topic of the discussion – particularly moral or ethical issues (Bloom and Levitan, 2011). Secondly, executive regulatory organizations need to ensure that their policy preferences receive support from other key actors and institutions who (co-)decide whether the executive regulatory organization's policy preferences are transposed into policies. Maor et al. (2013: 586) state that the 'regulators' choice between silence and talk is directly related to the likely impact of external judgments on their distinct reputation'. Therefore, an executive regulatory organization's distinct reputation during policymaking processes directly depends on whether their policy proposals are politically supported.

H1: An executive regulatory organization is more likely to engage in regulatory talk during regulatory decision-making processes if there is little political conflict surrounding a policy issue.

In line with Maor et al. (2013), it can be expected that the regulator's willingness to respond is shaped by the intensity of the opinions that it faces. For instance, if there is high media coverage, the chance that stakeholders or politicians directly address the regulatory organization increases. Large media attention provides a greater reputational threat for an organization, because it could, for instance, highlight weaknesses of the organization publicly. These negative depictions might stick in the public memory of the competencies of the organization if the concerned organization does not directly intervene. The organization might also be asked questions about issues more frequently, 'and the absence of a response becomes an issue on its own with each additional choice to remain silent' (Maor et al., 2013: 587).

H2: An executive regulatory organization's propensity to engage in regulatory talk regarding a policy issue is positively associated with the media salience of the issue.

Lastly, executive regulatory organizations might act differently depending on how technically complex each policy is. As Gormley (1986) first showed, politicians tend to be more active on highly salient and low complexity issues, while bureaucratic actors are more crucial in policy processes that involve significantly complex issues. Highly complex issues pose barriers to politicians' participation, as it is difficult for them to claim policy success before their constituents. Gormley suggests that the opposite is true for bureaucratic actors: If issues are complex, regulatory organizations can show off their expertise and prove themselves to other actors in the policy process. This notion was confirmed by Neshkova (2014), who found that the Commission relies on its expertise for highly complex issues, whilst being more responsive to politicians' change requests regarding less complex issues. Therefore, we expect that an executive regulatory organization appears more often in the media for technically complex issues because it gives these organizations a possibility to prove their expertise.

H3: An executive regulatory organization's propensity to engage in regulatory talk regarding a policy issue is positively associated with the technical complexity of that issue.

Policy promotion and passive talk

How does an executive regulatory organization use different modes of regulatory communication? In line with similar arguments from the bureaucratic reputation literature, we argue that an executive regulatory organization will choose public statements that will maximize reputational gains and minimize reputational

damages during regulatory decision-making processes. If an executive regulatory organization senses that its policy preferences are likely to be transposed into law, it will adopt an active and bold communication style that signals its preferences (henceforth, policy promotion). Whereas, it is more likely to adopt a passive and careful communication style if its policy preferences are under threat, i.e. when the outcome of a legislative procedure is politically uncertain (henceforth, passive talk).

Signaling theory provides a good foundation for understanding an executive regulatory organization's use of policy promotion. The theory has been used to explain how political actors convey difficult to observe qualities to other audiences (Bailey et al., 2005; Hennessy, 2017; van der Veer, 2020). Effective signals combine two qualities, namely, they are observable and costly to the signaling actor (Connelly et al., 2011). Firstly, the target audience of a signal needs to be able to differentiate the signal from other, usual communication (often referred to as 'noise'). Secondly, signals are costly for the signaling actor if they tie the signaling actor to a specific kind of action. In regulatory communication, promoting one's policy preferences can be considered a costly signal. If the signaling actor's policy preferences are not attained, the actor might lose credibility in future policy negotiations. Simultaneously, issuing such a signal might be beneficial for the signaling actor if the stated policy preferences are indeed transformed into policy outcomes, as the signaling actor can claim such outcomes as their will. It is likely that executive regulatory organizations will use policy promotion if they do not expect stakeholder or political opposition and expect their policy proposals to successfully pass the legislative process.

H4: An executive regulatory organization is more likely to use policy promotion during a policymaking process if a policy issue is characterized by low levels of political conflict.

As the external environment in which an executive regulatory organization operates becomes more hostile, and policy preference attainment is less likely, an executive regulatory organization may adopt a more careful and passive communication strategy, i.e. passive talk. After all, according to signaling theory, sending strong signals in the shape of clearly stated policy preferences is costly to the sender. If an executive regulatory organization publicly commits to a particular policy solution and this proposed solution does not pass the political policymaking process, the issuing executive regulatory organization will lose credibility in public's perception. We can assume that in the face of a lower likelihood of an executive regulatory organization's

preferred policy solution being turned into binding law, the executive regulatory organization will be much more careful in its public commitments.

What could passive talk look like in practice? Firstly, it will most likely not contain any strong communicative signals. As stated above, issuing these signals is costly and only pays off for the executive regulatory organization in the case of a successful policymaking process. If the executive regulatory organization does not anticipate its policy preferences to be successful, it will most likely refrain from strongly and publicly promoting these policy ideas. Secondly, passive regulatory communication would most likely focus on the administrative aspects of policymaking. If the regulatory policy does not pass the political process or gets heavily amended, the executive regulatory organization can therefore show that it has done its due diligence in finding a good policy solution. If a regulatory proposal is less likely to pass the legislative process, such passive talk will ensure that the executive regulatory organization doesn't lose its reputation when a policymaking process fails.

H5: An executive regulatory organization is more likely to use passive talk in regulatory communication during a policymaking process if a policy issue is characterized by high levels of political conflict.

The case: regulatory decision-making in the EU

The EU's nature as a regulatory state (Majone 1997) renders it a relevant case for assessing strategic communication in regulatory policymaking, considering that much of national-level regulation in EU member states can be traced back to regulatory policies that were agreed on at the EU level. It has been shown that the EU's policymaking bodies are faced with a complex environment of 'multiple, heterogeneous audiences posing a dynamic balance of conflicting threats' (van der Veer, 2020: 2). Faced with such a difficult environment, EU institutions provide both an informative as well as a most likely case for the use of policy preference signaling to increase the chance that their preferences will prevail. Specifically, we focus on the Commission because of its exclusive right to initiate EU regulations. As the EU's central executive bureaucracy, the organization and its political heads (i.e. Commissioners) find themselves particularly dependent on regulatory communication and open to challenges by their audiences (Blom-Hansen and Finke, 2020; van der Veer, 2020). After the Commission publishes a legislative proposal, the formal decision power over a particular policy lies with the EU's two co-legislators (Council and

Parliament). Next to so-called trilogue meetings and other formal mechanisms, the use of communication via news channels is an important way the Commission can still participate in the policy process.ⁱⁱ The news media provide a venue for the Commission to publicly promote and signal its policy preferences as well as defend and explain its reasoning. In these media appearances, the Commission is almost exclusively represented by its Commissioners (one for each EU member state).

Data and methods

Commissioner communication is measured via appearance in newspaper articles. The media provide an additional filter to real life events, as newspaper outlets decide what they wish to report on and what remains unreported. However, previous research on the involvement of the news media in the policy process has suggested that the media can be understood as an amplifying factor rather than a causal factor in setting the agenda (Wolfe et al., 2013). The news media are, therefore, a good venue to study the communication of the Commission, as they are likely to highlight the most salient issues within the organization's communication. Secondly, due to a broad selection of newspapers with different political leanings, it is likely that we also capture a broad representation of policy issues at the EU level. Third, newspaper reporting, although not perfect, is the best available medium to observe public communication in policymaking processes. Alternative sources, such as Commission's press releases, are highly standardized and therefore show relatively little variance across policies. Venues such as social media in contrast are not consistently used to communicate updates about policy processes and are therefore also not suitable as a medium to study in this context. By selecting the Commission as the sole target organization, our research design ensures that potential noise arising through media filtering is held constant across the regulations. For the above reasons, our design is in line with previous research on public communication in regulatory affairs (Gilad et al. 2015; Maor et al. 2013).

To test the above hypotheses, the authors constructed a database consisting of 2619 newspaper articles covering 76 regulatory legislative acts that have passed the ordinary legislative procedure of the EU between 2015 and 2016 (for the strategy on how the legislative acts were selected, see Braun et al. 2020 and the Online appendix). Our sample only contains passed legislative acts and one might argue that the selection of samples might bias the results. However, selection bias is kept to a minimum: Firstly, during the time of

observation (2015 and 2016), no legislative acts in the ordinary legislative procedure were rejected by the Parliament or by the Council. Secondly, while the Commission withdrew 42 legislative proposals at different stages of the ordinary legislative procedure in one coordinated effort in 2015. This was done to align the legislative agenda with the new political priorities arising from the 2014 European elections. A large majority of the withdrawn legislative proposals were largely older legacy proposals that did not align with the new legislative vision of the EU. Lastly, our sample contains legislative acts that proved to be very difficult to pass and almost were unsuccessful. About one-fifth of legislative acts in our sample took six years or longer from first consultations to the final passing.

The newspaper database construction has been part of a larger research project on stakeholder engagement in supranational regulatory governance. To retrieve the articles, standardized search strings were constructed to capture articles covering each regulation strategically (details in online appendix). The newspaper articles were retrieved from five of the most widely circulated newspapers covering European Affairs and a range of political perspectives from center-right to center-left.ⁱⁱⁱ While the newspapers are balanced in terms of political leaning, their audiences are likely located in the professional sphere. Given that we observe communication regarding ongoing policymaking processes, professionals can be considered the primary audience for Commissioners. The newspaper selection, therefore, aids in measuring communication between Commissioners and some of their most important stakeholders. However, while the audiences of the selected newspapers are not representative of the full public, these newspapers constitute a key source for the Commission to contribute to and shape the public debate on EU matters (many major newspapers pick up stories from these specialized outlets). Three trained human coders assessed for each sampled article whether it substantively covers each respective legislative act. 1139 relevant articles remained in the database covering 54 of the 76 originally sampled legislative acts that passed the ordinary legislative procedure (22 legislative acts did not receive any media coverage). The authors coded each article to whether it contains a statement by a Commissioner regarding each respective regulation. For each Commissioner statement, the authors further determined whether the statement contained elements of policy promotion or passive talk (for details on how it was coded, see Table 1). After completion, every article was linked to an extensive dataset containing detailed information on each article's respective policies

(containing details on stakeholder mobilization, consultations, and voting results in the Parliament and Council).

Dependent variables

The hypotheses outline three dependent variables. The first one involves *whether* the Commissioners speak up (or not) in any of the news articles covering one of the sampled policies (strategic silence vs. regulatory talk). The second and third dependent variables test *how* the Commissioners communicate in each article they appear in (i.e. whether they use policy promotion or passive talk). Examples for all categories are shown in Table 1. The level of observation is each newspaper article in the database.

Table 2-1. Coding examples.

Communication strategy	Examples
<i>Policy promotion</i>	‘The new regulation will greatly enhance the livelihoods of all fishermen in the Baltic region.’ ‘Giving the European railway agency more executive powers will benefit European consumers.’
<i>Passive talk</i>	‘The current policy proposal aims to regulate the inequalities in the European food system.’ ‘We have been consulting many stakeholders regarding this issue and have found it sensible to include certain exceptions in the proposal.’

The outcome for the first dependent variable is a binary variable indicating the presence of a (or multiple) Commissioner(s) in an article and is sequentially coded as *silence* (0) versus *talk* (1). The authors did not code any mere mention of a Commissioner as *talk*, but only coded it as such if there is a direct or indirect quote of a Commissioner. A statement was recorded both when it was a direct response to a journalist's

question or a secondary reporting – for example if an article's author quotes a press conference statement by a Commissioner. For instance, an article that stated ‘Commissioner Barnier attended the meeting of ministers on 3 October’ would be classified as silence, while another article that mentions ‘Commissioner Barnier voiced his opposition to the current developments in the Parliament and stated that “any alternative to the proposes scheme is unfeasible to implement”’ would be labeled as talk. Commissioners appeared in 185 articles across 32 out of the 55 sampled regulations that had received media coverage – they did not appear at all in the news coverage of the other 23 regulations.

The second and third dependent variables capture respectively whether a Commissioner uses policy promotion or passive talk in each of the recorded statements. Therefore, each of the 185 news articles in which a Commissioner statement was recorded was then coded to whether the Commissioner statement contained elements of *policy promotion* or *passive talk*. The authors chose to do this via two separate binary variables for the presence (1) or absence (0) of each strategy, as one statement could contain elements of both strategies. A statement was coded as policy promotion if the Commissioner highlighted specific dimensions of the regulation and emphasized the benefits of the regulatory solution the Commission proposes or promoted the Commission’s policy proposal in other ways. It was coded as passive talk if the Commissioner did refrain from disclosing the Commission’s preferences regarding an ongoing policy negotiation process and described the purposes of the regulatory proposal without explicitly promoting it or highlighting how the Commission agreed on a solution. While the communication strategies were coded by one coder, a random sample of 30 articles containing Commissioner statements was coded by a trained second coder to test the robustness of the two categories. Inter-rater reliability was high with a Krippendorff alpha of 0.863 for policy promotion and 0.931 for passive talk.

Independent variables

The analysis highlights three independent variables: Political conflict, policy complexity, and media salience. All three variables are measured at the policy issue level. Furthermore, we controlled for potential stakeholder conflict and staff size (also measured at the policy issue level).

The Commission is an institution that is influenced by political dynamics, both internally and externally (Hartlapp et al., 2014). If there is political contestation within the two EU co-legislators, we can assume

this to influence the voting outcome in both chambers. *Political conflict* is therefore operationalized by quantifying and combining the voting results in the Council and the Parliament regarding the regulations.^{iv} Political conflict is a bounded continuous variable ranging from 0 to 1, where 0 is the lowest level of political conflict i.e. 100% agreement to the policy proposal in both the Parliament and the Council and 1 is the highest level of political conflict. The value of 1 can only be reached theoretically, as it would imply that both the Parliament and the Council outright reject the proposal and it would therefore not have passed the ordinary legislative procedure. Conceptually, this measure is supposed to locate political conflict during the policymaking process. Whilst this operationalization measures political conflict towards the end of the policymaking process, it provides an accurate proxy for political conflict during the process. We have verified this measure with interviews with public officials of the Commission working on each legislative proposal and found that it strongly correlates with our qualitative assessment (for more information, see the Online appendix).

Media salience is measured as the total amount of newspaper articles that cover a specific policy issue. *Policy complexity* is conceptualized as the amount of information that is contained in a legislative proposal. In line with earlier research on text complexity, we assume that the more unique words a legislative proposal contains, the more technical the text can be assumed to be: Each word contains information and if there are many unique words, there is much information (Aizenberg and Müller, 2020). In contrast, a text that uses the same words repetitively can be assumed to use less information. Different measures of text complexity are often highly correlated, yet, they use various ways of measuring complexity in text – for instance, the average number of syllables, ‘familiar words’, or vocabulary diversity (Benoit et al., 2019). Whilst there are many measures of text complexity, this research has to account for varying lengths in the different legislative proposals. Carroll (1964) introduced one of the most frequently used measures that calculates the ratio between unique words and overall words and included a correction term for the length of a text – i.e. *Carroll’s corrected type-token ratio* (CCTR).^v We choose this measure for our analysis because it corrects for varying text length and has been successfully applied in other research contexts.^{vi} The CTTR of each legislative proposal was calculated to investigate the impact of policy complexity on the likelihood of the Commission engaging in the news.

Commissioner communication might indirectly be influenced by underlying stakeholder conflict. To control for this possibility, we chose to measure potential *stakeholder conflict* as the number of interest groups who have mobilized on a specific policy issue divided by the total number of total interest groups in the respective policy area. The number of mobilized interest groups has been determined through the study of EU documentation on public consultations and the impact assessment of the Commission regarding each of the sampled policies. The number of overall groups active in a policy area was determined through a count of organizations registered in the EU Transparency register in the policy area that most closely fits each respective policy. The underlying assumption behind this measure is that if many organizations active in a general policy area mobilize on a specific policy (e.g. health policy), there will be multiple policy preferences. If only a few organizations mobilize, the universe of preferences amongst stakeholders is likely to be smaller and might decrease the likelihood that stakeholders will challenge the Commission's policy proposal.

Various Directorates-General (the subunits of the Commission, henceforth DGs) might have different administrative capacities to gauge and process the current public and political climate surrounding a certain policy. To control for the possibility that larger DGs are more likely to assess public and political opinions regarding a legislative act and subsequently might prime Commissioners to become publicly active on an issue, the analysis also controls for *staff size*. This is measured by the number of employees that worked for each of the DGs (in full-time equivalents (FTEs), data from 2016). Models 2 and 3 exclude DG staff size since the number of policy issues (32) is relatively low and it is advisable to limit the number of explanatory variables per model.

Results

The results of the research are presented in three parts. Firstly, we describe general communication tendencies; Secondly, the model examining talk versus silence will be shown and discussed; Thirdly, we present the results of the models that investigate Commissioners' communication strategies.

Descriptive statistics

Of the total 1139 articles covering the sampled regulations, the Commission commented in 16% of these articles (n=185). The Commission's comments do not appear evenly distributed across regulations but

focuses on specific ones (ranging from an appearance in 0% to 54% of all articles featuring each respective regulation). This strongly suggests that Commission appearances in the media are not randomly dispersed but vary across different legislative acts. Furthermore, if Commissioners appear in news coverage, they are likely to promote the policy proposal of the Commission (52.4% of all articles with Commissioner appearances) and less likely to engage in passive talk (28.1%). Descriptive statistics regarding the independent variables can be found in the online appendix.

Talk versus silence

The analysis fits multilevel binomial logistic models with random intercepts for policy issues to account for the heterogeneity of varying issues and unequal distribution of Commission appearances across issues. This means that newspaper articles are nested in policy issues. From a model selection perspective, this random intercept is particularly recommended as it provides the lowest AIC in an empty model compared to a model without random intercept or other conceivable random intercepts such as accounting for the DG that is responsible for each respective policy area. The number of observations varies, as model 1 tests all articles covering policy issues, whilst models 2 and 3 only test those articles that contain commissioner statements. Model 1 tests whether a Commissioner appears in a news article covering any of the regulations. Model 2 tests, for all of the articles where a Commissioners' statement on policy promotion is reported. Model 3 controls for Commissioners' use of passive talk in their statements.

Model 1 in Table 2 shows that only policy complexity can explain whether a Commissioner is likely to appear in the news (*H3* confirmed). Neither media salience, nor political conflict can explain whether a Commissioner is likely to appear in the news media in the context of the sampled policies (*H1* and *H2* rejected). The marginal effects plot in Figure 1 shows that the effect of policy complexity on the likelihood of a commissioner appearing in the news is quite strong: Commissioners are almost four times as likely to appear in articles covering very complex regulations compared to regulations that are not very complex.

Table 2-2 Results.

	<i>Dependent variable:</i>		
	Commissioner appearance in media	Commissioner uses policy promotion	Commissioner uses passive talk
	Model 1	Model 2	Model 3
Policy complexity	0.348*** (0.126)	0.107 (0.158)	-0.069 (0.178)
Political conflict	1.937 (1.443)	-3.360** (1.606)	3.166* (1.796)
Media salience of regulation	-0.005 (0.004)	-0.003 (0.004)	-0.002 (0.005)
Potential stakeholder conflict	0.0002 (0.024)	-0.008 (0.028)	-0.008 (0.032)
DG staff size	-0.0004 (0.001)		
Constant	-4.647*** (1.166)	0.173 1.545	-1.002 (1.724)
Observations (groups)	1,139 (54)	185 (32)	185 (32)
Log Likelihood	-484.562	-123.024	-107.627
Akaike Inf. Crit.	983.124	258.049	227.254
Random intercept for policy issue	Yes	Yes	Yes

*Note:**p<0.1**p<0.05***p<0.01

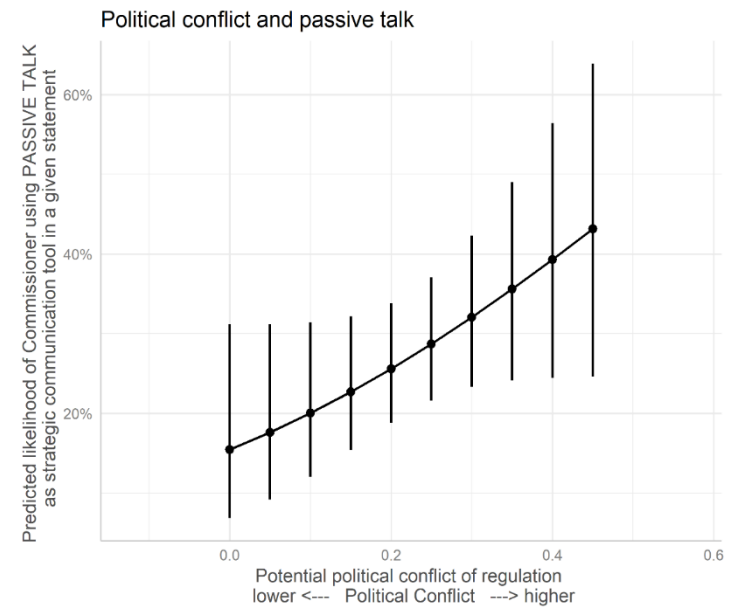
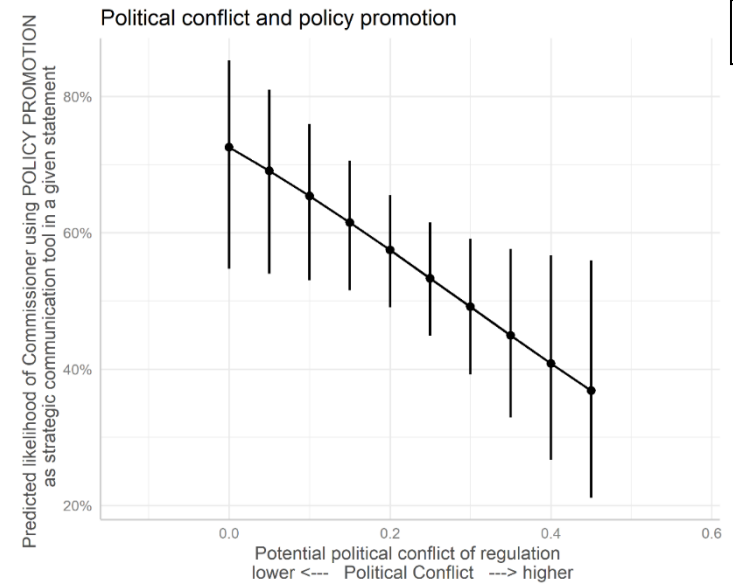
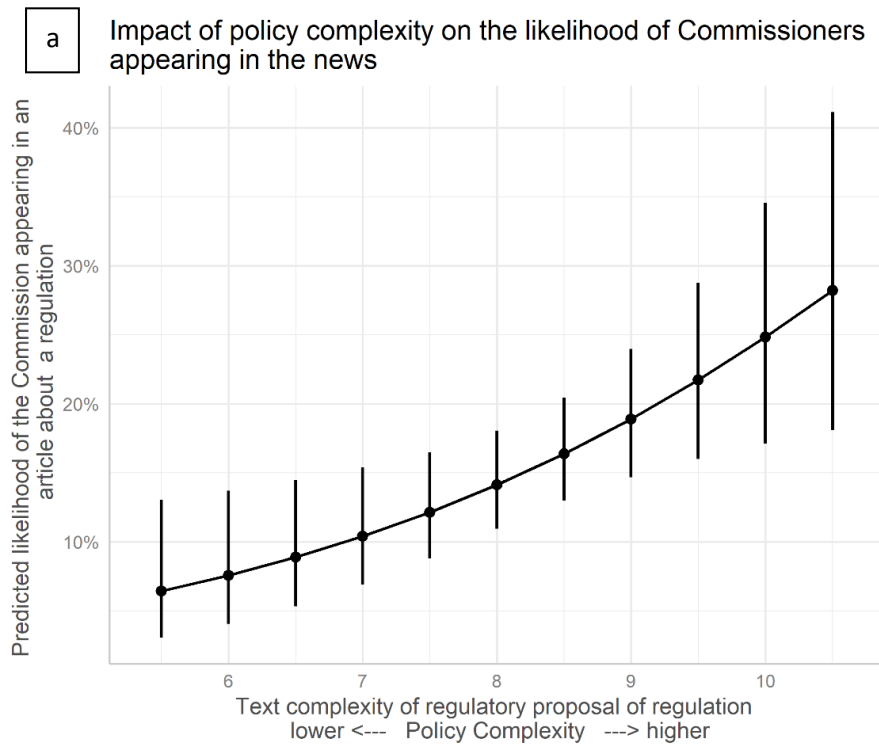


Figure 1. Marginal effect plots: (a) model 1; (b) model 2; (c) model 3.

Policy promotion and passive talk

Focusing on the models investigating communication strategies of Commissioners, we broadly find support for signaling theory: If a regulation is politically contested, Commissioners are much less likely to use policy promotion (see Table 2). Instead, they tend to use passive talk when discussing the regulations in question (*H5* confirmed by model 3). A different picture emerges if the regulation is less political conflictual: Model 2 shows that the coefficient of political conflict is negative, meaning that Commissioners are more likely to use policy promotion if political conflict is low (*H4* confirmed).

We also included the models that contain all variables, which show that it does not significantly change results (besides raising the p-value of political conflict in model 3 slightly above the .1 level, see the Online appendix). Our findings provide a good indication for the presence of an effect of political conflict on the choice of rhetorical tools. However, in light of the confidence intervals that are quite large at the extreme ends of our distributions (due to fewer observations in these ranges) and the relatively low p-value in model 2, the specific degree of the effects should be regarded with a sense of caution. We will further discuss the robustness of our findings in the conclusion.

Some case study illustrations might aid to contextualize the marginal effects plots reported in Figure 1. One of the least politically conflictual cases in the data, Directive 2016/2102 ‘on the accessibility of the websites and mobile applications of public sector bodies’, has been a part of the EU Commission’s *Accessibility Act* – a range of policies to better accommodate public infrastructure to the needs to individuals with various types of disabilities. This directive specifically sets guidelines to improve the accessibility of websites and interfaces of public organizations and has received political support from the beginning to the end of the policymaking process. The news coverage shows that the responsible Commissioner for the legislation, Marianne Thyssen, frequently endorses the legislation publicly. She wrote an opinion piece on the act in EURACTIV, titled ‘Better accessibility is good for consumers and businesses’, in which she promotes the Commission’s effort to improve accessibility for all and lays out how the *Accessibility Act* will accomplish this goal. Other newspaper articles quote her with similarly promoting statements. Similar legislative acts in the dataset with little political conflict show identical patterns, as policy promotion is the dominant communication style of Commissioners in news coverage, complemented with occasional use of passive

talk. Legislative acts that were politically conflictual are covered very differently in the news media. Consider one of the most conflictual legislative acts in the sample, Directive 2016/2284. It aims to regulate certain pollutants in the environment and was met with significant political opposition. Next to disagreements with the Commission's initial proposal, the Parliament and the Council disagreed on a number of key points in the proposal. Karmenu Vella, the Commissioner for the Environment, Maritime Affairs and Fisheries at the time, gives frequent but careful statements in the news coverage that mainly describe the problem of too much air pollution. In contrast to the communication on Directive 2016/2102, the Commissioner never mentions the possible benefits of the Commission's proposal, but rather focuses on the problem at hand, or more procedural elements such as how the Commission aims to facilitate an agreement between Council and Parliament. We found four instances of this type of passive talk, while the commissioner only made one statement promoting the particular policy, and this happened after an agreement was reached on the directive and it successfully passed the vote. Both examples illustrate the varying nature of Commission communication related to the politically contested nature of its policy proposal.

Discussion

The results show that Commissioners often seem to be guided by reputational concerns when using the media during regulatory decision-making. Firstly, in line with a general argument by Gormley (1986), they are more likely to speak up in news articles covering a regulation if the regulation in question is more complex. A possible explanation would be that more complex regulations provide the Commission's representatives an opportunity to present expertise to the public and underline the organization's competence to deliver innovative solutions to solve regulatory problems. Simultaneously, journalists might have a bigger need for explanations of certain parts of the regulation – to make the contents understood for the wider public – and might therefore rely on Commissioners, who know the details and intentions of the Commission's regulatory proposals.

Secondly, Commissioners promote the Commission's legislative proposals and regulatory preferences if they have little political opposition. Again, this can be ascribed to reputational concerns: If it is likely that the Commission's policy preferences will be transformed into law, Commissioners aim to claim policy success for themselves and the Commission. Promoting policy success is crucial for an executive regulatory

organization such as the Commission, as it underlines that the organization can draft sound and agreeable policies.

Thirdly, the results show that Commissioners refrain from promoting the Commission's policy preferences if political conflict is high. Instead, they engage in a more passive style of communication that outlines the Commission's efforts to draft a legislative act and the overall act's purpose. A possible explanation of this behavior could be the following. In this particular context, it seems most likely that Commissioners sense political opposition against the Commission's proposal and aim to limit the damage to the Commission's reputation in case the regulation is politically contested. The motivation behind this strategic choice might be that they want to outline that the Commission has done its duties to develop a good proposal (for example, by stating that it has conducted stakeholder consultations).

Lastly, this article finds that other policy issue factors such as media salience or potential stakeholder conflict do not significantly influence whether and how Commissioners speak up in the news. Further research will need to prove the robustness and external validity of our results. Due to the number of observations (which is naturally limited by the size of the overall population of passed EU legislation), confidence intervals, especially at the extreme ends of the distribution, become quite large.

Conclusion

This article investigated how the EU Commissioners use strategic communication in the context of regulatory decision-making. The results of our analyses lend support to the idea that reputational concerns are a key factor for the communication strategies of Commissioners. Three key findings arise: Firstly, the data show that Commissioners do communicate strategically via the news and that their strategies are dependent on policy-specific characteristics. They suggest that Commissioners sense the political mood surrounding each regulation and then pick communication strategies that maximize the reputational benefits for themselves and their organization. Secondly, Commissioners aim to maximize the reputational benefits through their communication. They are more likely to publicly engage regarding complex issues that allow the Commission to provide expertise to the public. Furthermore, if the legislative proposal of the Commission is likely to pass the co-legislation phase, Commissioners are more likely to promote it. This in turn might make it easier for them to claim policy success once the regulation is passed. Thirdly,

Commissioners aim to minimize reputational damages through their communication. If it is uncertain whether a legislative proposal by the Commission is likely to pass the political decision-making process, they choose a much more passive communication strategy that avoids to publicly link a policy to the intentions of the Commission.

These findings warrant further research that could uncover certain blind spots in our understanding of regulatory communication. On the one hand, the data does not show whether Commissioners *choose* to be involved in the news media or if journalists simply *require* the voices of Commissioners in their articles in specified cases. While the media agenda and the political agenda typically overlap and reinforce each other (Wolfe et al., 2013), future research should address whether and how media filtering influences interactions between public organizations and their audiences. Another approach to control for potential media filtering could be to compare news media reporting and direct outputs of the public organizations (e.g. press releases or social media communication). On the other hand, it is unclear whether a policy is more likely to pass because Commissioners promote it, or whether Commissioners only promote policies that are likely to pass anyway. Both of these questions could be addressed with a survey experiment or in-depth case studies with a time-series component that investigate the motivations and behavioral sequences behind the Commission's communication efforts.

Our empirical findings and theoretical propositions offer a range of contributions to existing research on regulatory communication. They show that current regulatory communication research might be biased towards negative externalities of communication – that is, how regulators attempt to limit reputational damages. Our research underlines that regulatory communication is more than ‘damage control’ but can also be used to maximize reputational benefits for an organization. While this assumption has been implicit in prior research (e.g. Busuioc, 2016; Maor et al., 2013), scholars recently have started to more closely investigate the positive externalities of regulatory communication (Salomonsen et al., 2021). Our analyses show that reputation maximizing behavior can explain certain communicational patterns for a broader set of regulatory organizations and should indeed be understood better. Furthermore, we found that exploring regulatory communication from the perspective of an executive regulatory organization, the Commission, provided valuable insights into how regulators perceive the environment. Due to the exposed and executive nature of the Commission, Commissioners are persons of public interest and therefore have great signaling

power to politicians and the wider public. Therefore, this context enabled us to both identify signals that these individuals were sending via the media, as well as identify developments in their direct environment that could have motivated them to send (or not send) these signals. While it is conceivable that similar signaling behavior also takes place in other regulatory organizations, such behavior might be more hidden and harder to trace. Identifying the existence of this strategic communication behavior by Commissioners might therefore inspire future research of reputational dynamics in other organizations.

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ⁱ While we refer to the Commission as an ‘executive regulatory organization’ from here on for simplicity, it should be understood that the Commission is a powerful central actor in EU policy making with powers that stretch far beyond administrating regulatory frameworks. Amongst others, it is the organization within the EU that exclusively proposes new legislation and has full authority to draft regulatory proposals. While it cannot transpose legislative proposals into binding law (this is usually done by the Council and the Parliament), it can withdraw proposed legislation if it deviates too much from the organization’s original proposal. For these reasons, the Commission can be seen as the gatekeeping legislator of the EU.

ⁱⁱ The Commission does have different tools for interference, such as withdrawing a proposal in later stages of the policy-making process if it does not agree with amendments.

ⁱⁱⁱ Newspaper selection: Financial times, Agence Europe, EUobserver, Politico Europe, European Voice, EurActiv.

^{iv} The score is calculated based on this formula.

$$\text{Conflict} = 1 - \frac{\sum_{i=1}^n (V_i)^2}{n}$$

where $\sum_{i=1}^n (V_i)^2$ is the squared ratio of yes-votes within each legislative body involved in the decision-making process (for the EU: $(\text{Votes}_{\text{European Parliament}})^2 + (\text{Votes}_{\text{Council}})^2$; n is the total number of legislative bodies involved; (1-) is used to transform the output value in a score from 0 to 1 (1 is the highest possible level of conflict). See Julio and Yook (2012) for a similar approach that captures political conflict.

^v CTR is calculated via the following formula: $\frac{\text{number of unique words}}{\sqrt{2 \times \text{number of total words in text}}}$

^{vi} e.g. (Aizenberg and Müller, 2020) use this measure to compare the technicality of various political newspaper articles of varying lengths and found that CTTR compares well to hand-coded evaluations of complexity.

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Chapter 4

Spreading the word?

European Union agencies and social media attention

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Introduction

Public communication and the speedy dissemination of information are key aspects in regulatory affairs, as regulatory risks and outcomes might directly or indirectly affect the public (Pildes and Sunstein 1995, 105). For instance, during the 2020 Covid-19 pandemic, EU public agencies such as the European Centre for Disease Prevention and Control played a key role in informing the public about current developments and in providing accurate and timely information (even more so in the face of online misinformation). In this effort, agencies are faced with a recurring challenge: making sure that their information does not remain unnoticed and actually reaches the public. The institutions of the European Union are no strangers to this problem and have been historically criticized for a lack of communication with the public. Already in the early stages of the union, the EU Commission has been accused of “alleged arrogant detachment from the public in particular” (J. Lodge 1994, 343) and from policy-making behind closed doors (Héritier 2003). The EU considers its public agencies as key players in addressing this perceived communication deficiency, as it states in an official publication: “*The European Union agencies play a key role in implementing EU policies and contribute to the EU’s overall visibility and image. For many agencies, external communication is a core task. Only through communication activities can they relay information and research-based evidence on specific issues, trends and challenges which relate to EU policy and its implementation, to inform policy makers and the public*” (European Commission 2013, 1).

The emergence of social media has sparked optimism amongst EU organizations that these channels will contribute to a closer connection between public organizations and the public (Brainard and McNutt 2010; Bonsón et al. 2012; Mergel 2013a; Bertot et al. 2012; European Commission 2018). However, a little over a decade after public institutions took their first steps on social media, research on the matter points towards a rather unsuccessful use of such technologies in western democracies (Brainard and McNutt 2010; Sandoval-Almazan and Gil-Garcia 2012; Theocharis et al. 2016; Grimmelikhuijsen and Meijer 2015). A key problem identified in this line of research is what could be called the ‘presence-attention gap’ on social media: Whilst many public institutions are *present* on social media, they receive relatively little *attention* on these platforms. For instance, when examining the social media presence of the Dutch police force, Grimmelikhuijsen and Meijer state that their findings “[...] debunk the idea that Twitter heralds the dawn of an age of frequent interactions between citizens and government

organizations” (2015, 604). They find that only a small fraction of citizens gets information on governmental affairs via social media when compared to other news sources.

Whilst the political science and public administration literatures offer nuanced explanations of how public organizations defend their reputation against external threats, we know relatively little about the audiences that these organizations target (Boon, Verhoest, et al. 2019). In addition, much of this scholarly work has focused on organization- and environment-specific cases, which makes it difficult to compare findings across organizational contexts (Ibid.). We know very little about determinants of the size of a public agency’s social media audience and whether the organization can influence the size of its attentive public through the way it communicates. Recently, the public administration literature has recognized the potential of social media to engage the public in governmental matters and connect citizens closer to the state (Mossberger et al. 2013; Mergel 2013b; Zavattaro and Sementelli 2014). Specifically, it has started recognizing the struggle of social media to live up to the expectations regarding citizen engagement – for instance, due to inherent biases in the technology (Feeney and Porumbescu 2021) or because public organizations are not harvesting the potential of the technology and rather use it as ‘just another media outlet’ for information dissemination (Gunawong 2014; Feeney and Welch 2014). Even stronger, some scholars argue that in its current shape, social media entrenches existing power asymmetries and deteriorates rather than improves communication between governments and citizens (Piccorelli and Stivers 2019). In this regard, much criticism relates to the underutilization of the engaging potential of social media platforms (Grimmelikhuijsen and Meijer 2015; Gunawong 2014).

We, therefore, have to wonder whether public organizations’ use of social media can live up to the expectations that were raised more than a decade ago and whether a more effective tapping into the engaging potential of social media can indeed increase the visibility of public organizations on social media platforms. While there are many subcomponents of this question, this research sets out to answer one of the most fundamental aspects: *What determines how much attention public agencies receive on social media?* It is important to examine this question, as we currently do not know if public organizations adequately utilize social media, and if how they use it shapes their ability to reach out to the public. From the perspective of public agencies, it is important to know if they are the architects of their fortune and

therefore can pursue specific social media strategies to increase their impact, or if their success on social media is determined by factors that are largely outside of the agencies' power.

Based on bureaucratic reputation and public communication research, we derive two sets of explanatory factors that can potentially contribute to an agency's attention on social media. The first set of explanations relates to institutional factors such as policy field and legal mandate of an agency. Another set of explanatory factors emphasizes the importance of how public organizations communicate on social media. The question is empirically examined through the study of the 39 Twitter accounts of regulatory and non-regulatory EU agencies (appendix C). This is the full population of the EU's decentralized and executive agencies present on Twitter (as of October 2019). Using a novel machine learning method to classify agencies' using Google's BERT language learning algorithm with an accuracy close to human performance and manually constructing a database of various explanatory factors, we test the determinants of social media attention of the agencies.

This article contributes to existing research about whether and how communication through social media channels impacts the way that the public perceives public organizations (Mergel 2017; Kagarise and Zavattaro 2017; Mergel 2013b). From a practitioner perspective, it illustrates a sound and straightforward way for public organizations to better estimate 'who they are talking to' and how their communication strategies might result in tangible engagement outcomes. The theoretical and empirical contribution of this article is threefold. Firstly, it extends ongoing research on agency communication by directly measuring the effect of different communication strategies on the demand-side: the audiences (Rimkutė 2019). Secondly, by examining if the information disclosed on social media is noticed by a larger audience, it contributes to the literature examining the spread of governmental information to mitigate risks and support policy implementation (Pildes and Sunstein 1995). Lastly, this work complements emerging research on the determinants of audience attention (Boon, Verhoest, et al. 2019; Boon, Salomonsen, et al. 2019) and links this line of research more strongly to social media studies (Mergel 2017).

Attention on social media

In the face of information overload, attention from mass audiences has become the new scarce resource in the media system (including traditional news sources) that actors in the media sphere compete for. The

ability to secure media attention has been understood to be “mostly advantageous” for an actor (Vliegenthart et al. 2005). In this struggle for attention, “media organizations and platforms vie for eyeballs, as do the issues, actors, causes, and factions that make up our civic and political sphere” (Zhang et al. 2018, 3163). Media attention has been shown to impact agenda-setting and rulemaking in the policy process and is therefore instrumental for regulatory organizations (Boydston 2013; Wolfe et al. 2013; Jones and Baumgartner 2012). Public attention has been a difficult concept to measure, it has often been conflated with the notion of mass media coverage (Zhang et al. 2018). However, this proxy measure only quantifies the amount of attention that media organizations *dedicate* to a certain actor or issue, and provides no insight into attention the audiences these organizations are trying to reach.

With the beginning of the scientific study of social media dynamics, scholars have started to untangle the differences between media coverage and audience attention. Social media makes it possible to study how much attention actors pay to various topics – for instance by looking at the content of an actor’s social media posts (Waters and Jamal 2011). This approach is very much in line with the traditional conceptualization of media attention as ‘how much attention does media actor X pay to topic Y’. What sets social media apart from traditional media is that it enables scholars to look at the other side of the “attention game” in a different way – that is, how much attention social media *audiences* pay to an actor or a topic. For instance, Barbera et al. (2019) show that political elites’ attention to topics on Twitter follows rather than leads the amount of attention their audiences are paying to the same issues. Likewise, Halpin et al. (2020) assess which specific audiences advocacy groups target on Twitter, distinguishing between elite, peer and mass audiences, and analyze the extent to which these audiences actually engage with these groups on this social platform.

Social media attention – here defined as the amount of attention that mass audiences pay to topics or actors on social media – therefore exhibits an audience-based approach to examine media attention. Platforms such as Twitter provide a wealth of different metrics that measure various aspects of attention. They can be broadly separated into two categories: long-standing and temporal attention (Van Aelst et al. 2017). Long-standing attention measures an actor’s constant audience, that is how many other social media actors are interested in receiving updates from this actor on a continuous basis. On Twitter, an actor with many followers can be assumed to be impactful in the long run, as each one of the messages

that this actor posts can be visible to their permanent audience. This long-standing attention is often related to the general public salience of an actor, as individuals such as “[...] famous politicians can reach a large crowd on Twitter, even without being particularly active or innovative users” (Van Aelst et al. 2017, 719).

In contrast, temporal attention speaks to the engaging nature of social media and relates to how much attention individual messages of actors receive. If messages are well constructed and relevant to certain audiences, they may spread through the social media network beyond those constant audience networks that devote long-standing attention to the organization (i.e., subscribe or follow the actor’s account). Users can share (i.e., retweet) messages they see within their own networks and therefore help to disseminate important information. For instance, social movement research has shown that ‘peripheral actors’ - actors on social media that are relatively inactive and have few followers - are essential to spread important news about social protest movements (Barberá et al. 2015). This implies that individual messages can be carried by the overall social network that spreads beyond an individual actor’s or organization’s direct followership.

Analytical framework: How organizational features influence social media attention

Both long-standing and temporal attention matter for public agencies, as they benefit from both having a large steady audience that they can engage with constantly, and being able to spread important news quickly and widely through a wider online network. The literatures on regulatory governance and public communication offer two different sets of possible explanations of variation in public agencies’ long-standing and temporal social media attention. The first group focuses on institutional factors that could explain how important the public considers an agency to be and in turn if it is ‘follow-worthy’. The second group stipulates that the style in which an agency publicly communicates influences how much attention this organization will receive. Whilst hypotheses on long-standing attention refer to factors that influence the size of the steady audience of an agency (e.g., the number of followers on Twitter), the hypotheses on temporal attention refer to how the same factors influence how much attention individual messages (e.g., individual tweets of an agency) receive. Since there is to our knowledge no comparable

research on how these factors would determine long-standing and temporal attention independently, we will formulate separate hypotheses for both types of attention in this section.

The regulatory governance and bureaucratic reputation literatures argue that how a public organization is set up (competencies, legal mandates, etc.) and the type of policy field in which it is active determines how an agency operates, how it communicates, and which stakeholder populations it is likely to address (Arras and Braun 2017; Beyers and Arras 2019; Leech et al. 2005; Carpenter and Krause 2012; Boon, Verhoest, et al. 2019). Research on EU agencies has shown that regulatory agencies – agencies that have a mandate that allows for rule-making, evaluation, or sanctioning powers in the implementation of EU policies (Font and Pérez Durán 2016; Kelemen 2002; Hanretty and Koop 2012) – are more independent from political supervisors than their non-regulatory counterparts (Wonka and Rittberger 2010). Whilst non-regulatory agencies are concerned with ‘fitting in’ the existing regulatory institutional environment and contributing to the policy process through efficiency-increasing measures, regulatory agencies are responsible for enhancing the credibility of a policy commitment (Majone 2001). This difference is also reflected in the way in which the agencies communicate through their regular communication channels. Regulatory agencies emphasize technical, procedural, and moral aspects of their organization, whilst non-regulatory agencies tend to refer more to performative aspects, for instance through showcasing and promoting regulatory outputs (Rimkutė 2020). Additionally, regulatory agencies (in particular EU agencies) tend to employ more tools to involve non-state stakeholders and could therefore be expected to put more resources into social media activities than non-regulatory agencies (Arras and Braun 2017).

This expectation becomes even more pronounced when considering the particular supranational legal environment in which EU agencies operate. Although EU regulatory agencies have far-reaching regulatory responsibilities, they also face legal restrictions when compared to their national counterparts, especially coercive powers (Chiti 2013). This in turn has been theorized to lead these agencies to adopt a much more information- and persuasion-based approach to regulation than their national counterparts (Majone 1997). Since these agencies rely more heavily on convincing the broader public, we assume that regulatory agencies aim to reach a wider audience than non-regulatory agencies.

H1a (long-standing attention): *Regulatory agencies receive more long-standing attention on social media than non-regulatory agencies.*

H1b (temporal attention): *Messages of regulatory agencies receive more temporal attention on social media than those of non-regulatory agencies.*

We know that EU agencies working in the field of social policy follow different communication patterns than those working on economic policy (Rimkutė 2020). The impacts of the activities of social policy agencies can be felt in a very direct way: since they are required to protect consumers in the EU from personal damages (e.g. food policy, environmental policy), they need to show that they can craft policies that are based on sound scientific evidence and therefore heavily depend on good and reliable public communication (Majone 1997). In contrast, economic regulators usually work on more abstract topics that are difficult to convey to a broader audience. Zingales (2013, 124) argues that “[t]he regulated are also perhaps the primary audience of the regulators, as taxpayers and citizens more generally have much less incentive to monitor regulation, and generally remain ignorant”. We can therefore expect that agencies active in the field of social regulation will be more interesting to follow on social media than those working in the field of economic regulation.

H2a (long-standing attention): *Agencies active in social policy receive more long-standing attention on social media than agencies concerned with economic policy.*

H2a (temporal attention): *Messages of agencies active in social policy receive more temporal attention on social media than those of agencies concerned with economic policy.*

The last hypothesis related to organizational features draws a somewhat pessimistic picture about the possibility of social media to elevate the visibility of organizations in the public eye. Some research suggests that the visibility of actors on social media broadly resembles the degree of visibility they have in more traditional media venues such as the news media. For instance, Gerhards and Schäfer (2010) show that the online presence of actors dealing with a particular issue was mostly similar to their presence in traditional news coverage. Other studies show that actors that are already visible in other news coverage will be much more likely to gain high visibility on social media (for interest groups, see Hong and Nadler

2016; for political parties, see Klinger 2013). This literature, therefore, suggests that social media attention of public agencies might be directly related to the attention they receive in traditional media

H3a (long-standing attention): *Agencies' long-standing social media attention is positively associated with their salience in traditional news media.*

H3b (temporal attention): *Temporal attention to messages of agencies is positively associated with their salience in traditional news media.*

How communication features influence social media attention

In addition to organizational characteristics, the public communication and e-government literatures offer another group of explanatory factors for social media attention, namely how governmental organizations communicate. This work demonstrates that how a governmental actor uses social media can greatly influence the attention and reaction of the public. Zavattaro and Sementelli (2014) show that citizen uptake rates are still low despite the public organizations offering online participation tools.

Governmental actors, therefore, have to choose if they want to remain passive and neutral, or if they want to encourage more frequent communication with citizens via social media (Bonsón et al. 2017; Bryer and Zavattaro 2011). Mergel (2013) demonstrates that a more engaging way of addressing the public can indeed yield positive payoffs for public organizations: Encouraging citizens to share ideas on municipal issues on social media does not only increase citizen engagement but also increases individual's willingness to collaborate with the government.

Drawing on work by Haro-de-Rosario et al. (2018) and Grimmelikhuijsen and Meijer (2015), we argue that public communication that focuses on operational information (e.g., stating what the agency currently works on) will be less popular and therefore less widespread than information that is engaging or inspiring for the reader (e.g. a call for action). This seems to imply that a more interactive and engaging way of communicating can yield better and closer communication of governments with varying groups of stakeholders amongst the population. Grimmelikhuijsen and Meijer (2015, 599) fittingly state that “[g]overnments that only use social media to deliver messages to citizens and never ask for feedback or react to comments or posts from citizens limit their ability to communicate”. It has been argued that various kinds of engaging messages can increase engagement with the audiences and might draw their

attention. For instance, sharing someone else's message has been argued to create "message ties" with the message originator (Saxton and Waters 2014; Guo and Saxton 2018). Other types of messages employ the bi-directional nature of social media that allows for interactions between the audience and the agency and try to motivate audiences to become active (Wukich and Mergel 2015; in a different context also described by Grimmelikhuijsen and Meijer 2015 and Theocharis et al. 2016) or capture their interest in other ways (Naaman et al. 2010; Saxton and Waters 2014). We therefore assume that interactive ways of communicating will attract more social media attention.

H4a (long-standing attention): *The share of interactive messages published by an agency is positively associated with its level of long-standing attention.*

H4b (temporal attention): *Temporal attention to messages of agencies is positively associated with the use of interactive language.*

Research design

Context

We examine these hypotheses based on a study of EU agencies' communication via the social media platform Twitter. The EU agency population is a relevant object to study in this context for several reasons. Firstly, the wide variety of agencies in the EU enable us to observe attention dynamics across organizational contexts. Whilst in-depth studies of single public organizations might provide a more detailed picture of social media interaction, the external validity of such studies is limited (see Boon, Verhoest, et al. 2019 for a similar argument). In contrast, this case allows us to observe effects across policy areas and legal mandates of the organizations. Importantly, the EU is not a case that directly compares to national (or regional) governments, as the citizens typically feel more attached to their cities and country than the European Union (European Commission 2021, 154–160). It can be expected that it is more difficult for EU agencies to gain attention from a wider audience on social media than for their national counterparts. Still, if EU agencies deploy strategies that secure public attention, these approaches also seem likely to work, and perhaps work even better, in more favorable national contexts.

Secondly, we have selected public agencies since they are particularly dependent on reaching key audiences. Social media attention can be crucial for these organizations, for instance when regulators have

to issue product warnings, have to relay important information to the public during environmental or health disasters such as earthquakes or pandemics, or would like to receive input from specialist communities (Kuran and Sunstein 1999; Pildes and Sunstein 1995). Social media might therefore provide a good platform for these organizations to transfer information to targeted audiences or the wider public, depending on the specific context. Furthermore, different public agencies might sometimes compete for similar mandates and responsibilities and often rely on public backing to secure legal, political, and financial support (Wilson 1989; Busuioc 2016). The ability to reach a large audience as well as targeted communities, and highlighting their competencies and abilities, is important for communication officials within these organizations, as it, in the long run, can also ensure the survival of their organization (Gilad and Yogev 2012).

Studying the agencies' presence of Twitter specifically, as compared to other social media platforms such as Facebook or Instagram, provides multiple advantages. Despite justified concerns about the biased nature of Twitter, much recent work demonstrates that this platform is a very suitable environment to study human and organizational communication behavior. Firstly, all large governmental organizations are present on the platform (particularly in the EU case), whilst only certain organizations have active social media presences on other platforms. Furthermore, they are more likely to communicate key issues via Twitter compared to other social media platforms such as Facebook or Instagram, and these issues have demonstrated to mirror their issue priority in other venues (Casas and Morar 2019). Issues discussed by individuals on Twitter also seem aligned with issues that are salient among the overall population (O'Connor et al. 2010). From a practical standpoint, Twitter allows researchers to examine social media communication on a more granular level than other social media platforms. We will discuss the relevant implications and limitations of relying on social media communication in the conclusion.

Data

This research is based on an extensive dataset collected via the Twitter API. Firstly, all official Twitter accounts of EU agencies that are present on the platform were collected via the website of the EU (European Union 2018). In total, we included 39 accounts of 38 agencies, as the European Food Safety Authority has two separate accounts on Twitter. We collected the most recent 3200 tweets of each agency (collected on October 16, 2019) as this was the maximum limit that the open-access Twitter API allows

to download (or less if the agency has posted less than 3200 tweets).¹² This resulted in a dataset of 91168 agency tweets. Tweets that were not formulated by the agencies (i.e., retweets of other accounts) and non-English tweets were removed, after which 53865 tweets remained in the dataset. The dataset was enriched with data on characteristics of each of the sampled agencies that were collected via desk research. Eventually, the dataset contained each of the agencies, their institutional characteristics, and their communication behavior. The next paragraphs clarify details on these characteristics.

Operationalization

Dependent variables: Long-term and temporal social media attention

As outlined above, we test the impact of the possible determinants on both long-term and temporal attention. Unifying the measure of attention into one variable might blur differing effects of explanatory factors on specific types of attention. The analyses on long-standing attention are run on the agency account level ($n=39$), whilst the analyses on temporal attention are run on the agency tweet level ($n=53865$).

To measure the long-standing attention that an agency receives on Twitter, a *count of all followers* of the Twitter account was taken (as of June 15, 2019). The number of followers is seen as one of the key metrics to measure online attention as it reflects the user's primary audience (Bruns and Stieglitz 2014; Van Aelst et al. 2017). If a Twitter user follows another account, each of the followed account's messages (i.e., tweets) will appear in the follower's news feed. In comparison to other ways of paying attention on social media, following an account constitutes a way of paying attention for the long-term, as from the point of following onward each new message will be brought to the attention of the follower. Since the distribution is strongly right-skewed, the natural logarithm was used in the statistical models.

The *number of retweets* per message was used as a measure for temporal social media attention. If other social media users retweet messages of an agency, they help to increase the visibility of these messages within their follower networks. Retweeting increases the chances that a particular message will spread beyond an agency's follower network (Van Aelst et al. 2017). As each message might receive varying

¹² This limit has since been lifted by Twitter for authorized academic accounts. However, the common software packages in RStudio that are used for retrieving the tweets via the Twitter API have not implemented the limit removal at the time of writing.

levels of retweeting, this metric can be considered a measure of temporal social media attention. In this context, retweets were considered a more adequate measure compared to “likes” or taking the sum of likes and retweets. In the case of governmental affairs, likes do not necessarily signal attention. For instance, if a consumer safety authority issues a product warning for a children’s toy and publishes the warning via their social media accounts, it is unlikely to receive many likes. In contrast, users are more likely to retweet the message to warn other users in their network.

Independent variables

The organizational (binary) variables *legal mandate (regulatory vs. non-regulatory)* and *policy field (social vs. economic)* for H1a/b and H2a/b are coded according to Rimkute’s (2020) classification scheme. Regarding the legal mandate, regulatory agencies include all agencies that follow what Majone (1997) calls the “logic of ‘regulation by information’ (i.e., agencies in charge of information gathering, technical advice, standard-setting, or [quasi-]decision- or rule-making tasks), whereas nonregulatory agencies comprise those possessing executive and coordination tasks” (Rimkutė 2020, 395). Regarding coding the policy area, agencies that are involved in environmental, health, and broader safety and security issues were coded as social policy agencies, whereas agencies involved in safeguarding and supporting the European single market were coded as economic policy agencies. To obtain the information to code the agencies, we searched the websites of the agencies to determine their respective policy fields and legal mandates. *Media salience* (H3a/b) was calculated by using the number of search results that appear searching for each agency in the Factiva newspaper database for the years between 2014 and 2018 (including all news outlets).

The second group of variables taps into the varying communication strategies of the agencies on Twitter (testing hypotheses 4a/b). Whilst social media research occasionally mentions the positive effects of more interactive communication on government-citizen interaction (Grimmelikhuijsen and Meijer 2015), it is not disclosed what constitutes ‘more interactive’ in practice. This research will therefore adopt a reductionist approach and test two different types of messages that have been shown to increase audience engagement: *informational tweets* and *engaging tweets* (for examples, see table 2). Engaging messages ask the reader to become active in some way and have been shown in numerous ways to increase the likelihood that the addressed will engage with the content of the message (Wukich and Mergel 2015; in a different context also described by Grimmelikhuijsen and Meijer 2015 and Theocharis et al. 2016). Examples

include calls to action – for instance, to recycle more or to vote. Informational messages aim at making complex topics more accessible to the reader by pointing out interesting facts (for example about how to stay healthy) that are aimed to be interesting for a broader audience (Naaman et al. 2010; Saxton and Waters 2014).

For each ytweet posted by the agencies, a supervised machine learning algorithm classified whether it was informational or engaging (after hand-coding a subsample of tweets). For the hypotheses on long-standing attention, the tweeting style had to be aggregated to the agency account level by calculating the share of each message type amongst the overall sent messages. To obtain the share, the numbers of informational and engaging tweets were divided by the number of overall tweets posted by the agencies.

Lastly, several control variables were included: The models control for *staff size*, *agency budget*, *tweeting frequency*, and *Twitter account age*. Staff size (in FTEs) and budget values were collected via desk research and refer to the latest known values, either from 2016 or 2017. Both control for the possibility that those agencies with more staff and budgetary resources can spend more time on social media activity and therefore increase their visibility. Tweeting frequency was calculated by averaging the number of tweets each agency had posted per month within the last three months before data collection (the data were collected in October 2019). It controls for the option that agencies that communicate more often create more possibilities to be seen by other Twitter users and subsequently be followed by them. Twitter account age is the number of days since each agency has created their account on Twitter until the date of data collection (for simplicity taken to be October 01, 2019). This variable controls for the possibility that agencies that have been on Twitter earlier simply had more time to build up a followership.

Table 4-1: Independent Variables

Measure	Description	Source
Staff size	FTEs of the agency; control variable	Annual budget declarations, agency websites
Budget	Annual budget of each agency; control variable	Annual budget declarations, agency websites
Media salience	Number of newspaper articles that appear when using the agency name as a search term on the Factiva newspaper database for the time from 01/01/2014-01/01/2018	Factiva
Legal mandate	Responsibility for regulatory or non-regulatory tasks	Coded based on Rimkute (2019) coding scheme, verified by checking agency websites.
Policy field	Responsibility for economic or social policy	Coded based on Rimkute (2019) coding scheme, verified by checking agency websites.
tweeting frequency	Average number of posted tweets per month	Twitter
(Share of) informational tweets	(Percentage of) tweets that have an informational character	Twitter, machine learning classification of Tweets
(Share of) engaging tweets	(Percentage of) tweets that have an engaging character	Twitter, machine learning classification of Tweets
Age	Age of each agency Twitter account in days until October 1, 2019.	Twitter

Classification of agency tweets

This research used a machine learning classifier to automatically classify the tweets of agencies according to whether they are informational or engaging in nature (or none of these two options). Using machine learning techniques is increasingly common in public administration and political science research and has also been applied to agency communication (Anastasopoulos and Whitford 2018; Hollibaugh 2018; Loftis and Mortensen 2020). A subset of account descriptions and agency tweets was hand-coded into different classes (see table 2) and then automatically classified by the Bidirectional Encoder Representations from Transformers (BERT) algorithm (Devlin et al. 2018) provided by Google AI (for detailed information on how BERT operates, see appendix B). BERT is a language model that is based on some of the most recent developments in natural language processing and outperforms many of the standing benchmarks

in language recognition and text classification. It is therefore well suited for application in this research context.

Amongst the over 91000 tweets of the EU agencies, 1000 were randomly sub-sampled and hand-coded whether they belonged to one or two of the non-exclusive tweet categories (for coding examples, see table 2). Tweets were classified as engaging if they encouraged the reader to become active, either in everyday life or by participating in events and venues of the agency. They were coded as informative if they contained general information, quick facts, or recommendations from the general policy field of the respective agency. These tweets do not necessarily have to refer to ongoing policy processes but can also have a more general character (e.g., a health agency posting about how to live a healthier life).

[Table 2 here]

After training the machine learning classifier with the hand-coded data, the whole dataset was automatically classified on an external server (as the operation is computationally demanding). Details on text pre-processing, model training, and model evaluation can be found in a detailed step-by-step appendix (B). We conducted validity tests by manually verifying 200 of the classified tweets. This test showed that the classifier reached an F1-score of 96.77% for informational tweets and 95.65% for engaging tweets. Both can be considered as extremely reliable outcomes (for performance metrics, see appendix A).

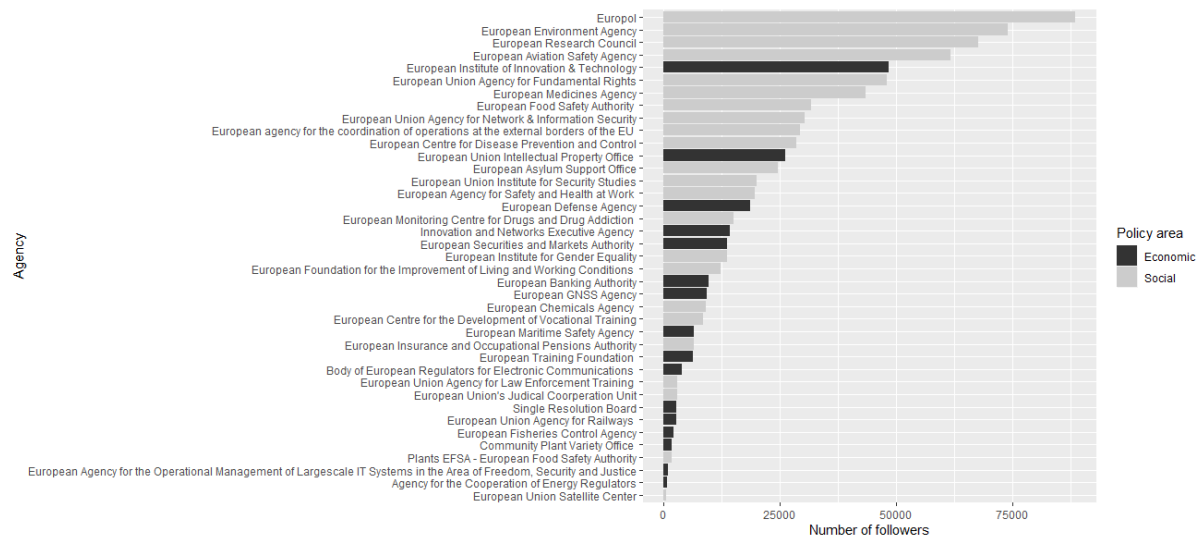
Results

This section will first provide a concise general overview of audience size and communication behavior of EU agencies on Twitter. Subsequently, we present the statistical analyses required to evaluate the hypotheses.

The characteristics of social media attention

In line with previous studies on media attention (Boydston 2013; Jones and Baumgartner 2005), we see a highly skewed distribution of both long-standing and temporal social media attention to varying agencies. As shown in Figure 1, the five agencies with the most followers (Europol, EEA, ERC, EASA, EIT) attract more followers (i.e., long-standing attention) than the remaining 33 agency accounts in the sample

combined (for the key metrics of the dataset, including a list of agencies and classification results, see appendix C).

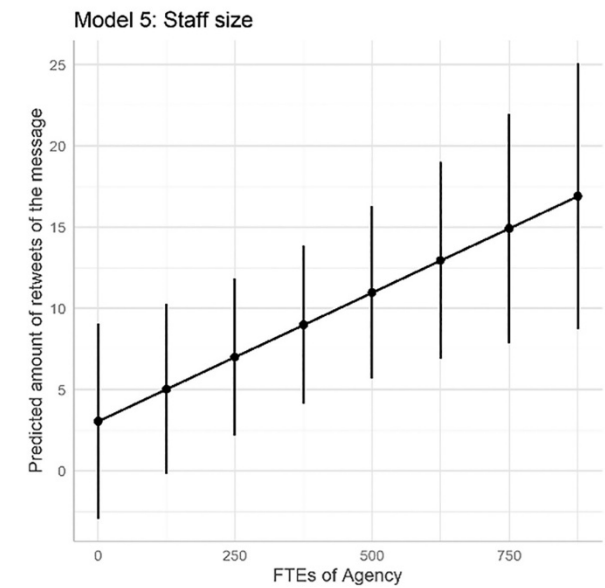
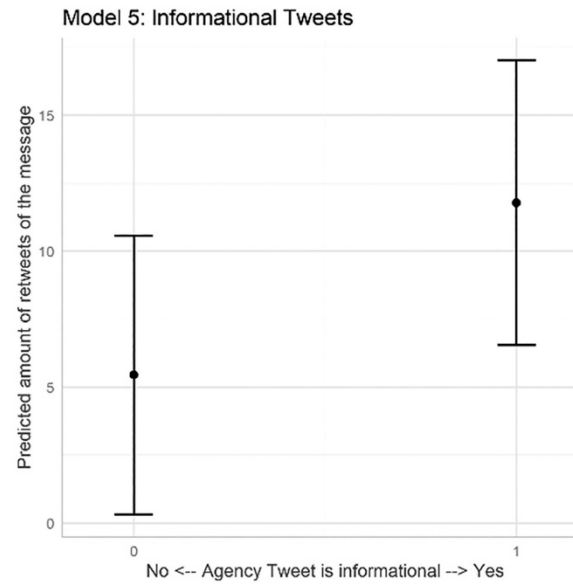
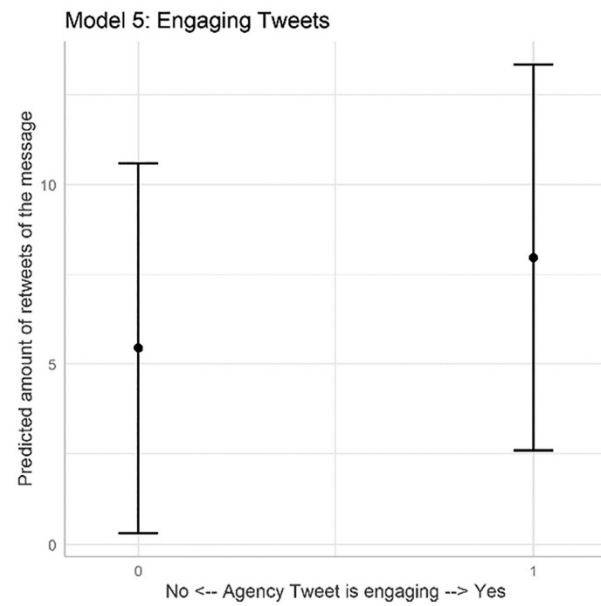
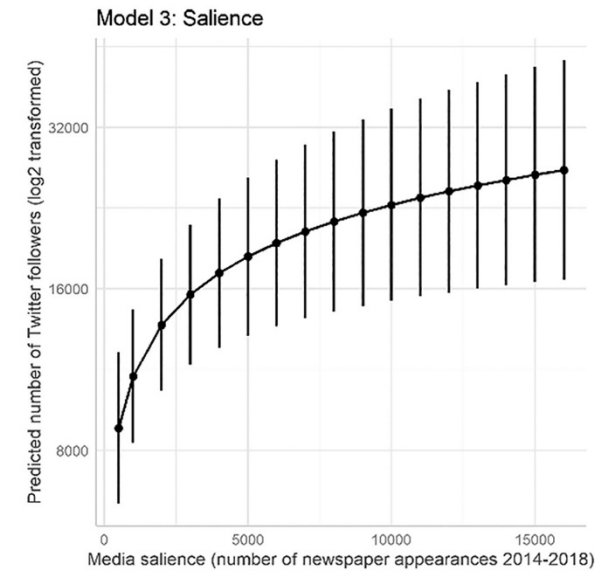
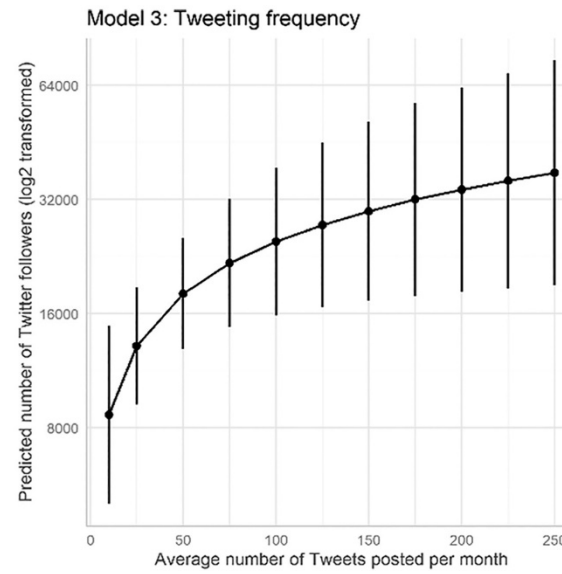
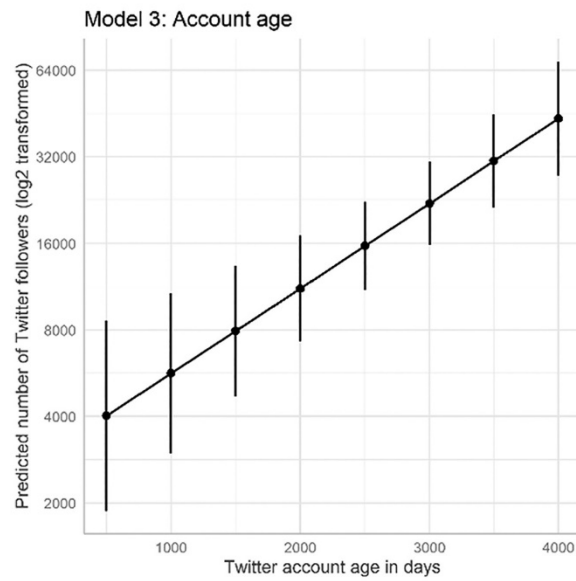


Which agencies attract long-standing attention on social media?

Since the first dependent variable (number of followers) is a logged continuous variable, using a linear regression model is adequate. We tested the models for any violations of linear regression assumptions (i.e., linearity, homoscedasticity, skewness, and kurtosis). The dataset does also not suffer from multicollinearity. The explanatory variables were assessed across 3 different models: Model 1 tests organizational variables and model 2 tests communication variables. Due to the (naturally) low number of observations, we used a method of variable selection that would allow us to provide enough observations per tested independent variable. We built a third model that retained those variables from model 2 that would contribute the highest relative explanatory power to the model, using a method first proposed by Lindeman, Merenda, and Gold (1980, 119ff). Three variables contribute a majority of the explanatory power to model 2 and from a theoretical side also serve well to explain the number of followers of an account and have therefore been added to model 3. Although our models are naturally confronted with the small population size, the significant effects remain robust across all models they are included in and effect sizes remain stable, suggesting that the findings are quite robust. The adjusted R^2 – which in contrast to multiple R^2 controls for the number of independent variables in a model - values range between 0.55 (model 1), 0.6 (model 2), and 0.62 (model 3), suggesting that model 3 is best able to explain the variation in the dependent variable.

Model 1, 2, and 3 suggest that the size of an agency's social media followership, that is the long-standing attention, is influenced by the media salience of the agencies (H3a confirmed). The more salient an agency is in the news media, the larger this agency's audience tends to be on social media. The policy field and the legal mandate are not significantly related to the size of the social media followership (H1a and H2a rejected). Lastly, how the agencies communicate does not seem to have a large influence on whether they can reach a broader public (H4a rejected). Other significant variables are the Twitter account age and the average tweeting frequency, both of which are positively associated with the size of the followership. The marginal effects plots in figure 2 demonstrate the size of the significant effects in relative terms. Account age by itself provides a lot of explanatory power to predict followership size, as an exclusion of the variable leads to a drop of the adjusted R^2 to .35 - .40 (model 1 and model 3 respectively).

	<i>Dependent variable:</i>		
	log(followers)		
	(1)	(2)	(3)
Staff	-0.00005 (-0.002, 0.002)	-0.0005 (-0.003, 0.002)	
Salience (log)	0.284** (0.058, 0.511)	0.291** (0.059, 0.522)	0.319*** (0.162, 0.477)
Budget	0.003 (-0.002, 0.007)	0.003 (-0.002, 0.007)	
Policy field (ref:economic)	0.420 (-0.232, 1.073)	0.337 (-0.341, 1.016)	
Legal mandate (ref:non-regulatory)	-0.246 (-0.844, 0.352)	-0.183 (-0.774, 0.408)	
Account age	0.001*** (0.0004, 0.001)	0.001*** (0.0003, 0.001)	0.001*** (0.0004, 0.001)
Share of informational tweets		0.523 (-2.251, 3.297)	
Share of engaging tweets		2.087 (-3.950, 8.124)	
Tweeting frequency (log)		0.386** (0.034, 0.737)	0.457*** (0.135, 0.778)
Constant	4.966*** (3.397, 6.534)	3.715*** (1.895, 5.536)	3.448*** (1.899, 4.998)
Observations	39	39	39
R ²	0.620	0.694	0.651
Adjusted R ²	0.549	0.599	0.622
Residual Std. Error	0.896 (df = 32)	0.845 (df = 29)	0.820 (df = 35)
F Statistic	8.710*** (df = 6; 32)	7.296*** (df = 9; 29)	21.807*** (df = 3; 35)
<i>Note:</i>			*p<0.1 **p<0.05 ***p<0.01



Which agencies attract temporal attention on social media?

Changing the dependent variable from long-standing attention to temporal attention presents a different picture of social media attention. Since the dependent variable treats individual tweets of agencies as the unit of analysis, the analysis applies a generalized linear mixed model with random intercepts for agency accounts (i.e., tweets nested in agency accounts). The models were built stepwise to ensure the best model fit (i.e., best nesting of variables) and it was found that the random intercept for agencies reduced the log-likelihood in comparison to a null model and other sensible model specifications. Model 4 includes organizational variables, whilst model 5 includes all variables under observation.

The two models show that organizational features do not explain how much temporal attention agencies receive for their tweets. Neither policy field, nor legal mandate or media salience are significant in both models (H1b, H2b, H3b rejected). Instead, communicational variables can explain how much attention the agency tweets receive. Across all agencies in the sample, tweets that use either informational or engaging language receive more retweets and therefore spread more within the Twitter network (H4b moderately confirmed). Model 5 suggests that the use of informational language increases the number of retweets of the message by 6.3 compared to the baseline, whilst engaging language increases retweets by 2.5. However, the effect is modest and 95% confidence intervals between tweets that use and do not use said language are overlapping (see marginal effects in figure 2). Amongst the control variables, we see that the staff size of the agencies seems to be positively associated with the number of retweets per posted tweet.

<i>Dependent variable:</i>		
	Retweet count	
	(4)	(5)
Staff	<i>0.017** (0.005, 0.029)</i>	<i>0.016** (0.004, 0.028)</i>
Salience (log)	0.726 (-0.783, 2.235)	0.656 (-0.829, 2.142)
Budget	-0.017 (-0.046, 0.012)	-0.017 (-0.045, 0.012)
Policy field (ref:economic)	3.261 (-0.873, 7.395)	2.543 (-1.535, 6.622)
Legal mandate (ref:non-regulatory)	-3.129 (-6.789, 0.531)	-2.707 (-6.305, 0.890)
Account age	0.0005 (-0.002, 0.003)	0.0003 (-0.002, 0.003)
Tweet is informational (ref: no)		<i>6.333*** (5.118, 7.547)</i>
Tweet is engaging (ref:no)		<i>2.518*** (0.834, 4.203)</i>
Tweeting frequency (log)		0.462 (-1.694, 2.617)
Constant	-2.750 (-13.921, 8.420)	-4.114 (-16.899, 8.672)
Observations	53,865	53,865
Log Likelihood	-288,064.200	-288,005.300
Akaike Inf. Crit.	576,146.400	576,034.500
Bayesian Inf. Crit.	576,226.500	576,141.300
<i>Note:</i>		*p<0.1 **p<0.05 ***p<0.01

Discussion

The analysis shows that EU agencies receive drastically varying amounts of attention on social media.

Across the whole agency landscape, attention is strongly skewed towards a small number of organizations that capture a majority of followers. The analysis shows that the amount of long-standing attention, that is the audience size of an agency on Twitter is largely determined by the amount of attention it receives ‘in the real world’ outside of Twitter. Regarding explanations of long-standing attention, only media salience could significantly explain the variation of attention across agencies: An agency that is salient in the news media will most likely gather more attention on social media. Agencies that do not receive much attention in the traditional media will find it difficult to gather a large audience on social media.

What agencies actually *do* on social media, how they communicate with their audience, does not seem to play an important role for how much long-standing attention they gather. This is very much in line with what Van Aelst et al. (2017) have stated regarding politicians’ social media accounts: the amount of followers is often mostly determined by how prominent each politician is outside of the social media sphere and what they do on social media has no large impact on their audience size. None of the tested communication strategy variables are significant in the models that examine long-standing attention. Communication frequency does seem to play a minor role in how many followers an agency has, as well as the age of the account. While communication frequency does have a positive effect, the effect does decrease as the frequency of Tweeting goes up. Agencies that post very infrequently typically have less followers than those that post at an average frequency. However, the differences are less outspoken when comparing accounts with average communication frequency and those that particularly frequently, as frequent communicators do not have significantly more followers than average communicators. This finding dampens the hope that social media may provide a new venue for small public organizations to make their voices heard. If these organizations are not receiving attention in the ‘old’ media (i.e., traditional news media), they will most likely also not receive broader long-standing attention on social media.

Does this mean that how an agency communicates does not matter? Models 4 and 5 show that the opposite is true. When shifting the focus of investigation from long-standing to temporal attention, we find that communication styles can impact audiences’ attention. The models show that across all agencies,

messages (i.e., tweets) that are informational or engaging are more likely to be shared within the social media network than messages that are not informational or engaging. The findings suggest that although the overall audience size (i.e., long-standing attention) of agencies is capped mostly by factors that lie outside of their control – such as account age and media salience –, individual messages can still spread through the network if they are well-crafted and make use of the interactive nature of Twitter. While we can only speculate about the reasons for the positive significant effect of staff size on temporal attention, these findings could further underline the positive effect of well-crafted social media communication on audience attention: Organizations with more staff potentially have more available human resources for public communication matters. Having more public servants in the communication departments of these agencies might, therefore, lead to better-designed communication. Of course, this interpretation is only speculative and should be tested by future research.

Conclusion

This research has demonstrated that social media has the potential to be a powerful public engagement tool for EU agencies. While it seems that the long-term attention for an agency is largely predetermined by its general news salience, account age, and tweeting frequency, the findings provide support for an engaging and interactive governmental use of social media. Only when messages are well crafted can social media live up to what the technology was designed to do: spread the word.

The results show that both long-standing and temporal attention vary substantially across agencies. The degree of usefulness of social media to engage with the public, therefore, differs considerably between the sampled organizations. The ability to “be heard” is crucial for many public agencies, since social media provide an easily accessible venue for both organizations and the public to exchange information. It is therefore important to understand what agencies can do to increase their engagement potential and how different communication strategies influence their visibility and followership on social media.

This research provides three interesting insights regarding this question. Firstly, long-standing attention to an agency on social media is predetermined by the salience of the agency in the traditional news media. An organization that is frequently discussed in the news media tends to have a larger Twitter followership than an organization that does not capture much news media attention. Secondly, the empirical findings

of this paper do not provide much support for the theory that the legal mandate or the specific policy area plays an important role in how much attention an agency received on Twitter. The findings suggest that social media attention is rather determined on an individual case-by-case basis and cannot be generalized along dimensions related to the specific policy area or legal mandate. Thirdly, the results show that agencies are usually not able to capture more long-standing attention (i.e., larger followership) through carefully crafted communication – besides the finding that regular communication leads to larger audience bases than very infrequent communication. However, certain communication styles such as informational or engaging tweets can increase the attention to *individual tweets* of agencies and facilitate the wider dissemination of these messages within the Twitter networks. These findings are promising from the perspective of agencies, as they align with findings from earlier research (e.g. Grimmelikhuijsen and Meijer 2015; Theocharis et al. 2016) that suggest that public organizations and political actors can reach a wider audience via social media if the technology is used more strategically. Given the relatively small effect sizes that we observed and overlapping confidence intervals, research should dive deeper into the question of how more effective communication can bring more engagement with public organizations' audiences.

These results have practical implications for both researchers and practitioners within agencies and other public organizations. For researchers in the field of governmental use of social media, it means that more research is required to understand what exactly allows public organizations to connect closer with their audiences. While much of the current research focuses on the intentions of communication officials to reach wider audiences, as well as anticipations and demands of their audiences, we need to better understand concrete dynamics behind communication between public organizations. Researchers should examine what constitutes good and effective social media communication, how the quality of communication can be empirically assessed, and how audiences react to various ways of being addressed by public organizations. For practitioners, this finding means that greater emphasis should be put on how public communicators reach out to their audiences. The way in which they communicate via social media can make the difference between being heard and remaining unnoticed. Additionally, tweeting frequently tends to grow the size of the audience quite considerably. Our research also suggests that it might be

worthwhile for public organizations to analyze their social media interactions in-depth to streamline their outreach strategies and assess the impact that their communication strategies are having.

Our approach also illustrates the potential of automated text analysis techniques applied to the study of public institution's use of social media. The use of large pre-trained language models such as BERT enable researchers to reliably classify large amounts of data with relatively little required hand coding (i.e., learning material) and high precision. Applying similar methods to other large data sources can help us to understand patterns of behavior that we were previously unable to examine. This is by no means an argument to adopt a 'less is more' approach for the use of automated machine learning methods. Still, this research suggests that, if used correctly and with many checks and much caution, machine learning methods for text qualification can be employed by public organizations with relatively little resources with a high accuracy and assist researchers and public organizations in their daily activities.

Some limitations of our research point to interesting future avenues in this area of study. Firstly, Theocharis et al. (2016) point out in a similar case that the data does not allow to determine if the connection between communication behavior and audience size is causal or not. We do not know if agencies communicate in a certain way because they know that they are talking to a certain audience or if their audience adapts according to how they communicate. Further experimental studies would be a valuable addition to measure how various audiences react (differently) to varying communicational cues. Likewise, the analysis includes only two organizational types and tests only two different communication strategies (engaging and informational tweets) to measure varying communication styles. This approach is reductionist and was chosen to measure the impact of key differences between organizations and in communication. However, there might be other factors that have an impact on the dependent variable. Future research might develop additional or alternative methods of measuring variance in communication and organizations and uncover mechanisms that have previously stayed unexplored. For instance, does it matter whether organizations are engaged in service delivery, have advisory tasks, or directly engage with citizens?

Furthermore, we lack understanding of the motivations of the various agencies to use social media. As Mergel (2016) points out, different governmental agencies might use (or not use) social media for varying

reasons. Some might use it purely as a tool for information dissemination, some might use it to connect to their 'fanbase' (Mergel 2016, 145), whilst others again might use it to actively engage with the public in a social media dialogue. Particularly in the European context, we lack qualitative studies that uncover these motivations and could provide a great addition to our understanding of the public organization social media landscape.

Another point of caution is that this research only includes the limited population of European Union Agencies on Twitter. While this sample is naturally limited and cannot be extended, future research might examine national agencies and compare them across countries. This would allow for interesting comparisons across national contexts, as well as enable for the inclusion of interesting interaction terms – for instance, is the positive effect of communication frequency on audience size more or less pronounced for less media salient agencies? Eventually, such approaches could show whether communication strategies can serve as a weapon of the weak by allowing less prominent agencies to enter larger communication stages.

Lastly, we have opted to study the agencies' communication via the social media platform Twitter, which in itself is a biased platform that attracts and connects specific types of users that do not necessarily represent the average public. Furthermore, scholars have pointed out that a platform such as Twitter might enlarge existing power asymmetries between citizens and the state and might increase existing biases (Feeney and Porumbescu 2021). Future research can certainly address the limitations of our study by examining public communication in different social media channels.

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Chapter 5

Issue segmentation by public agencies: Assessing communication strategies of EU agencies related to Covid-19

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Introduction

Reputational uniqueness has been shown to ensure the long-term survival of political organizations (Gilad & Yogev, 2012) and can assist them to secure political and public support, ensure additional resources or to expand their policy competencies and task portfolios (Carpenter, 2014; Gilad et al., 2015). Being seen as unique is particularly difficult for public agencies in the European Union. In the EU regulatory state (Majone, 1997), the public agency landscape is dense and competitive. Individual agencies must be mindful of other agencies when they communicate to avoid competing for similar reputational features or policy responsibilities with other adjacent agencies and to protect their own mandated authorities (henceforth ‘jurisdictional turf’; Wilson, 1989). While we know that public agencies strive for reputational uniqueness and protect their jurisdictional turf, we lack deeper knowledge of how they do so (but for a notable exception, see Busuioc, 2016). Given that scholars have shown that agencies use strategic communication as a reputation management tool (Maor, 2020), it can be expected that they also use communication to establish reputational uniqueness. Therefore, this article asks the following question: *How do public agencies maintain reputational uniqueness and protect their jurisdictional turf via means of public communication?*

Departing from earlier findings in from the bureaucratic reputation literature (and its predecessors) we expect that agencies use a strategy that we call “issue segmentation” to establish their reputational uniqueness and protect their jurisdictional turf (Busuioc, 2016; based on arguments from Wilson, 1989). This implies that agencies will embrace opportunities to highlight the unique ways in which they can contribute to the public good. When they are faced with encompassing policy issues, we expect individual agencies to identify specific sub-issues that closely align with their core competencies. These sub-issues are chosen in a way that avoids overlap and conflict with other agencies’ reputational profiles. We theorize that agencies use these strategies to protect their own jurisdictional turf, to establish their unique reputational profiles, and to signal competence and expertise to their respective (often specialized) target audiences. At the same time, we acknowledge the complexity of this exercise. Public organizations, like agencies, face difficulties to satisfy all subgroups within their audiences with a single narrative— after all, any agency’s audience is not a homogeneous group but rather composed of many subgroups with varying interests and preferences (Maibach et al., 2011; Müller & Braun, 2021; Slater, 2013; Slater & Flora, 1991).

While applying issue segmentation and clear messaging has important benefits, these diverse audiences might at times also result in mixed messages, or cause agencies to focus on similar issues that are (to a lesser extent) unique to them – a behavior that we would call issue convergence.

To study the research question, we chose to empirically investigate how European Union agencies communicated during the Covid-19 pandemic. The pandemic presents the greatest public health threat in modern history and stalled public life in most parts of the world and resulted in humanitarian and economic crises. Public communication by governmental bodies has proven to be particularly important, as fighting the disease requires behavioral changes and compliance by the citizens (e.g., mask-wearing, willingness to be vaccinated). The Covid-19 pandemic provides a unique case, as it is a highly salient, extraordinarily complex, and cross-regulatory issue (henceforth we will refer to these kinds of issues as ‘encompassing issues’). Given the importance of cross-continental coordination during the pandemic, EU agencies quickly found themselves in the spotlight of the public discussion. At the same time, all European agencies were affected by the pandemic, as it had important financial, economic, health, and humanitarian implications. With policy responsibilities that are often closely related, European agencies found themselves in a difficult situation. If they managed to represent their organizations’ capabilities and knowledge in a good light, they would be able to secure public and political support. In contrast, if they could not show that they can deliver unique contributions to the presented policy challenges, they could risk major reputational damage. If issues segmentation can be observed – as suggested by the bureaucratic reputation literature– we are most likely to observe it for this case, as the situation requires action and public communication of many agencies at once.

Using an extensive dataset of the communication output of 38 EU public agencies regarding the Covid-19 pandemic on the social media platform Twitter, we show how agencies strategically choose to prioritize niche dimensions of a salient issue to capture and satisfy niche audiences they care about. In this way, they establish unique ‘niche monopolies’ regarding the Covid-19 pandemic, which are closely related to their core responsibility and tend not to overlap with the niches of other agencies. At the same time, some common themes that relate to morality, appear across agencies.

This research contributes to existing bureaucratic reputation literature in important ways. When studying reputational communication patterns, it is important to consider how agencies respond to other agencies

or anticipate their behavior and communication. In doing so, this research complements earlier work focused on reputational responses regarding threats or reputational dimensions in everyday communication (Gilad et al., 2015; Maor et al., 2013; Rimkutė, 2018; van der Veer, 2021). In addition, most of the bureaucratic reputation literature observes strategic communication of regulatory agencies via their audiences (Boon & Wynen, 2017), or the news (Boon et al., 2019; Gilad et al., 2015; Müller & Braun, 2021). This research adds another component to this communicational interaction, by stipulating those individual agencies are also mindful of *other agencies* when crafting strategic public responses.

Furthermore, adopting a multi-agency focus allows us to test earlier findings from (mostly) single or small n case studies. While these approaches are highly insightful to clarify the mechanism behind the establishment of bureaucratic reputation, it is valuable to examine these findings more systematically (Salomonsen et al., 2021). Our study uses a comparative design of 38 public agencies in the EU and is based on 1251 agency tweets about the COVID pandemic, allowing us to observe communication about the same topic across several organizations.

The following theoretical section will present existing knowledge on how public organizations establish and maintain their reputational uniqueness (Carpenter, 2020) and protect their jurisdictional turf (Wilson, 1989) and, secondly, how they use strategic communication to do so (Maor, 2020). Subsequently, we will present case expectations that relate to the idea of issue segmentation before presenting the empirical investigation of this research and discussing the key findings and implications of our study.

Reputational uniqueness and jurisdictional turf

Reputation-based explanations have helped to understand a multitude of aspects relating to public agency behavior. Originally thought to explain bureaucratic behavior that aimed at forging organizational autonomy (Carpenter, 2020; Maor, 2020), it has since been used to explain – amongst others – internal coordination of regulators (Blom-Hansen & Finke, 2020), rule enforcement (Maor & Sulitzeanu-Kenan, 2013; van der Veer, 2021), prioritization of tasks (Carpenter, 2002), and the strategic use of communication (Gilad et al., 2015; Maor et al., 2013). A reputational perspective is based on the idea that it matters how an organization presents itself and how that actor is perceived by external audiences (based

on seminal work by Goffman 1959). The sum of self-portrayal and external perception is called reputation and is commonly defined as “a set of symbolic beliefs about the unique or separable capacities, roles, and obligations of an organization, where these beliefs are embedded in audience networks” (Carpenter, 2014). By responding to expectations from an agency’s audience, it can cultivate and shape a unique and distinct reputation. That reputation is the organization’s “primary source of power, which can allow it to enlist support, build its autonomy, protect it from external attacks and ultimately help ensure its survival” (Busuioc, 2016; Carpenter, 2014, 2020).

Following this line of research, two concepts are particularly relevant to understand in the context of issue segmentation: reputational uniqueness and jurisdictional turf. Public agencies strive for “reputational uniqueness” (Carpenter, 2020, p. 5), which enables these organizations to support their claims of making unique contributions to society and becomes their *raison d’être*, in other words, their long-term survival strategy (Gilad & Yogev, 2012; Maor et al., 2013). More specifically, reputational uniqueness “[...] refers to the demonstration by agencies that they can create solutions (e.g., expertise, efficiency) and provide services (e.g., moral protection) found nowhere else in the polity” (Maor, 2010, p. 138). In consequence, reputational-aware organizations seek ‘niche roles’ (Busuioc & Lodge, 2016 refer to it as “niche monopolies”) that are distinct from that of other agencies in their environment (Gilad & Yogev, 2012). They also resist tasks that are outside their constructed domain (i.e., the task they were founded to fulfill) to limit the chance of competition and potential losses (Gilad, 2008; Wilson, 1989). They only seek new roles if the responsibilities fall strictly within their constructed domain and when not claiming jurisdiction would undermine their reputation – and seen as a sign of weakness (Maor, 2010). In other words, organizations seek to capture niche monopolies and avoid interdependent and competitive areas at these imply reputational risks.

How do organizations establish reputational uniqueness? To address this question, we build on earlier work that has connected reputational considerations to Wilson’s notion of jurisdictional ‘turf’ (Busuioc, 2016; Wilson, 1989). Turf, in this context, is understood as an agency’s distinctive jurisdiction (or mission) (Wilson, 1989, p. 182) or ‘regulatory dominion’ (Maor, 2010, p. 136). Jurisdictional turf and reputation uniqueness are complementary concepts, as one (jurisdictional turf) is required to accomplish the other (reputation uniqueness). In other words, agencies need to claim certain regulatory responsibilities to show

to the relevant audiences that they are capable regulators in these specific fields. Claiming regulatory responsibilities can be complicated, particularly when facing complex policy issues. When a new complex policy issue arises, individual agency jurisdictions are often not clearly defined and might overlap. If two agencies claim similar areas of regulation, they might have to spend additional resources to compete with their opponents. They may not have the expertise or capacity to carry out new tasks or they might lose the competition with other agencies claiming similar responsibilities. Therefore, the concept of reputational uniqueness assumes that regulators are aware of jurisdictional overlap with other agencies and “strategically anticipate jurisdictional battles with rival regulators” (Maor, 2010, p. 138). Given that regulators are generally risk-averse, they will avoid making jurisdictional claims if doing so would create new political or organizational adversaries. Furthermore, they are highly protective of their own turf, as this is essential for their reputational uniqueness and long-term survival (Baldwin et al., 2015, p. 368; Wilson, 1989).

Considering key insights and findings from previous work on reputational uniqueness and jurisdictional turf and translating these assumptions to the realm of public communication, we assume that regulators will engage in ‘issue segmentation’ when they face an encompassing policy issue. Issue segmentation can be understood as the practice of dissecting a broad issue into multiple sub-issues and claiming the ones that best advance one’s own reputation. Encompassing issues usually touch upon various regulatory fields, and even within each regulatory field, the distribution of responsibilities among specialized regulatory organizations might not always be clear or overlap. Therefore, we would expect individual agencies to split encompassing policy issues up into sub-issues that they can convincingly claim.

Following our logic, issue segmentation comes with multiple advantages for each individual agency involved in an encompassing policy issue. Firstly, it is a much more manageable task for an agency to convincingly display expertise regarding a sub-issue compared to the overall policy issue. Secondly, issue segmentation allows agencies to avoid direct conflict with each other by competing for similar regulatory responsibilities. Lastly, by carefully communicating about a set of sub-issues, public organizations can craft a unique public reputational profile that is different from the profile of similar organizations.

While issue segmentation has not been specifically discussed in prior research, agencies have been shown to engage in audience segmentation strategies (originating from health communication and first

mentioned in the context of bureaucratic reputation by Maor (2020)). These strategies are meant to divide their audiences into meaningful groups based on what the agencies want to accomplish (Slater, 2013).

These audience segmentation strategies can be based on either audience characteristics (e.g., sociodemographic attributes, closeness to political principals) or issue characteristics (e.g., what issue to focus on), or a mix of both (Grunig, 1989; Kim et al., 2011; Slater, 2013). Audience segmentation strategies become particularly important if multiple agencies compete for similar responsibilities. In this case, communication signals are likely tailored so that two agencies do not compete for similar audiences to avoid potential defeats – that is, losing responsibilities or losing audiences (Maor, 2020).

At the same time, issue segmentation is not the only pattern that might occur. Rather than focusing on distinct issues, the public communication efforts of various EU public agencies might overlap and concentrate on similar issues– this could be called issue convergence. From a pragmatic point of view, issue convergence could signal the unity of EU institutions during challenging times and further instill trust in the European population that any EU actions are well coordinated. Secondly, previous studies of the communication of individual agencies suggest that agencies seek to use external shocks to strategically expand their mission or policy responsibilities (Gilad et al., 2015; Müller & Braun, 2021). This view is often supported by neofunctionalist explanations of crisis moments as possibilities for agencies rather than pure threats (Bergmann, 2019), and confirmed by work on “bureaucratic drift” (Calvert et al., 1989; McCubbins et al., 1987). If all agencies would attempt to expand their mandates at the same time, as they, for instance, are (almost) all directly or indirectly affected by an emerging encompassing issue, we would find significant similarities and overlaps in their communication. Notably, issue segmentation and issue convergence do not have to be mutually exclusive. There might be variation across policy issues, or across or even within agencies (over time, depending on the specific policy issue).

Theoretical expectations

Based on the concept of issue segmentation, we will formulate two theoretical expectations regarding the communication of regulators in the context of an encompassing issue. While the first expectation directly relates to Wilson’s notion of turf protective behavior, the second expectation focuses on how agencies establish reputational uniqueness by communicating about mutually exclusive issues.

Public organizations will emphasize protecting their jurisdictional turf and take decisions that primarily allow them to keep those regulatory responsibilities that have become part of their core mission. For instance, Busuioc (2015) shows that public agencies only cooperate with other organizations when they can ensure that their jurisdictional turf stays protected, and they will be able to keep – or even better extend – their unique reputational profile. We expect to find a similar behavior regarding the sub-issues that agencies focus on: public agencies will mostly focus on those sub-issues that relate closely to their core missions and disregard issues that lay at the periphery of their organizational mission. This would allow them to protect their jurisdictional turf and their current reputational profiles. While we might see occasional advances into issues that are not directly related to an agency's core mission, we expect the organizations to only attempt to expand their reputational profiles when a good opportunity arises.

Expectation 1: When communicating about an encompassing issue, a public agency predominantly focuses on sub-issues that relate to the agency's core mission.

Secondly, in line with previous observations regarding establishing reputational uniqueness, we can expect agencies to communicate about 'unique' sub-issues that do not overlap with those of other agencies. They are expected to do so because it would allow them to show that they occupy a unique niche in the overall organizational landscape they are placed in (Gilad & Yogev, 2012). Furthermore, public organizations are typically seen as risk-averse (Chen & Bozeman, 2012). Two agencies are rarely seen to compete for similar audiences or competencies (Maor, 2020). For instance, Maor et al. (2013) show that the Israeli banking authority remains silent regarding public allegations about issues that are within another agency's jurisdiction. This also relates to the general self-representation of each agency; agencies are interested in being perceived as unique and not conflictual with other agencies' core tasks, which might cause conflict and friction (Gilad, 2008). By focusing most attention on unique sub-issues, they avoid competition with other agencies for similar audiences or competencies. If agencies would communicate about a broader set of issues, they would risk entering the jurisdictional turf of other agencies and might not be able to demonstrate their unique contribution to the polity.

Expectation 2: When communicating about encompassing issues, public agencies will prioritize unique sub-issues that do not overlap with issues prioritized by other agencies

Data and methods

We explore a real-life case of issue segmentation by examining how EU agencies communicated during the Covid-19 pandemic in 2020. The pandemic provides a fitting example of an encompassing issue. As other encompassing policy issues such as climate change or technological revolutions, the Covid-19 pandemic presents both a risk and an opportunity for the communication efforts of EU public agencies.

This research employs analysis of Twitter communication of EU public agencies during the COVID-19 pandemic to uncover and explore patterns of issue segmentation. Particularly during the height of the pandemic, other communication channels were severely limited (no travel, stay-at-home orders – therefore fewer traditional press conferences, face-to-face meetings, or other public events). Additionally, the only other consistent public communication channel of most agencies – the news sections on most agencies’ websites – is typically used for administrative announcements rather than ad-hoc communication (e.g., websites tend to feature new reports, or upcoming events, rather than quick reactions to currently unfolding situations). Furthermore, Twitter has been shown to be used by public agencies as an instrument for reputation-building (Jason Anastasopoulos & Whitford, 2019; Mergel, 2013). Studying other communication venues such as online or print newspapers is not feasible in this context due to journalists filtering communication by agencies to accommodate their reporting requirements – this would lead to a potentially biased representation of agency communication, as some agencies generally receive much more media attention than others.

The sampled EU agencies are the full population of EU public agencies with a social media presence (to our knowledge). We collected all tweets of 38 public agencies on Twitter from January 1st, 2020, to July 31st, 2020, (for a specification of all agencies and abbreviations, see appendix B). This broadly covers the timeframe of the first infection wave of the pandemic in most countries, starting from the European Center for Disease Control’s first tweet about the novel coronavirus on January 9th, 2020. We deliberately chose this timeframe, as it ensured a sustained period of common focus on the issue, as well as high salience of the communication on Covid-19. The data was collected by accessing Twitter’s REST API (Representational State Transfer Application Programming Interface) via the R library “rtweet” and downloading the Twitter timelines of each of the organizations in the sample. Using a dictionary

approach, we identified all tweets about the COVID-19 pandemic (this approach is used in a similar context by Green et al., 2020). Given that tweets about the coronavirus are very often recognizable by specific hashtags (e.g., #coronavirus), the dictionary was constructed through a reiterative process. We collected a keyword list, applied it to the tweet collection and then identified the tweets that were not captured by the current keyword selection and updated the dictionary with new words that would then capture the false negatives.

Subsequently, we subsampled the ten agencies that were the most active ‘covid-tweeters’ (meaning that these agencies posted the most tweets about COVID-19). We chose the top ten agencies, as we see a sharp 22.5% drop in covid-related tweets between the tenth (EU satellite center) and the eleventh agency (European Agency for safety and health at work) in the dataset. We did not include the full population of agencies and tweets in this study, as the uneven distribution of tweets across agencies would bias the construction of the structural topic models (see below). An extremely uneven distribution of tweets across agencies (e.g., out of 38 agencies, one agency tweets less than 0.5% of all tweets) could potentially lead the topic model algorithm to ‘overlook’ topics of agencies with very few contributions towards the COVID-19 debate.

We consciously did not pre-select our subsample based on the organizational relevance of the organizations to the COVID-19 pandemic, but instead used a bottom-up approach to allow unexpected patterns to arise from the data. The tweets of the covid-tweeters were then used to generate multiple structural topic models (STM), of which the model with the best fit was used for further analysis. Building upon other probabilistic topic models, structural topic models are a form of semi-supervised text analysis that can discover latent topics in a set of documents (Roberts et al., 2019). The STM is a generative model of word counts, meaning that it follows the assumption that words that co-occur in the same text tend to form coherent topics. A key innovation of STM is that it can incorporate (and test) additional co-variables into the model, allowing the researcher to discover topics and estimate their relationship with document metadata. The nature of the metadata is arbitrary and can be continuous (e.g., time) or categorical (e.g., the political leaning of the author). This ability makes STM particularly useful for this research, as it allows us to observe topics to vary across time or contexts and performs well with short texts (Rodriguez & Storer, 2020). It has, therefore, been used in similar contexts such as the analysis of Twitter

communication after terroristic attacks (Fischer-Preßler et al., 2019) or how judges use social media for public communication (Curry & Fix, 2019).

To uncover how agencies communicate about the COVID-19 pandemic, we used a structural topic model with 28 topics. While structural topic models do not require prior hand-coding of documents, the number of topics the model searches for must be set before the model can be calculated. To do this, we constructed models with 5 (number of agencies) to 50 topics and manually selected the best 3 models based on a range of quantitative measures (i.e., held-out likelihood, residuals, and semantic coherence). We used a range of indicators, as no one ‘ground truth’ indicator would clearly indicate the number of topics in a text corpus, and multiple indicators should be compared to arrive at a reasonable number of topics (Roberts et al., 2019).

The models included a topic prevalence co-variate for time and agency. We account for time, as it can be assumed that topics appear at different times throughout the pandemic. Furthermore, we include a co-variate for the agency posting each tweet, to account for the fact that agencies might discuss different topics. However, the identified topics are extremely similar to a model that does not include agencies as a co-variate. Lastly, the three best models were manually checked to examine which topic model would provide the most interpretable topics, with 28 topics providing the best overall balance between semantic coherence and held-out likelihood (and other indicators, see appendix D). Each topic was labeled based on the content by examining words that were highly correlated to each topic and examining tweets that displayed a high correlation with the topic (for a full overview of the topics, see appendix A).

Since structural topic models provide topic-per-document predictions, each tweet in the text corpus is assigned a probability that it belongs to each of the 28 topics. As tweets are very short texts, we assumed that each tweet mainly belongs to one topic, as incorporating two or more topics in one tweet is unlikely to happen. To test this, we calculated the average theta value of the highest theta value for the topic model, indicating a median theta value of .75 (i.e., the median tweet contains 75% of words from one topic within the topic distribution, while the other 25% of words are likely to come from other topics).

The median second-highest theta value per tweet is .09, indicating that around 9% of each tweet is generated from the second most-likely topic. In the context of this research, it is therefore unlikely that many tweets contain a significant portion of a second topic. However, to exclude the possibility that our

approach masks nuances in our findings, we have computed 28 regression models for each of the topics for which we test the impact of each Twitter account on the prevalence of a topic (appendix C). The models confirm our findings. Therefore, each tweet was labeled with the topic that it most likely belongs to.¹³ If a topic was mostly covered by one or two agencies, it was considered as an example of issue segmentation.

Results

In the COVID-19 debate, public agencies in our sample communicated about a wide range of issues, ranging from very general issues such as international unity to fight the disease (topic 1), administrative issues such as invitations for webinars (topic 2) or invitations to online press conferences (13), to highly specific topics such as how to tackle disinformation (topic 11), or banking measures to alleviate personal financial hardship (topic 14). A complete topic list can be found in appendix A, a list with the highest word-per-topic and topic-per-document probabilities can be found in appendix E. Certain topics could intuitively be linked to one of the agencies in the sample due to their specificity. For instance, topic 9, violence against women, can intuitively be linked to the European Institute for Gender Equality EIGE. Other topics are more ambiguous and could relate to multiple agencies. An example here could be topic 22, which can best be described as hygiene recommendations to contain the spread of the disease. Lastly, almost all topics are related to policy issues, except a few topics that have no direct relationship with regulatory issues (topics 2 and 25). However, these administrative topics appear rarely (in less than 5% of tweets).

¹³ We have attached the output of every regression model ($n=28$, because we use 28 topics) in appendix C. The findings from the regression model largely confirm the findings that we gained from the one-topic-assignment strategy. In every case for which our method predicts that one agency dominates a certain topic, the regression model confirms this with a statistically significant, positive coefficient for this agency. In some cases, a second (or third) agency is also statistically significantly related to a topic, but in these cases the relation is either negative or the coefficient is very small (close to 0). In one exceptional case (topic 15), our method suggests that the ECDC dominates a topic, while the regression suggests that both the ERC and the ECDC are associated with the topic. However, in this case the coefficient for both agencies is very low. As it turns out, our approach is even somewhat conservative towards the issue segmentation argument, as there are multiple topics for which the regression result indicates issue domination, our one-topic-assignment model does not pass the issue domination threshold (e.g., topic 7). For the topics that we describe as ‘shared’, the regression model suggests similar conclusions and indicates that multiple agencies are positively associated with a given topic (albeit with comparatively low coefficients).

Expectation 1: Issue segmentation within individual agencies

To identify whether and to what extent agencies select sub-issues within the Covid-19 debate, we looked at the distribution of each topic across all agencies. Despite communicating about the same political event, the messages of the sampled EU agencies rarely overlap. While certain topics are more evenly distributed across agencies, they present a minority. Topics that are more evenly distributed typically refer to general issues, such as international solidarity to find a cure for the virus (#7), tackling disinformation (#8), or global coordination regarding covid-measures. These general topics seem to share a rather moral or normative dimension, suggesting that such topics seem to matter less when aiming to establish a unique reputation (for a deeper discussion and application of reputational dimensions, see Overman et al., 2020; Rimkutė, 2020). Most tweets are only posted by one single account in our sample and only roughly 12% of all tweets appear more than twice in the dataset (i.e., only 12% of Tweets are retweets of the same Tweet).

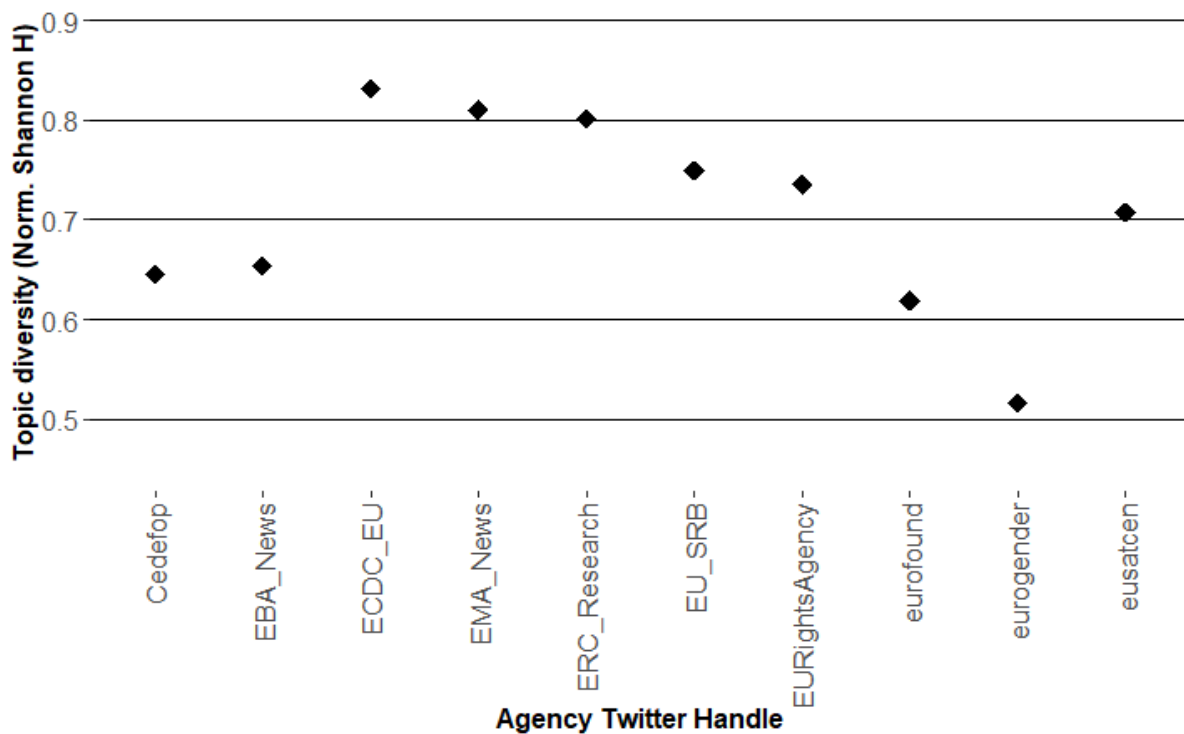


Figure 1: Topic diversity within agencies

As a test of whether agencies communicate broadly or instead focus on specific issues in their communication, we calculated the topic diversity across agencies via Shannon's H index (Shannon, 1948). Similar to the Herfindahl–Hirschman Index and other diversity indices, the Shannon index calculates the

diversity of a population (in this case the diversity of topics used by each agency) in which each member (each tweet) belongs to a unique group (topic). A high topic diversity, therefore, shows that the Tweets that an agency posts about Covid-19 are relatively evenly distributed across topics, whilst a low topic diversity signal an agency's focus on only a few topics and disregard of other topics. The Shannon index has been used in many other settings to measure (aspects of) diversity, for instance, related to policy agendas, stakeholder engagement, or interest group populations (Boydstun, 2008; Braun et al., 2020; Sheingate, 2006). We chose the normalized version of the Shannon index, meaning that all values range between 0 and 1 – 1 meaning large topic diversity and completely even distribution of messages across topics (Boydstun et al., 2014).

The findings are visualized in figure 1. Topic diversity is highest for the agencies that are most responsible for key areas of the Covid-19 pandemic (ECDC, EMA, ECDC). These agencies, therefore, have more applicable mandates for many of the sub-issues of Covid-19 and subsequently communicate about them. They stand in contrast with those agencies that do not hold key responsibilities for the fight against Covid-19, but still communicated relatively frequently about the pandemic. Agencies such as Cedefop, Eurofound, and EIGE (@eurogender) show a much lower topic diversity, indicating that these agencies focus on very few topics instead of communicating more broadly.

To fully evaluate expectation 1, we assessed whether the sub-issues that agencies focus on respectively are related to their core missions or not (table 1). Based on a thorough analysis of each agency's website and its legal mandates, we determined the core responsibilities of each organization. This was done by identifying the main themes that the agencies communicated about and their self-understanding (sections such as "mission" or "about us" on their websites). We subsequently clarified which sub-issues that agencies tweeted about related directly to the core missions of each agency, and which sub-issues either do not relate to the core responsibilities or are shared across multiple agencies. As the table shows, most sub-issues that the agencies communicate about are closely related to their core responsibilities. However, there are certain exceptions, most notably related to the European Center for Disease Prevention and Control. While the agency mostly communicates about its core areas of expertise, it also posted (and

retweeted) messages that urged the public and politicians to work together to fight the pandemic and shared insights into technological developments to fight the pandemic.

Table 1: Relation of sub-issues to agencies' core missions (only including agencies that dominate sub-issues as shown in figure 2)

Agency	Sub-issues dominated	
	Core task of agency	Not core task
Cedefop	3: Impact on job market	-
ECDC	4: Early information on outbreak; 16: General medical information about the disease; 22: Hygiene recommendations; 23: ECDC risk assessments; 24: Data updates (global death reports)	1: Unity against pandemic; 15: Technological developments to fight Covid
EU SRB	5: Eu banking resolution against financial impacts; 14: Banking measures to alleviate personal financial hardship	2: Web event invitations
FRA	27: Impact on human rights	-
Eurofound	6: Covid survey	
EIGE	9: Gender issues (violence against women)	-
EU SatCen	20: Military response	-

Expectation 2: Issue segmentation across agencies

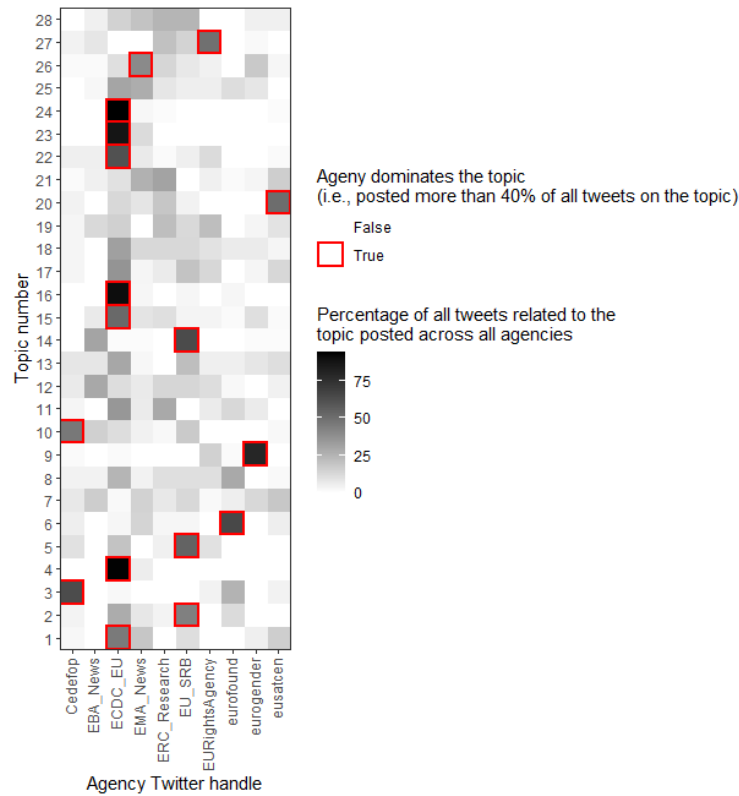


Figure 2: Topic distribution across agencies. Rows are the topics while columns are the various Twitter accounts of the included agencies. Shading of each cell signals the overall percentage of tweets of a certain topic that each agency has posted.

To evaluate our second expectation, we aggregated the distribution of tweets of each topic across all agencies to uncover which topics are unique to agencies and which topics are more evenly distributed. The results are visualized in figure 2.

In line with expectation 2, we find that many topics are dominated by one agency that communicates about this particular issue. The European Center for Disease Control (@ECDC_EU) captures the most topics, followed by the Stability Reserve Board (@EU_SRB). Other agencies that post frequently about COVID-19 each dominate one issue. Surprisingly, the European Medicine Agency (@EMA) and the European Banking Authority (@EBA_News), and European Research Council do not capture any of the topics of the model but seem to communicate more broadly. Rather than focusing strongly on one particular sub-issue, they appear to focus on various issues they consider relevant, and as such represent a case of issue convergence rather than segmentation. However, this can be mainly ascribed to the 40% threshold, as a lower threshold would have resulted in more dominated topics for these agencies.

Furthermore, certain issues were indeed occupied by two agencies. For instance, topic #21 on Covid-19

research was used to almost equal parts by the European Research Council and European Medical Agency accounts, as it falls within both their jurisdictions. However, a closer look at their use of the topic revealed different angles towards the topic, as the European Medical Agency published tweets that concerned the use of research to produce effective medicines and vaccines against the disease, whilst the account of the European Research Council focused on the research work itself and the researchers behind it.

Discussion

The analyses presented above have allowed us to test the theoretical expectations that were identified in this research. The findings show evidence of issue segmentation, both within (expectation 1) and across (expectation 2) agencies.

Firstly, we find support for expectation 1. The broader discussion of the pandemic is segmented across agencies, as most agencies in the sample focus on specific sub-issues of the Covid-19 debate. While the agencies with the most important responsibilities regarding Covid-19 also managed to capture the largest number of sub-issues, they also addressed the most diverse set of sub-issues through their communication. When calculating the within-agency topic diversity (Shannon's H), we find that agencies with many Covid-19 related responsibilities – such as the European Center for Disease Control or the European Medical Agency - also displayed the largest topic diversity. By dominating one or multiple unique sub-issues regarding the pandemic, agencies can show to the public that they are able to deliver unique goods to the polity and the public (Maor & Sulitzeanu-Kenan, 2016; Rimkutė, 2018).

Furthermore, dominating one sub-issue means that potentially competing organizations find it more difficult to convincingly show that they are better suited to exercise related responsibilities (Busuioc, 2016).

Our issue segmentation approach also helps to explain the appearance of perhaps “unexpected” agencies amongst the most frequent Covid-19 communicators in the data - for instance, the European Centre for the Development of Vocational Training, the European Institute for Gender Equality, or the EU Satellite Centre. We consider these organizations as “unexpected”, because they are comparatively small agencies (both in terms of areas of responsibility, staff, and budget size) and occupy areas of expertise that do not

seem to be directly related to a health pandemic. So why do they still communicate so actively about Covid-19? The topic models show that these unexpected communicators focus almost exclusively on very narrow and specific issues, such as for example violence against women or changes in the work conditions of European citizens. In contrast, other agencies that are responsible for areas that are directly impacted by the pandemic, such as the transportation sector, did communicate less about Covid-19 than could have been expected (e.g., the EU Aviation Safety Agency or the European Railway agency).

The exploratory analysis showed that most of the dominated sub-issues were directly related to the core missions of the agencies. This lends support to the idea of turf-protective behavior (Wilson, 1989). By communicating extensively about how Covid-19 relates to their core missions, agencies can demonstrate that they are capable and knowledgeable to execute the core tasks that are allocated to them. At the same time, they ensure that no other organizations with adjacent task areas compete for similar responsibilities. For the unexpected communicators in our sample, whose core responsibilities do not clearly relate to Covid-19, there might be an additional rationale. By highlighting how their core responsibilities are relevant to the highly salient issue of the pandemic, they are able to show that they still matter and are an important component of the EU bureaucratic and administrative system – thus ensuring their long-term survival (Gilad & Yogev, 2012).

We also find support for expectation 2, as we observe issue segmentation across the agency landscape as well. Many sub-issues are talked about by one single agency, while other agencies stay relatively silent on the same issue. Even agencies within a similar regulatory domain (such as public health or financial agencies) communicate in unique ways with little overlap with each other. We, therefore, find support that agencies aim to communicate in a way that allows them to establish and maintain reputational uniqueness, by differentiating themselves from other agencies in the organizational landscape.

However, figure 2 also shows nuances to issue segmentation behavior by agencies. Firstly, not all agencies dominate at least one sub-issue. While the European Banking Authority, the European Medicines Agency, and the European Research Consortium are frequent COVID-19 tweeters, they focus on a relatively broad range of issues and do not dominate a single sub-issue in the sample. Equally, not all topics are dominated by a single agency – some topics are distributed relatively evenly across agencies. Furthermore, we do not exclusively find issue segmentation across all topics and agencies – in certain

select cases, we find that two agencies talk a lot about the same sub-issue. For instance, both Eurofound and Cedefop talk about the impact of the pandemic on the job market (topic 3). There seem to be certain agencies and topics that favor issue segmentation, while others do so to a lesser extent, and at times demonstrate a certain level of issue convergence.

Conclusion

This research has addressed the important question of whether and how public agencies communicate about a shared and encompassing issue. Drawing on previous research on reputation management strategies of public organizations, we have argued that if multiple public organizations communicate about the same (salient) issue, they will aim to further forge their reputational uniqueness and protect their turf. Whilst doing this, we expected organizations to be risk averse by avoiding competing for similar responsibilities with other public organizations. To do so, we expected to see patterns of issue segmentation, both within and across agencies, as large and complex issues are dissected into many smaller sub-issues, which are then ‘claimed’ by individual public organizations.

To test these expectations, we examined the communication of 38 public agencies of the European Union regarding the Covid-19 pandemic on the social media platform Twitter between January and June 2020. Using an automated text analysis approach, we dissected the sample of Covid-19 related tweets by the ten most frequently communicating agencies into 28 different sub-issues and examined the topic distributions within and across agencies. Albeit important nuances, we saw our previous expectations confirmed by the subsequent analyses: EU agencies use communication regarding the pandemic to protect their organizational turf, to establish and defend their reputational uniqueness, and to demonstrate to the public and political principals that they are important and relevant actors, even if their core missions do not seem to directly relate to the most salient issue at the current time. Our findings show that the frequency of communication seems to be in part related to how closely each respective agency’s core mission is related to Covid-19. However, communicational strategies also seemed to have played a role, as certain agencies with no obvious connection to Covid-19 communicated frequently about the topic, while other agencies with more apparent relevance to the topic communicated less than expected. Furthermore, we find clear traces of issue segmentation, as many agencies seem to focus on

sub-issues regarding the pandemic that other agencies do not communicate about. These sub-issues are frequently related directly to their core missions, indicating that they aim to show their audiences that they can execute the tasks that are allocated to them.

This research comes with important limitations that should be addressed by further research. Firstly, we have examined the case of EU agency communication regarding Covid-19. While this provided a perfect opportunity to study communication behavior regarding a subject, the Covid-19 pandemic is a unique and rather exceptional case in public communication. It is exceptional in that it is a highly salient and highly urgent policy problem that touches on many policy fields. Whilst other comparatively policy problems are typically highly salient (e.g., climate change) or highly urgent (e.g., regulating modern technologies such as bitcoin), they are typically not both at the same time and do not touch upon as many different policy areas. Furthermore, we have focused on public agencies of the EU, whilst other public organizations with different tasks and more representative functions (such as the EU parliament or the Commission) might adapt different communicational approaches. Secondly, we have only observed the communication of agencies on the social media platform Twitter and do not know if similar behavior of issue segmentation also translates to other media environments such as the news media or public press releases of the agencies in our sample. Other venues such as the news media follow different dynamics (e.g., conditions for participation), which might result in different communicational practices by public agencies (or a different perception of their communication activities).

Further research could address both limitations of this study, as well as new theoretical avenues that we have identified here. For a better understanding of communicational strategies and issue segmentation in particular, researchers could study communication behavior in different contexts than this study. This includes, on a topic level, issues that are less encompassing and crisis-driven than the Covid-19 pandemic, which is a unique case of public communication. On an organizational level, researchers should address how communicational strategies differ across public organizations and whether other organizational variables such as the size and mandate of the organization or issue salience impact the choice of communicational strategies. Furthermore, the findings of this research raise further questions about the motivations behind issue segmentation and the decision-making process of communication officials within the agencies under observation. This could be addressed with qualitative research designs that dive

deeper into the motives of public officials in charge of communication. Furthermore, while this study examined the phenomenon of issue segmentation in an explorative and data-driven manner, we need more research into the nature, strategy, and effect of issue segmentation to fully understand its existence and impact. For instance, while our method clearly shows the presence of segmentation in the agencies' communication, we do not know why we see such a pattern and whether it is the result of conscious or subconscious action by communication officials within the respective agencies. Qualitative insights into the motivations of communication officials within the agencies would be valuable evidence, as well as studies that investigate many different public organizations within a single policy area. Future studies should also explore topics such as failed issue segmentation attempts, patterns of issue convergence, and the specific trade-offs that agencies are confronted with when addressing their diverse audiences.

Our findings have several theoretical implications. They confirm previous findings about the rational calculations that many regulators engage in when communicating with the public (Maor, 2020). Our analysis shows that the communication follows distinct and recognizable patterns that are consistent across our sampled organizations. Using the theory on turf-protective behavior and reputational uniqueness, we were able to explain these patterns, indicating the underlying strategies of regulators. Furthermore, this research shows the value of a comparative empirical approach toward public communication by agencies. By including many different public agencies of the EU, we were able to identify communicational behavior that is consistent across organizations. This signals that besides relying on single case studies, further research should also continue the very recent development of observing agency communication across organizational contexts (e.g., Salomonsen et al., 2021). This research also demonstrates the value of using automated text analysis as part of a broader research strategy. We have combined structural topic models to structure the data into comprehensible topics and then proceeded with the output of the topic models as input for further empirical analyses. Whilst we used a relatively simple approach to structuring a larger amount of text, it shows the value of combining human and computational judgment to make sense of substantial amounts of text. Lastly, our research adds another perspective regarding the question of who is involved in the communication between agencies and the public. Whilst previous research has adopted varying definitions of who are the audiences of public agencies, these definitions typically include the news media, specialist audiences such as professionals and

private organizations, or the wider public. Our analyses imply that public agencies also pay close attention to *other agencies* when engaging in public communication. We do not currently know if they explicitly do so or if it is an implicit process of carving out reputational profiles vis-à-vis other organizations (this could be explored in further research). Issue segmentation could happen either because agencies pay attention to other agencies or because agencies select the sub-issues that are best suited to advance their own reputation and these sub-issues happen to be mutually exclusive.

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Chapter 6

Conclusion

Drawing conclusions

In the second half of conducting my doctoral research, I (and everyone else on this planet) unwillingly became part of a case study of the importance of my research subject. Health authorities worldwide were scrambling to understand the new virus Covid-19, while the World Health Organization first talked about isolated cases of infections in China, until characterizing the virus as a pandemic on March 11, 2020. The following months and years were dominated by public discussions about policies to contain the pandemic and limit economic damages. Officials in organizations such as the European Medical Agency, and its national counterparts, had to publicly justify their decisions while national political leaders called upon the citizens of their countries to follow the current lockdown measures or to get vaccinated once a vaccine was available. How closely citizens followed these requests differed widely across countries, even between EU countries with relatively similar characteristics. Regulatory communication likely played a large role in how well citizens were informed about new measures, how well they understood them, and how much they accepted them.

This dissertation set out to understand better how regulators use regulatory communication, and how their communication influences their interactions with audiences and citizens. It specifically set out to test the role of regulatory communication in shaping an organization's reputational profile and how it is used as a regulatory tool in itself. To do so, the various chapters examine how public organizations interact with their audiences via means of communication, how they strategically shape their reputational profile, and how well they manage to attract attention and engage with their audiences.

The findings show that regulatory communication is an intricate play between regulators and their audiences and that communication can take on many different functions. The chapters tell an interrelated story that helps us to better explain the underlying dynamics of regulatory communication. Chapter 2 starts by testing whether a regulator's communication is reactive to the organization's environment and whether we can find elements of communicational strategy in their output. I find that it is highly reactive to the news media and that regulators follow communicational strategies that are focused on establishing a sound reputation for various functional areas. Chapter 3 then examines how regulators use communication strategically to maximize reputational payoffs and minimize reputational damages. I

identify strategic behavior in the regulators' communication that might be motivated by reputational considerations. Chapter 4 investigates how audiences react to various types of public communication of public agencies on social media. I find that more interactive content increases attention to individual agency messages. Lastly, chapter 5 shows that public communication demonstrates turf- and reputation-protective behavior of public agencies. Here I find that even when communicating about the same issue (the COVID-19 pandemic), individual public agencies identify and focus on specific niche issues that differentiate them from other similar organizations and help them to craft a unique reputational profile. However, there are more nuances to these findings that I will clarify below.

Finding answers

How do public organizations use strategic regulatory communication in regulatory governance? This is what this dissertation set out to examine. Based on the findings, I can formulate a number of answers to the research question. Public agencies use strategic regulatory communication in regulatory governance

- ➡ to establish, maintain, improve, and protect their reputational profile.
- ➡ proactively, as their strategies seem to be guided by medium- and long-term targets.
- ➡ to react to what their audiences are saying about them or about the issues they are involved in.
- ➡ to reach and influence their audiences – what they say and how they say it influences how much attention audiences pay to them and guides what their audiences expect of them.

I want to further elaborate on these answers and embed them in previous research on the matter. To do so, I will structure the findings and their implications along the two theoretical themes that have underlined this research and were put forward in the introduction.

Strategy and timing

Many EU organizations, especially in the regulatory agency space, are non-majoritarian actors embedded in democratic structures. They carry out tasks that are delegated to them by elected mandate holders, such

as the EU parliament and the EU council. Consequently, EU organizations such as the decentralized agencies rely on continued support by their political principals, which in turn rely on public support. The combination of exercising delegated authority and their dependence on public and political support renders the organizations and actors under examination particularly dependent on a well-maintained reputation – otherwise, they might be perceived as illegitimate, incompetent, and ultimately organizations of limited value. Consequently, as outlined in the introduction, strategic regulatory communication often seems to be motivated by reputational considerations. Unsurprisingly, this research found this to be unequivocally true. There are two elements of the findings that I want to emphasize in this context: strategy and timing.

Earlier research has shown that regulatory organizations follow longer-term reputational goals when communicating with the public and making operational decisions, by gradually constructing a reputation for various functional areas that are important to them (Gilad et al., 2015; Maor et al., 2013), or by deciding whether or not to cooperate based on the best (projected) reputational payoffs (Busuioc, 2016). For instance, when being subjected to external reputational threats – for instance, allegations of misconduct or inefficiency – regulators have been shown to differentiate whether the threats target functional areas that are core to their organization's identity or whether they target rather peripheral areas that the organization has not yet established a sound reputation for (for additional research on the topic, see Rimkutė, 2020b). This suggests that public organizations communicate not sporadically with short-term goals in mind, but rather strategically with an eye on long-term reputational targets. The findings of chapter 2 confirm many of the conclusions of this body of research, but also add further nuance to them by adding the elements of time and reciprocity with the media. I show that the European Central Bank emphasizes various functional areas at different times throughout its lifecycle. They change the emphasis on various functional areas in a way that best serves the organizational goals at the time. The Commissioners under observation in chapter 3 seem to be guided by underlying strategies as well, by maximizing reputational payoffs and minimizing reputational damages whenever possible. Besides there being an underlying strategy, Commissioners are not only reactive when communicating, but also proactive by anticipating future developments of the issues they are talking about. In many of the observed cases, they communicate cautiously *before* a proposal receives political opposition in the

parliament or council. Vice versa, they communicate confidently *before* a proposal receives broad political support amongst the co-legislators. The issue segmentation approach pursued by EU agencies in chapter 5 shows that agencies strategically communicate about the issues that benefit their image. Much in line with Wilson (1990) and Busuioc (2016), I find that agencies are not only strategic niche seekers but also conflict avoiders that do not interfere with the jurisdiction of other agencies active in adjacent policy areas.

Regulatory communication as part of regulatory governance: attentive to audiences

Regulatory communication is about expectation management. How efficiently the involved actors can manage each other's expectations can have an impact on regulatory governance processes, ranging from close collaborations between stakeholders, legislators and the executive, to misunderstandings between various groups of actors (Coombs, 2007). In line with earlier findings by Gilad et al. (2015), chapter 2 shows that regulatory communication is not only about what regulators *say* but also about what regulators *hear*. Regulators impact what the media discusses, but the media also influences what regulators discuss. Surprisingly, I found that the European Central Banks reacts even quicker and stronger to changes in media reporting than vice-versa. Chapter 4 shows that not every message is created equal in terms of how much attention it receives. Much of what regulatory organizations say on Twitter remains unnoticed, adding to the complexity of studying regulatory communication: Regulators might say things that are not registered by target audiences or simply ignored. At the same time, it shows that depending how public organizations communicate, they might attract more or less attention to an individual message. It, therefore, not only matters what regulators say, but also how they say it.

If carefully and efficiently used, regulatory communication can foster engagement between regulators and regulatory stakeholders, be that citizens or organized interests. Regulators are in constant contact with their manifold audiences, and these audiences embed beliefs about the organization that greatly matter for regulatory affairs. If regulators can demonstrate to their audiences that they are up to the tasks that are allocated to them and can clearly outline what stakeholders can expect in the future, this leads to greater predictability of future policies – and stakeholders seek predictability (Joosen, 2021). Chapter 2 shows this very prominently: especially when talking about developing and unusual competencies – which are more unpredictable for stakeholders-, the ECB is very quick to respond to the media to better manage

expectations. When it comes to established – and predictable – competencies, the ECB is slower to react as it has to do less to manage stakeholder expectations.

Avenues of future research

Sound academic research finds answers yet also raises new questions, and this dissertation is no exception to this rule. In this section, I will point out core areas for future research on regulatory strategic communication and regulatory governance.

Theoretical

In line with much previous work, this dissertation has explored regulatory communication by public organizations by focusing on the supply side of regulatory information, and being less attentive to on the demand side: the audiences. While chapters 2 and 4 tap into audience responses to regulatory communication, it leaves open the question whether audiences (in this case the news media) are reacting directly to the regulator's communication or if their reaction is circumstantial. Furthermore, we know little about how regulatory communication influences actual perceived legitimacy, competence, and reputation of regulatory organizations (Boon et al., 2020) . To summarize, we need to know how audiences react to and are influenced by regulatory communication beyond relatively broad indicators such as likes or shares on social media, or salience in the news media. Future research should test whether regulatory communication has a causal impact on audiences' perceptions and expectations, and what other factors beyond communication might play a role in these processes.

Secondly, much of the research on regulatory communication focuses on three groups of regulatory organizations: US agencies, EU agencies, or national financial agencies. We need to extend the analytical focus to other types of organizations. Notably, this is not an empirical point but rather a theoretical one. This research has made a first step by extending this focus to a complex executive regulator such as the EU Commission. The results show that key observations from the fields of bureaucratic reputation and regulatory governance also hold for other types of organizations involved in regulatory affairs, but they also show that observing other types of organizations can yield valuable insights that merely studying regulatory agencies would not uncover – for instance by observing multi-faceted actors that are neither purely bureaucrats nor purely politicians, such as EU Commissioners. Many other organizations are also

‘messy’ in that they are at least partially or indirectly influenced by political logics: Ministries are usually headed by politicians and management board seats of regulatory organizations are often occupied with either current or former political members. Extending the current analytical focus to other regulatory organizations, such as national agencies, ministries, or municipal administrations, will both extend our theoretical knowledge on the matter as well as verify (or reject) current knowledge.

A last point, and in my eyes the most fascinating one, refers to the role of data in regulatory governance research and public administration research as a whole. In chapter 4 I write: “New generations of language learning models can support the analysis of the impact of communication strategies”. There is a more encompassing point to be made here – there are more and more ways to use and analyze data. Additionally, the digitalization of the administrative state leads to more and more structured and unstructured data that is available to researchers in the field. This data (and much more unpublished data) is also available to public organizations at all levels of government. While this has the potential to yield more useful information for governments and policymakers, we do not know if it actually does. A growing line of research investigates the use of AI in government, but AI is only part of the picture.

The nature of the data public officials are faced with is changing as well: public administrations are faced with an extremely large quantities of data and the data itself is becoming more complex. Additionally, data might be present, but not necessarily accessible for public officials, as it is either hidden or otherwise not ready for use by public officials – for instance by being a large corpus of text that can hardly be processed with limited human resources. This comes with technical/strategical as well as normative implications. From a technical/strategical standpoint, we need to test and validate strategies that could enable public administrations to adapt to the reality of a more digitized and data-driven society. This involves purely technological advances, for instance through the use of further evolved methods of data analysis, as well as organizational advances, for instance through adaptations in regulatory governance and organizational leadership. To provide an example for required adaptations in organizational governance and leadership: many public organizations are increasingly hiring data scientists and data engineers that have to be integrated in existing organizational structures. The output of these novel data science units is still new to public organizations, and we need to know how the insights from these units can be used most efficiently to inform the strategy of these organizations – this requires new governance and leadership strategies.

However, more data driven public administrations also raise normative implications, both in terms of ethics as well as accountability. How can we ensure that novel tools to analyze data for regulatory governance are used ethically? There are many examples of discriminatory machine learning models, because these models are only as good as the data that they are trained on. If there are inherent biases in the training data, these models will learn the biases and apply them to novel data. Using evermore complex data science tools in regulatory governance also has implications for accountability: if public organizations use highly complex methods of data analysis, it will become increasingly difficult to explain and justify their decisions to the public and key stakeholders. However, these audiences need to be able to understand the output of public organizations because they will not be able to properly hold such agencies to account if they do not fully grasp the underlying tools used for decision-making. In many cases, technical, strategical, and normative questions go hand in hand and future research needs to ensure that we do not lose sight of all three dimensions.

Methodological

Communication is notoriously hard to measure. The field of public administration is increasingly accepting of the use of new automated methods such as text mining and machine learning to analyze large amounts of text, as it allows researchers to answer questions that we were previously unable to address. The application of these methods is still in its infancy in the field, and we need more research into how existing methods can be used to answer pressing research questions. At the same time, research using these methods needs to ensure high levels of testing and verification to ensure the robustness of the findings (de Vos & Verberne, 2021). We also have to move from the question of how to apply the methods in our field to how we can adapt these methods so that they optimally align with our research goals. That is, methods such as machine learning or natural language processing were not originally made for public administration – we therefore need to explore how we can adapt these methods to serve specific research purposes (for an example, see Dun, Soroka, & Wlezien, 2021). This dissertation has demonstrated the different ways in which this can be done – for instance by combining dictionary methods and topic models in chapter 2, or by combining statistical analysis with language learning models in chapter 4. Many other combinations and adaptations are possible, and we should explore and document robust and replicable ways of applying them to public administration research.

As pointed out above, we know little about causal pathways between communication by regulators and beliefs amongst their audiences. This could be addressed by experimental setups that test various communication strategies and whether and how they impact stakeholders. However, there might also be different approaches that are currently untapped, such as observing interactions of regulators and stakeholders during consultation processes, or by adopting more anthropological approaches to the study of interactions between stakeholders, citizens, and the state.

Empirical

This study includes both single (chapter 2), intra-organizational comparative (chapter 3), and cross-organizational comparative case studies (chapters 4 and 5). Equally, the body of regulatory communication scholarship includes many single case studies, as well as comparative case studies.

However, much of the comparative work compares agencies with a range of varying mandates operating in a multitude of policy areas. This empirical design helps us to isolate characteristics and mechanisms that are present across organizational contexts – this is why this dissertation makes use of such designs in chapter 4 and 5. What we lack is comparative work within similar contexts. Our study on the EU Commission has been an effort to do exactly that, by comparing sub-units of a complex organization with each other, holding many contextual variables constant. There is more left to be done in this area. For instance, little is known about differences across policy domain, or across countries that vary in key political/institutional characteristics. Such issues require more complex empirical designs. For instance, scholars could compare national agencies in multiple policy areas across a broad sample of countries (e.g., OECD countries, EU, OPEC, etc.) and subsequently compare policy area differences across the sample.

This leads to the last point which relates to the case selection in regulatory governance research. A majority of the research, particularly in regulatory communication research, is located in Western, democratic, developed countries (and this research falls within this tradition). This focus is understandable, as data availability and language skills of researchers make it much more feasible to conduct research in these countries. However, our field should expand the empirical focus beyond western countries and investigate the external validity of the findings in other parts of the world. It is very likely that formal and informal rules of democratic societies impact how public organizations represent themselves and interact with stakeholders. We are equally likely, to find very different dynamics in

countries with other formal and informal rules (democratic or non-democratic). Knowledge about these other countries and political systems is not only important from a theoretical and empirical perspective but is also becoming increasingly relevant in a globalized world.

Translating findings to practice: policy suggestions

The findings from this dissertation are not only relevant for academics, but also have practical implications for policymakers and stakeholders in the regulatory domain. While the findings help to better understand how public organizations communicate with the public in the context of regulatory affairs, we have to ask how we can further improve these interactions.

Firstly, public officials are likely aware that what they say influences the public discussion. However, there are other areas of impact of regulatory communication that officials might not be directly aware of. For instance, chapter 4 shows that the way how a public organization communicates can impact how much attention a message receives and it can even determine who listens to it. Technical language likely attracts specialized audiences, while formulating regulatory issues in layman's terms could potentially attract attention from a wider public. This has implications for who participates in regulatory affairs. An agency that communicates with extremely technical language likely will not be able to attract NGOs, civil society organizations, or citizens if it conducts public consultation (by the virtue of these groups never realizing that these public consultations might be relevant to them). Many regulatory issues are hugely relevant to society at large, while regulatory organizations predominately have to rely on the input from private interests and specialized interest groups participating in their consultations. I fully agree with suggestions by Redert (2021) and Joosen (2022) to both enhance the expertise of disadvantaged interest groups by providing research grants and to formulate policy problems in simple language that is understandable for the average citizen. Beyond that, regulatory organizations of the EU can become better in advertising consultation processes and using informal channels to collect ideas of how to solve policy issues – these informal channels might not only be social media, but also other media platforms such as YouTube or podcasts

The second policy suggestion refers to a normative question that public officials in public agencies are confronted with. These organizations are independent from political principals by design to come up with

scientifically optimal policy solutions rather than politically optimal ones. This also implies that public communication serves a different role for these types of organizations compared to governmental representatives, such as politicians or ministries. Should public agencies engage with their audiences and citizens? And relatedly, what role does public communication play in this interaction? There is no clear answer to this question, besides the fact that this dissertation and other research on the matter show that public communication is essential for these organizations to craft a public image. From this research, it seems that many independent agencies are themselves not entirely sure what role their public communication should play – and this might work to their detriment. For instance, chapter 4 shows that while many EU agencies have social media accounts, these accounts are either rarely utilized, or they are used simply as a news outlet rather than a tool for interaction with the agencies' audiences. Such suboptimal social media presences might look bad to the average citizen or even key stakeholders, as it might downplay the relevance of these organizations. From a normative standpoint, there is an argument to be made that even independent agencies should engage with the public, as this contributes to their democratic legitimacy, makes their actions more transparent and allows stakeholders and the public to hold them accountable for their actions – an activity that in the current state is predominantly available to their political principals. At the same time, more public engagement also makes it more difficult for the agencies to stay objective in their judgements of regulatory risks. The Covid-19 pandemic has shown how quickly public discussions about regulatory issues such as masks, vaccines, and transmissibility can become heated and political.

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Appendices

Chapter 2 Appendices

A : Text Analysis Method: preparatory steps and LDA

A-1 Dictionary of search terms

Topic	Terms
Core responsibilities	"stability", "stabil", "stabl", "stable", "stabilityori", "stabilis", "stabilised", "stabilisers", "inflat", "rate", "price", "currenc", "currency", "currencies"
Unconventional measures	"measur", "stimulus", "purchas", "quantitativ", "eas", "unconvent", "unconventional", "conven", "convent", "convention", "conventional", "ass", "bond", "buy"
Evolving competencies	"supervis", "supervi", "SSM", "new", "expan", "mandat", "mandate", "mandates", "respons", "responsibility", "macroprudenti", "macro-prudent", "macro-prudenti"

A-2 Text pre-processing

Firstly, documents were cleaned and unified: Documents were transformed into a text corpus, containing the content of each document and metadata belonging to the document (author, date, and outlet). Furthermore, each word in the documents was transformed to lower-case letters and stemmed (i.e., removing variable word endings), and documents were stripped of white spaces, punctuation, and numbers. Lastly, typical English stop words and other frequent terms that could provide statistical disturbance in later analyses (e.g. “bank”, “ecb”) were removed from the documents (the additional terms were selected based on their frequency in the documents and potential interpretative content and vary between the two databases). Lastly, each corpus was transformed into a document-feature matrix (dfm) that contains documents as rows and each occurring word as columns. To make the workload of later computational steps more manageable, the sparsity of the dfm was reduced conservatively (deleting terms that appear in either less than 2 or more than 1500 documents).

A-3 Background information Latent Dirichlet Allocation

LDA is a three-level Bayesian model, which treats each document of a collection as a mixture of various (latent) topics (Blei et al. 2003). Each topic is modeled over a mixture of underlying topic probabilities and consists of a mixture of words that represent this topic with varying probabilities. LDA uses a backtracking approach to generate the individual per-topic-per-word probabilities, called β . It assumes that three steps generate each document in a collection: First, the number of words is determined over a Poisson distribution (N). Second, the topic composition is determined (following a Dirichlet distribution over a predetermined k number of topics). Third, each of the N words is generated by firstly picking the topic according to the predetermined probability and then picking a word from that topic following “a multinomial probability conditioned on the topic” (Blei et al. 2003, 996). Accordingly, the γ value of the LDA model calculates the per-document-per-topic probability (e.g. $\gamma = 0.245$ for topic 2 means that 24.5% of the words in this document were generated from topic 2). LDA only identifies words that tend to co-occur without telling the researcher what each topic is about. This requires the researcher to read and interpret the typical words and documents of each topic to determine the theoretical content of each identified topic. Furthermore, using an LDA model requires the researcher to determine a set the number of topics to be identified by the algorithm. For this project, we constructed 15 LDA models with 2 to 16 topics and selected the lowest number that would clearly recognize the three topics that we were interested in ($k = 10$). We used Gibbs sampling for the LDA estimation, because it maximizes the likelihood of the topic-per-word distribution. The reasoning behind this sampling method is that it starts at a random topic distribution per word. It then assumes that we do not know the topic assignment of each given word, but we know the assignment of all other words. From these other word assignments, the algorithm then tries to infer the specific assignment that will be attached to the given word. This sampling method is particularly suitable for the kinds of text that this research uses and is therefore used in many applications in the political science and public administration literature. After identifying the desired frames, we selected the top 100 terms that constituted each of the topics (ranked according to the beta value) and used these terms as input for a dictionary-based approach to calculate the relative occurrence of these words in each document. This operation calculates for each document:

Relative occurrence = Occurrence of frame words / total number of words.

A-4 Topics of the topic model generated on the ECB corpus, including most strongly linked terms

<u>Topic 1</u>	<u>Topic 2</u>	<u>Topic 3</u>	<u>Topic 4</u>	<u>Topic 5</u>	<u>Topic 6</u>	<u>Topic 7</u>	<u>Topic 8</u>	<u>Topic 9</u>	<u>Topic 10</u>
growth	market	area	question	oper	bank	financi	bank	see	market
product	financi	institut	draghi	council	credit	risk	supervisori	paper	liquid
labour	integr	januari	second	govern	area	market	supervis	econom	bank
reform	area	rate	say	decemb	loan	system	nation	polic	money
area	develop	franc	said	januari	financ	stabil	resolut	monetari	oper
economi	cross-bord	mfis	rate	period	sector	institut	supervisor	m	rate
market	singl	banco	now	decid	fund	manag	singl	journal	credit
structur	increas	eu	inflat	meet	lend	credit	author	work	collater
increas	effici	exchang	think	septemb	capit	develop	institut	j	measur
econom	system	cyprus	first	octob	asset	inform	union	pp	provid
<u>Topic 11</u>	<u>Topic 12</u>	<u>Topic 13</u>	<u>Topic 14</u>	<u>Topic 15</u>	<u>Topic 16</u>	<u>Topic 17</u>	<u>Topic 18</u>	<u>Topic 19</u>	<u>Topic 20</u>
payment	cultur	monetari	inflat	statist	monetari	one	clear	crisi	union
sepa	frankfurt	strategi	price	data	area	may	ccps	financi	europ
servic	presid	polic	rate	report	price	system	et	economi	econom
bank	design	communic	expect	survey	polic	money	market	measur	singl
retail	new	analysi	asset	area	rate	public	counterparti	system	polit
card	programm	decis	monetari	ecb	stabil	case	ccp	time	nation
direct	seminar	inform	polic	publish	currenc	even	deriv	sovereign	area
scheme	cooper	bank	chang	inform	eurosystem	differ	infrastructur	debt	currenc
use	board	uncertainti	economi	avail	develop	howev	financi	sector	integr
provid	work	money	output	quarter	govern	institut	à	govern	state
<u>Topic 21</u>	<u>Topic 22</u>	<u>Topic 23</u>	<u>Topic 24</u>	<u>Topic 25</u>	<u>Topic 26</u>	<u>Topic 27</u>	<u>Topic 28</u>	<u>Topic 29</u>	<u>Topic 30</u>
import	area	polic	intern	eurosystem	system	banknot	programm	countri	rate

need	countri	monetari	global	asset	settlement	coin	greec	eu	polic
challeng	competit	stabil	currenc	collater	secur	cash	reform	converg	interest
year	unit	price	exchang	secur	eurosystem	nation	debt	member	inflat
let	differ	object	economi	credit	payment	changeov	sector	state	low
like	across	econom	countri	elig	oper	area	remain	rate	monetari
work	differenti	effect	trade	million	infrastructur	inform	imf	exchang	lower
new	shock	maintain	world	account	t2s	public	greek	access	measur
time	state	respons	globalis	govern	target	circul	support	process	negat
now	union	economi	us	amount	particip	counterfeit	ireland	new	real
Topic 31	Topic 32	Topic 33	Topic 34	Topic 35	Topic 36	Topic 37	Topic 38		
purchas	countri	financi	council	question	growth	question	fiscal		
bond	year	system	member	trichet	price	rate	area		
rate	peopl	risk	institut	stabil	area	duisenberg	govern		
asset	europ	regul	govern	govern	inflat	mr	countri		
market	germani	bank	independ	rate	econom	say	econom		
polic	one	macro-prudenti	nation	said	remain	think	polic		
programm	need	stabil	treati	say	expect	interest	reform		
yield	take	framework	committe	price	increas	growth	deficit		
area	much	sector	report	council	develop	now	growth		
monetari	make	institut	state	regard	year	one	public		

■ = Core competencies ■ = Expanding competencies ■ = Unusual measures

A-5 Sample of documents with high gamma values for the topic ‘price stability’

The ESCB's stability-oriented monetary policy strategy Speech by the President of the Eu...	230	10 November 1998
PRESS RELEASE A stability-oriented monetary policy strategy for the ESCB 13 October 19...	667	13 October 1998
The ECB's monetary policy strategy and the quantitative definition of price stability Lette...	1198	17 December 2001
The ESCB's stability-oriented monetary policy strategy Speech by Dr. Willem F. Duisenber...	3901	7 December 1998
Monetary policy in a new environment Speech by Professor Otmar Issing Member of the...	3080	29 September 2000
From the EMI to the ECB Speech delivered by Dr. Willem F. Duisenberg, President of the ...	3331	30 May 2000
Monetary policy formulation in the euro area Christian Noyer, Vice-President of the Euro...	1946	21 May 2001
The Eurosystem's monetary policy strategy: The first year's experience Speech by the Pres...	380	11 October 1999
Monetary policy in EMU Speech by Dr. Willem F. Duisenberg President of the European ...	1820	20 November 1997
A stability-oriented monetary policy strategy Speech by Christian Noyer, Vice-President o...	4026	8 December 1998
Monetary policy in EMU Speech by Dr. W. F. Duisenberg, President of the European Mon...	969	15 November 1997
Monetary policy-making in Europe Speech presented by Christian Noyer, Vice-President ...	1556	19 November 1999
The role of monetary policy in managing economic risks. Speech by Prof. Otmar Issing, ...	2613	26 March 2002
PRESS RELEASE Review of the quantitative reference value for monetary growth 5 Decem...	3615	5 December 2002
Objectives and challenges of monetary policy: a view from the ECB Speech by Jürgen Sta...	1493	19 January 2007

Appendix B: Robustness checks

B-1 Matching topic models and frame dictionaries



Figure 1: Comparison between dictionary-based and topic-model-based measurement of the core competency frame

To make sure that our dictionary measures the frames that we are interested in, we compared the results from both the dictionary and the topic model to see if there is sufficient overlap. Figure 2 shows the output that had the highest association with the ECB's core responsibilities (right) and the same frame measured with our dictionary approach (left). Importantly, as LDA is an unsupervised algorithm, it cannot detect

changing contexts of a topic. For instance, the word “stability” (which should be clearly linked to the core responsibility topic) is only to 10 % linked to this topic¹⁴ and is (less strongly) also linked to other topics in the model. If the context of price stability changes over time, the model will not detect these changes and will rather assign the same words to other topics (a dictionary-based method does not have this problem, as it only searches for individual words, independent of the context). Based on our final topic model, we constructed frame-dictionaries: Once we had identified the topics that represented our target frames, we extracted the words that were most clearly related to these topics and would not also occur in other frames that we did not want to measure¹⁵. After constructing the dictionary of terms, we calculated the average occurrence of these terms in relation to the overall number of words in each document (after removing stop words) and averaged that value per year to get an overview of frame development across time. As the figure 2 shows, the dictionary approach yields comparable results to the topic model approach with smaller variations that can be explained by the fact that the dictionary approach captures *all* discussions of a frame, while a topic within a topic model typically only captures *certain* dimensions of a frame.

¹⁴ That means that the algorithm predicts that the term is linked to our target topic in 10% of the occurrences.

¹⁵ See dictionary in Appendix A-1

B-2 Checking if the topics of the ECB corpus also appear when running a topic model on the news corpus

All of the topics are present; however, the distribution is different compared to the ECB corpus.

<u>Topic 1</u>	<u>Topic 2</u>	<u>Topic 3</u>	<u>Topic 4</u>	<u>Topic 5</u>	<u>Topic 6</u>	<u>Topic 7</u>	<u>Topic 8</u>	<u>Topic 9</u>	<u>Topic 10</u>
member	inflat	england	euro	rate	-	euro	financ	uk	greek
council	price	cricket	dollar	low	think	billion	minist	vote	greec
govern	year	board	currenc	negat	know	zone	eu	financi	debt
board	two	play	us	measur	go	articl	meet	eu	govern
execut	rate	world	yen	deposit	can	jone	offici	leav	bailout
note	target	game	exchang	polici	say	dow	leader	brexit	€
one	inflation	last	market	interest	just	licens	eurozon	britain	greece
interview	oil	chairman	trade	eas	one	reprint	plan	market	emerg
comment	rise	test	new	inflat	mean	offici	parliament	london	fund
mersch	expect	team	high	cut	time	thursday	prime	impact	athen
<u>Topic 11</u>	<u>Topic 12</u>	<u>Topic 13</u>	<u>Topic 14</u>	<u>Topic 15</u>	<u>Topic 16</u>	<u>Topic 17</u>	<u>Topic 18</u>	<u>Topic 19</u>	<u>Topic 20</u>
itali	rate	us	data	us	€	cut	eurozon	even	rate
french	interest	economi	expect	index	capit	growth	crisi	may	growth
italian	cut	global	growth	stock	lender	year	financi	one	interest
franc	polici	econom	quarter	fell	loan	rate	govern	now	eurozon
polit	thursday	world	month	rose	italian	eurozon	crisis	much	rise
govern	expect	growth	show	market	bad	next	debt	can	econom
elect	rates	feder	eurozon	gain	stress	last	stabil	like	increas
italy	move	europ	survey	close	banks	economist	risk	might	point

chang	england	reserv	busi	investor	test	week	fund	still	monetari
de	point	economy	year	yield	loss	econom	fiscal	make	economist
<u>Topic 21</u>	<u>Topic 22</u>	<u>Topic 23</u>	<u>Topic 24</u>	<u>Topic 25</u>	<u>Topic 26</u>	<u>Topic 27</u>	<u>Topic 28</u>	<u>Topic 29</u>	<u>Topic 30</u>
compani	polic	per	polic	lend	fed	trichet	trichet	court	countri
share	monetari	cent	program	loan	rate	market	presid	german	fiscal
group	market	eurozon	stimulus	fund	polic	eurozon	weber	rule	econom
report	chang	fall	month	liquid	year	jeanclaud	board	monetari	govern
profit	policy	expect	offici	money	us	financi	duisenberg	legal	budget
year	also	however	write	market	growth	yesterday	stark	omt	growth
market	time	main	billion	credit	econom	president	year	case	reform
£	level	yesterday	maker	€	market	comment	french	programm	deficit
sale	clear	1	still	banks	reserv	page	head	govern	euro
sector	term	last	economist	borrow	feder	month	job	constitut	year
<u>Topic 31</u>	<u>Topic 32</u>	<u>Topic 33</u>	<u>Topic 34</u>	<u>Topic 35</u>	<u>Topic 36</u>	<u>Topic 37</u>	<u>Topic 38</u>		
german	bond	investor	spain	financi	draghi	nation	"		
germani	yield	year	countri	secur	mario	new	'		
bundesbank	buy	invest	debt	rule	qe	eu	-		
weidmann	market	manag	ireland	regul	month	singl	s		
draghi	debt	corpor	spanish	us	eurozon	frankfurt	publishedtim		
monetari	govern	say	govern	market	govern	union	blocktim		
germany	purchas	asset	portug	firm	presid	system	bst		
berlin	bonds	market	irish	trade	expect	supervis	today		
critic	investor	accord	cost	settlement	council	countri	gmt		
polic	€	mani	borrow	new	purchas	financi	say		

 = Core competencies  = Evolving competencies  = Unusual measures

Appendix C: Additional checks

C-1 Frame congruence across time

Since to our knowledge there are no standard tests that account for changes in Granger causality across time, we developed an own approach to test whether the use of frames in ECB and media aligns across different time periods (particularly under stress). We developed what we call “rolling Granger causality test”, which tests whether there is Granger causality between two variables in a subperiod of a time series. In our case, we tested for each month under observation, if there has been Granger causality between the various frames in the 11 months before. This tests therefore enables us to identify times in which frames align more between the ECB and the media. We subsequently coded a significant Granger causality test in a month in a binary fashion and aggregated the observations per year. Therefore, if the cell for “ECB cores resp” shows 3 for the year 2001, there have been 3 months in which the ECB’s use of core responsibilities has been granger causing the appearance of the same frame in the media. This test *by no means* is statistically accurate, however, it provides an indication of frame alignment across time.

Year	predictor	ECB core resp.	ECB unconventional measures	ECB expanding res.	News core resp.	News_uncon	News_exp
2001		3	0	0	11	0	3
2002		6	0	11	7	7	1
2003		5	1	1	0	6	4
2004		0	7	0	0	0	1
2005		0	7	1	1	2	4
2006		3	2	1	1	9	7
2007		4	1	1	1	0	2
2008		8	1	2	3	0	0
2009		3	3	3	0	9	2
2010		5	4	4	5	4	0
2011		9	0	7	2	7	1
2012		2	6	0	5	8	9
2013		6	3	0	3	1	4
2014		0	1	2	3	6	3
2015		6	4	0	0	2	11
2016		2	1	0	3	6	10
2017		0	0	1	11	12	3

Chapter 3 Appendices

A: Policy selection strategy

The legislative acts were selected based on a full overview of EU legislative output in the period 2015-2016 in the context of a research project on stakeholder engagement in supranational regulatory governance (for detailed information, please see Braun et al., 2020). The 76 legislative proposals have been subsampled from the overall population of 127 regulations that have passed the ordinary legislative procedure since it is the current standard decision-making procedure for adopting EU legislation (European Union, 2007) and allows to exclude non-equivalent decision-making procedures that might follow different logics. Amongst the 127 legislative acts, all regulations have been selected that: (a) can be considered a regulation based on the definition by Koop and Lodge (2017: 95-108) as an intentional intervention in the activities of a target population; (b) fall within one of six policy areas for which the EU has either exclusive or shared competences with the European member states.

B: Newspaper search strategy

Newspapers: Financial times (all sources), Agence Europe (all sources), EUobserver, Politico Europe, European Voice (uncheck “exclude discontinued sources”), EurActiv (all sources)

Timeframe: If there is a consultation, then two years before first consultation. If there is NO consultation, then TWO years before the proposal was published.

Language: English

Search string structure:

(key terms in the title OR key terms Eurvoc descriptor OR key terms from the title of the legislative proposal OR key terms from the summary of the proposal OR key terms from the summary of the final act OR key terms from the consultation documentation OR key terms relating to typical ways in which the specific regulation is referred to in the news OR CELEX number OR regulation ID) AND (EU OR "European Union" OR Commission OR "European Parliament" OR "European Council") AND (directive* OR rule* OR regulation* OR decision* OR legis* OR “regulatory framework” OR “regulatory frameworks” OR “regulatory package”)

A practical example of a search string:

("2013/0265" OR "2015/751" OR "32015R0751" OR "interchange fees" OR "card-based transactions" OR "Card-based payment" OR "Multilateral Interchange Fees" or "Multilateral Interchange Fee" OR "European market for card payments" or "European market for internet payments" or "European market for mobile payments" OR "Honour all cards rule") AND (EU OR "European Union" OR Commission OR "European Parliament" OR "European Council") AND (directive OR rule* OR regulation* OR decision* OR legisl* OR "regulatory framework" OR "regulatory frameworks" OR "regulatory package")*

C: Robustness check – Alternative models

Table 1. All variables included (i.e., not excluding DG staff/administrative capacity).

	<i>Dependent variable:</i>		
	Commissioner appearance in media (1)	Commissioner uses policy promotion (2)	Commissioner uses passive talk (3)
Policy complexity	0.348*** p = 0.006	0.169 p = 0.307	-0.157 p = 0.397
Political conflict	1.937 p = 0.180	-3.167** p = 0.050	2.928 p = 0.104
Media salience of regulation	-0.005 p = 0.211	-0.003 p = 0.432	-0.001 p = 0.836
Potential stakeholder conflict	0.0002 p = 0.994	-0.015 p = 0.600	0.003 p = 0.924
DG staff size	-0.0004 p = 0.477	-0.001 p = 0.164	0.001* p = 0.075
Constant	-4.647*** p = 0.0001	0.149 p = 0.924	-1.028 p = 0.552
Observations	1,139	185	185
Log Likelihood	-484.562	-122.054	-106.037
Akaike Inf. Crit.	983.124	258.107	226.074
Random intercept for policy issue	Yes	Yes	Yes

Note: *p<0.1 **p<0.05 ***p<0.01

D: Regulations

Table 2. List of regulations included in the study.

ISSUE ID	ISSUE DESCRIPTION	CELEX_NUMBER	TITLE	DATE OF PUBLICATION
1	Conditions for fishing	32016R2336	Regulation (EU) 2016/2336 of the European Parliament and of the Council of 14 December 2016 establishing specific conditions for fishing for deep-sea stocks in the north-east Atlantic and provisions for fishing in international waters of the north-east Atlantic and repealing Council Regulation (EC) No 2347/2002	23/12/2016
2	Accounts of railway undertakings	32016R2337	Regulation (EU) 2016/2337 of the European Parliament and of the Council of 14 December 2016 repealing Regulation (EEC) No 1192/69 of the Council on common rules for the normalisation of the accounts of railway undertakings (Text with EEA relevance)	23/12/2016
3	Financial management	32016R2135	Regulation (EU) 2016/2135 of the European Parliament and of the Council of 23 November 2016 amending Regulation (EU) No 1303/2013 as regards certain provisions relating to financial management for certain Member States experiencing or threatened with serious difficulties with respect to their financial stability	13/12/2016
4	Public sector bodies' websites	32016L2102	Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies (Text with EEA relevance)	02/12/2016
5	Natural gas and electricity prices	32016R1952	Regulation (EU) 2016/1952 of the European Parliament and of the Council of 26 October 2016 on European statistics on natural gas and electricity prices and repealing Directive 2008/92/EC (Text with EEA relevance)	17/11/2016
6	Recovery plan for bluefin tuna	32016R1627	Regulation (EU) 2016/1627 of the European Parliament and of the Council of 14 September 2016 on a multiannual recovery plan for bluefin tuna in the eastern Atlantic and the Mediterranean, and repealing Council Regulation (EC) No 302/2009	16/09/2016
7	Injurious pricing of vessels	32016R1035	Regulation (EU) 2016/1035 of the European Parliament and of the Council of 8 June 2016 on protection against injurious pricing of vessels (codification)	30/06/2016
8	Dumped imports	32016R1036	Regulation (EU) 2016/1036 of the European Parliament and of the Council of 8 June 2016 on protection against dumped imports from countries not members of the European Union (codification)	30/06/2016
9	Subsidised imports	32016R1037	Regulation (EU) 2016/1037 of the European Parliament and of the Council of 8 June 2016 on protection against subsidised imports from countries not members of the European Union (codification)	30/06/2016
10	Undisclosed know-how and business information	32016L0943	Directive (EU) 2016/943 of the European Parliament and of the Council of 8 June 2016 on the protection of undisclosed know-how and business information (trade secrets) against their unlawful acquisition, use and disclosure (Text with EEA relevance)	15/06/2016
11	Railways	32016R0796	Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004 (Text with EEA relevance)	26/05/2016
12	Railways	32016L0798	Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (Text with EEA relevance)	26/05/2016
13	Railways	32016L0797	Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (Text with EEA relevance)	26/05/2016
14	Indices of consumer prices	32016R0792	Regulation (EU) 2016/792 of the European Parliament and of the Council of 11 May 2016 on harmonised indices of consumer prices and the house price index, and repealing Council Regulation (EC) No 2494/95 (Text with EEA relevance)	24/05/2016
15	Medicines	32016R0793	Regulation (EU) 2016/793 of the European Parliament and of the Council of 11 May 2016 to avoid trade diversion into the European Union of certain key medicines	24/05/2016
16	Gas emissions	32016L0802	Directive (EU) 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels	21/05/2016

17	Gaseous fuels	32016R0426	Regulation (EU) 2016/426 of the European Parliament and of the Council of 9 March 2016 on appliances burning gaseous fuels and repealing Directive 2009/142/EC (Text with EEA relevance)	31/03/2016
18	Cableway installations	32016R0424	Regulation (EU) 2016/424 of the European Parliament and of the Council of 9 March 2016 on cableway installations and repealing Directive 2000/9/EC (Text with EEA relevance)	31/03/2016
19	Insurance distribution	32016L0097	Directive (EU) 2016/97 of the European Parliament and of the Council of 20 January 2016 on insurance distribution (recast) Text with EEA relevance	02/02/2016
20	Trade marks	32015L2436	Directive (EU) 2015/2436 of the European Parliament and of the Council of 16 December 2015 to approximate the laws of the Member States relating to trade marks (Text with EEA relevance)	23/12/2015
21	Sugar industry	32015R2284	Regulation (EU) 2015/2284 of the European Parliament and of the Council of 25 November 2015 repealing Council Directive 76/621/EEC relating to the fixing of the maximum level of erucic acid in oils and fats and Council Regulation (EC) No 320/2006 establishing a temporary scheme for the restructuring of the sugar industry	11/12/2015
22	Caseins and caseinates	32015L2203	Directive (EU) 2015/2203 of the European Parliament and of the Council of 25 November 2015 on the approximation of the laws of the Member States relating to caseins and caseinates intended for human consumption and repealing Council Directive 83/417/EEC	01/12/2015
23	Atmospheric pollutants	32015L2193	Directive (EU) 2015/2193 of the European Parliament and of the Council of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants (Text with EEA relevance)	28/11/2015
24	Common commercial policy	32015R1843	Regulation (EU) 2015/1843 of the European Parliament and of the Council of 6 October 2015 laying down Union procedures in the field of the common commercial policy in order to ensure the exercise of the Union's rights under international trade rules, in particular those established under the auspices of the World Trade Organization (codification)	16/10/2015
25	Information Society services	32015L1535	Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (Text with EEA relevance)	17/09/2015
26	Direct payments	32015R1146	Regulation (EU) 2015/1146 of the European Parliament and of the Council of 8 July 2015 fixing the adjustment rate provided for in Regulation (EU) No 1306/2013 for direct payments in respect of the calendar year 2015	17/07/2015
27	Insolvency proceedings	32015R0848	Regulation (EU) 2015/848 of the European Parliament and of the Council of 20 May 2015 on insolvency proceedings	05/06/2015
28	Long-term investment funds	32015R0760	Regulation (EU) 2015/760 of the European Parliament and of the Council of 29 April 2015 on European long-term investment funds (Text with EEA relevance)	19/05/2015
29	Card-based payment transactions	32015R0751	Regulation (EU) 2015/751 of the European Parliament and of the Council of 29 April 2015 on interchange fees for card-based payment transactions (Text with EEA relevance)	19/05/2015
30	Anti-dumping or anti-subsidy measures	32015R0477	Regulation (EU) 2015/477 of the European Parliament and of the Council of 11 March 2015 on measures that the Union may take in relation to the combined effect of anti-dumping or anti-subsidy measures with safeguard measures	27/03/2015
31	Anti-dumping or anti-subsidy measures	32015R0476	Regulation (EU) 2015/476 of the European Parliament and of the Council of 11 March 2015 on the measures that the Union may take following a report adopted by the WTO Dispute Settlement Body concerning anti-dumping and anti-subsidy matters	27/03/2015
32	Common rules for exports	32015R0479	Regulation (EU) 2015/479 of the European Parliament and of the Council of 11 March 2015 on common rules for exports	27/03/2015
33	Common rules for imports	32015R0478	Regulation (EU) 2015/478 of the European Parliament and of the Council of 11 March 2015 on common rules for imports	27/03/2015
34	Road-safety-related traffic offences	32015L0413	Directive (EU) 2015/413 of the European Parliament and of the Council of 11 March 2015 facilitating cross-border exchange of information on road-safety-related traffic offences Text with EEA relevance	13/03/2015
35	Food	32015L0254	Directive (EU) 2015/254 of the European Parliament and of the Council of 11 February 2015 repealing Council Directive 93/5/EEC on assistance to the	18/02/2015

			Commission and cooperation by the Member States in the scientific examination of questions relating to food Text with EEA relevance	
36	Union Customs Code	32016R2339	Regulation (EU) 2016/2339 of the European Parliament and of the Council of 14 December 2016 amending Regulation (EU) No 952/2013 laying down the Union Customs Code, as regards goods that have temporarily left the customs territory of the Union by sea or air	23/12/2016
37	Insurance-based investment products	32016R2340	Regulation (EU) 2016/2340 of the European Parliament and of the Council of 14 December 2016 amending Regulation (EU) No 1286/2014 on key information documents for packaged retail and insurance-based investment products as regards the date of its application (Text with EEA relevance)	23/12/2016
38	Market for domestic passenger transport	32016R2338	Regulation (EU) 2016/2338 of the European Parliament and of the Council of 14 December 2016 amending Regulation (EC) No 1370/2007 concerning the opening of the market for domestic passenger transport services by rail (Text with EEA relevance)	23/12/2016
39	Market for domestic passenger transport	32016L2370	Directive (EU) 2016/2370 of the European Parliament and of the Council of 14 December 2016 amending Directive 2012/34/EU as regards the opening of the market for domestic passenger transport services by rail and the governance of the railway infrastructure (Text with EEA relevance)	23/12/2016
40	Atmospheric pollutants	32016L2284	Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (Text with EEA relevance)	17/12/2016
41	Fisheries	32016R2094	Regulation (EU) 2016/2094 of the European Parliament and of the Council of 23 November 2016 amending Council Regulation (EC) No 1342/2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks	03/12/2016
42	Rail transport statistics	32016R2032	Regulation (EU) 2016/2032 of the European Parliament and of the Council of 26 October 2016 amending Regulation (EC) No 91/2003 on rail transport statistics, as regards the collection of data on goods, passengers and accidents	23/11/2016
43	Pests of plants	32016R2031	Regulation (EU) 2016/2031 of the European Parliament and of the Council of 26 October 2016 on protective measures against pests of plants, amending Regulations (EU) No 228/2013, (EU) No 652/2014 and (EU) No 1143/2014 of the European Parliament and of the Council and repealing Council Directives 69/464/EEC, 74/647/EEC, 93/85/EEC, 98/57/EC, 2000/29/EC, 2006/91/EC and 2007/33/EC	23/11/2016
44	Statistics of goods transport	32016R1954	Regulation (EU) 2016/1954 of the European Parliament and of the Council of 26 October 2016 amending Regulation (EC) No 1365/2006 on statistics of goods transport by inland waterways as regards the conferral of delegated and implementing powers on the Commission for the adoption of certain measures	17/11/2016
45	External trade with non-member countries	32016R1724	Regulation (EU) 2016/1724 of the European Parliament and of the Council of 14 September 2016 amending Regulation (EC) No 471/2009 on Community statistics relating to external trade with non-member countries as regards conferring of delegated and implementing powers upon the Commission for the adoption of certain measures (Text with EEA relevance)	30/09/2016
46	Atmospheric pollutants	32016R1628	Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC (Text with EEA relevance)	16/09/2016
47	Community Fisheries Control Agency	32016R1626	Regulation (EU) 2016/1626 of the European Parliament and of the Council of 14 September 2016 amending Council Regulation (EC) No 768/2005 establishing a Community Fisheries Control Agency	16/09/2016
48	Inland waterway vessels	32016L1629	Directive (EU) 2016/1629 of the European Parliament and of the Council of 14 September 2016 laying down technical requirements for inland waterway vessels, amending Directive 2009/100/EC and repealing Directive 2006/87/EC	16/09/2016
49	Fisheries	32016R1139	Regulation (EU) 2016/1139 of the European Parliament and of the Council of 6 July 2016 establishing a multiannual plan for the stocks of cod, herring and sprat in the	15/07/2016

			Baltic Sea and the fisheries exploiting those stocks, amending Council Regulation (EC) No 2187/2005 and repealing Council Regulation (EC) No 1098/2007	
50	Markets in financial instruments (MIFID II)	32016R1033	Regulation (EU) 2016/1033 of the European Parliament and of the Council of 23 June 2016 amending Regulation (EU) No 600/2014 on markets in financial instruments, Regulation (EU) No 596/2014 on market abuse and Regulation (EU) No 909/2014 on improving securities settlement in the European Union and on central securities depositories (Text with EEA relevance)	30/06/2016
51	Markets in financial instruments (MIFID II)	32016L1034	Directive (EU) 2016/1034 of the European Parliament and of the Council of 23 June 2016 amending Directive 2014/65/EU on markets in financial instruments (Text with EEA relevance)	30/06/2016
52	Statistics concerning international trade	32016R1013	Regulation (EU) 2016/1013 of the European Parliament and of the Council of 8 June 2016 amending Regulation (EC) No 184/2005 on Community statistics concerning balance of payments, international trade in services and foreign direct investment (Text with EEA relevance)	29/06/2016
53	Exemptions for commodity dealers	32016R1014	Regulation (EU) 2016/1014 of the European Parliament and of the Council of 8 June 2016 amending Regulation (EU) No 575/2013 as regards exemptions for commodity dealers (Text with EEA relevance)	29/06/2016
54	Aid scheme for the supply of food	32016R0791	Regulation (EU) 2016/791 of the European Parliament and of the Council of 11 May 2016 amending Regulations (EU) No 1308/2013 and (EU) No 1306/2013 as regards the aid scheme for the supply of fruit and vegetables, bananas and milk in educational establishments	24/05/2016
55	Animal health	32016R0429	Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law') (Text with EEA relevance)	31/03/2016
56	Fisheries	32016R0096	Regulation (EU) 2016/96 of the European Parliament and of the Council of 20 January 2016 amending Regulation (EU) No 1236/2010 laying down a scheme of control and enforcement applicable in the area covered by the Convention on future multilateral cooperation in the North-East Atlantic fisheries	02/02/2016
57	Financial transactions	32015R2365	Regulation (EU) 2015/2365 of the European Parliament and of the Council of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012 (Text with EEA relevance)	23/12/2015
58	Payment services in the internal market	32015L2366	Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (Text with EEA relevance)	23/12/2015
59	Package travel and linked travel arrangements	32015L2302	Directive (EU) 2015/2302 of the European Parliament and of the Council of 25 November 2015 on package travel and linked travel arrangements, amending Regulation (EC) No 2006/2004 and Directive 2011/83/EU of the European Parliament and of the Council and repealing Council Directive 90/314/EEC	11/12/2015
60	Novel foods	32015R2283	Regulation (EU) 2015/2283 of the European Parliament and of the Council of 25 November 2015 on novel foods, amending Regulation (EU) No 1169/2011 of the European Parliament and of the Council and repealing Regulation (EC) No 258/97 of the European Parliament and of the Council and Commission Regulation (EC) No 1852/2001 (Text with EEA relevance)	11/12/2015
61	Internet access	32015R2120	Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union (Text with EEA relevance)	26/11/2015
62	Fisheries	32015R2102	Regulation (EU) 2015/2102 of the European Parliament and of the Council of 28 October 2015 amending Regulation (EU) No 1343/2011 on certain provisions for fishing in the GFCM (General Fisheries Commission for the Mediterranean) Agreement area	25/11/2015
63	Financial rules of EU budget	32015R1929	Regulation (EU, Euratom) 2015/1929 of the European Parliament and of the Council of 28 October 2015 amending Regulation (EU, Euratom) No 966/2012 on the financial rules applicable to the general budget of the Union	30/10/2015

64	Greenhouse gas emission	32015D1814	Decision (EU) 2015/1814 of the European Parliament and of the Council of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC (Text with EEA relevance)	09/10/2015
65	Seal products	32015R1775	Regulation (EU) 2015/1775 of the European Parliament and of the Council of 6 October 2015 amending Regulation (EC) No 1007/2009 on trade in seal products and repealing Commission Regulation (EU) No 737/2010 (Text with EEA relevance)	07/10/2015
66	Petrol and diesel fuels	32015L1513	Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources (Text with EEA relevance)	15/09/2015
67	European Fund for Strategic Investments	32015R1017	Regulation (EU) 2015/1017 of the European Parliament and of the Council of 25 June 2015 on the European Fund for Strategic Investments, the European Investment Advisory Hub and the European Investment Project Portal and amending Regulations (EU) No 1291/2013 and (EU) No 1316/2013 — the European Fund for Strategic Investments	01/07/2015
68	Common rules for imports of textile products	32015R0936	Regulation (EU) 2015/936 of the European Parliament and of the Council of 9 June 2015 on common rules for imports of textile products from certain third countries not covered by bilateral agreements, protocols or other arrangements, or by other specific Union import rules	25/06/2015
69	Money laundering	32015L0849	Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC (Text with EEA relevance)	05/06/2015
70	Fisheries	32015R0812	Regulation (EU) 2015/812 of the European Parliament and of the Council of 20 May 2015 amending Council Regulations (EC) No 850/98, (EC) No 2187/2005, (EC) No 1967/2006, (EC) No 1098/2007, (EC) No 254/2002, (EC) No 2347/2002 and (EC) No 1224/2009, and Regulations (EU) No 1379/2013 and (EU) No 1380/2013 of the European Parliament and of the Council, as regards the landing obligation, and repealing Council Regulation (EC) No 1434/98	29/05/2015
71	Union tariff quotas	32015R0754	Regulation (EU) 2015/754 of the European Parliament and of the Council of 29 April 2015 opening and providing for the administration of certain Union tariff quotas for high-quality beef, and for pigmeat, poultrymeat, wheat and meslin, and brans, sharps and other residues	19/05/2015
72	Dioxide emissions from maritime transport	32015R0757	Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (Text with EEA relevance)	19/05/2015
73	eCall in-vehicle system	32015R0758	Regulation (EU) 2015/758 of the European Parliament and of the Council of 29 April 2015 concerning type-approval requirements for the deployment of the eCall in-vehicle system based on the 112 service and amending Directive 2007/46/EC	19/05/2015
74	Lightweight plastic carrier bags	32015L0720	Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags (Text with EEA relevance)	06/05/2015
75	Road vehicles	32015L0719	Directive (EU) 2015/719 of the European Parliament and of the Council of 29 April 2015 amending Council Directive 96/53/EC laying down for certain road vehicles circulating within the Community the maximum authorised dimensions in national and international traffic and the maximum authorised weights in international traffic (Text with EEA relevance)	06/05/2015
76	Genetically modified organisms	32015L0412	Directive (EU) 2015/412 of the European Parliament and of the Council of 11 March 2015 amending Directive 2001/18/EC as regards the possibility for the Member States to restrict or prohibit the cultivation of genetically modified organisms (GMOs) in their territory Text with EEA relevance	13/03/2015

E: Descriptive statistics

Variable	mean	sd	min.	max.	skew
Policy complexity	8.17	1.18	5.9	10.18	-0.22
Political conflict	0.19	0.1	0.04	0.45	0.75
Media salience of regulation	20.6	27.9	1.0	156.0	2.78
Potential stakeholder conflict	3.73	5.12	0	27.6	2.24
DG staff size	582.1	281.91	159.0	1,024.0	0.45

F: Robustness of political conflict measure

To test whether political conflict at the end of the policy process (as used in this research) is a good proxy variable for measuring political conflict at earlier stages of the policy process, we conducted interviews with public officials within the Commissions who were responsible for drafting the policy proposals of each respective policy in our sample. We interviewed officials responsible for 40 of the 76 sampled regulations and directives. They were asked the following question: “Issues [within a policy process] can generate political conflict among public and private stakeholders that are involved and/or affected by the regulation. To what extent did these issues raise such political conflict?”. The findings strongly confirm that policies that our current measurement for political conflict marks to be most conflictual are already perceived as conflictual by the public officials responsible for drafting the policy – that is, they were aware of potential conflict before the final votes in council and parliament. Amongst the top 20 of the most conflictual policy processes in our sample (according to the conflict measure we currently use), we collected interview responses from officials responsible for 13 of these regulations and directives. For 11 out of the 13 covered policy processes, public officials reported at least one sub-issue of the policy that raised political conflict at least “to some extent” (4 policies) or “to a large extent” (7 policies). Most of these policy processes contained 2 or more conflictual sub-issues. Amongst the 20 policy issues with the least amount of political conflict in our sample, we spoke to Commission officials responsible for 5 policy processes. 2 of these did not contain any conflictual sub-issues, while 2 did contain a sub-issue that was conflictual “to some extent” and one that contained one sub-issue that was conflictual “to a large extent”.

Chapter 4 Appendices

A: BERT classification performance metrics

To evaluate the model performance of the BERT classification of the tweets, a random sample of the classified dataset was hand-coded (n=200). The tweet categories are not mutually exclusive (i.e., a tweet can

Hand-coded → Prediction ↓	Not informational	Is informational
Not informational	168	0
Is informational	2	30

be both engaging and informational or nothing of the two). Therefore, two confusion matrices are presented.

Hand-coded → Prediction ↓	Not engaging	Is engaging
Not engaging	187	0
Is engaging	1	11

This resulted in the following confusion matrix:

Following from that, multiple performance metrics were calculated for each of the classification classes.

Precision = true positives / (true positives + false positives)

Recall = true positives / (true positives + false negatives)

Balanced Accuracy = (Precision + Recall)/2

F1 (harmonic mean of precision and recall) = $2 * \frac{precision * recall}{precision + recall}$

Metric	Informational tweets	Engaging tweets
Precision	93.75%	91.67%
Recall	100%	100%
Accuracy	99%	99%

F1	96.77%	95.65%
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B: How BERT works and how it was applied in this research

Building on other recent language models (such as ULmfit), BERT uses transfer-learning to the information contained in word-to-word and sentence-to-sentence relationships to provide better understanding and interpretation of text. Using a transfer-learning model for sentence classification requires two steps: Firstly, creating a neural network language model that contains information on how words relate to each other. Secondly, the last layer of the model has to be fine-tuned to the specific classification task at hand and to the specific type of text the task is based on. The bi-directional transformer has outperformed numerous language classification records since its release in October 2018 and was therefore chosen for this research. The model is based on a neural network model that has been trained on the BooksCorpus (800 million words) and the English Wikipedia (2500 million words) to predict the next sentence in a text (for more details, please refer to the foundational paper by Devlin et al. 2018).

For the sake of understandability, we will outline every step of conducting this research according to the practices of recent machine learning publications in the field of public administration and policy science.

Step 1: Creating a dataset of hand-coding of agency follower account descriptions and agency tweets

Amongst the over 91000 tweets of the EU agencies, 1000 were randomly sub-sampled and hand-coded whether they belonged to one or two different non-exclusive tweet categories (engaging or informational). Tweets were classified as engaging if they encouraged the reader to become active, either in everyday life or by participating in events and venues of the agency. They were coded as informative if they contained general information, quick facts, or recommendations from the general policy field of the respective agency. These tweets do not necessarily have to refer to ongoing policy processes, but can also have a more general character (e.g. a health agency posting about how to live a healthier life).

Step 2: Text preprocessing, model training, and model evaluation

Using the TensorFlow library in the Python language, BERT was used to classify with the training data created in step 1. BERT has been developed by Google and is based on a paper by Devlin et al. (2018) and the model, including pre-trained language models were made available via GitHub (for more information on how the algorithm works, see appendix B). Unlike the older bag-of-words approaches, BERT is a transfer-learning model. This means that the BERT machine-learning model that is used to classify the accounts and tweets will not only learn from the specific dataset that was used to train it for the classification tasks. Before it is trained on the coded dataset, it learned how written language works in general, using the Wikipedia database (ca. 2 500 000 words) and a book corpus (ca. 800 000 000 words). This so-called pre-training takes many weeks even on powerful computers; however, the pre-trained language models are downloadable and open source and were used for this research. Unlike bag-of-words approaches, BERT does not look at the appearance of individual words or n-grams (i.e. multiple words) in isolation, but it takes the context into account. After all, “[f]rom a linguistic or cognitive standpoint, ignoring word order in the treatment of a semantic task is not plausible [...]” (Socher et al. 2013, 3). Through combining multiple developments of natural language processing research of the recent years, BERT has set benchmarks in most major text interpretation tasks (such as sentiment analysis, entity recognition, and -most relevant for this research- text classification) and has been used in thousands of research projects in diverse fields ranging from medicine to scientometrics.

Unlike bag-of-words approaches, no preprocessing of the text is required besides tokenization (using the standard BERT tokenizer) and padding (as the order and declination of words provide information to the BERT). As already stated, Bert takes word context into account, meaning that it uses all information provided in the text. Using a word stemmer or lemmatization would therefore take away valuable information that BERT needs to provide accurate classifications of text (very much like a human being).

The step to teach the algorithm how to interpret the tweets and account description is called fine-tuning, as it adjusts the pre-trained model for the specific task at hand. BERT is well suited for classifying Twitter data, as it works very well with relatively small training data (since it has already been pre-trained to interpret written

language via a massive dataset) and handles short text much better than other algorithms since it takes word context into account.

The training data is unbalanced, meaning that the informational and engaging tweets are lower in number than the remaining tweets in the dataset. It is, however, not drastically unbalanced: The informational category represents 19.3% of the hand-coded tweets, while the engaging tweet category represents 13.3%. We, therefore, carefully followed best practices in machine learning to avoid overfitting the model to the training data during fine-tuning. Firstly, we ran many different iterations of the fine-tuning step with different parameter settings and constantly evaluated the performance of the model on a validation set (15% of the training dataset of 1000 tweets). We used the different parameter options that are proposed by the authors of BERT (Devlin et al. 2018) and observed important markers such as training and evaluation loss, and training metrics such as F1 scores and the Mathews correlation coefficient (MCC) that is particularly suited for the evaluation of unbalanced data. Firstly, to determine the number of training epochs, we ran a model with 5 epochs and observed how the training and validation loss would develop at each epoch (while holding the learning rate and training batch size at the suggested levels of the BERT authors). Across most models, the training loss would continue to decrease, while the validation loss would stagnate or increase after training for 3 epochs (suggesting overfitting of the classifier). We decided to train the final model for 3 epochs based on these findings. As for learning rate and training batch size (both of which can either facilitate or prevent overfitting), we ran models with all possible combinations of learning rate and batch size and then produced a confusion matrix of classification of the validation dataset. For some parameter settings, the model would predict the majority class in most or all cases – again, suggesting that the model was overfitted. We picked the parameter settings that would maximize the number of correct predictions of the classes of interest (i.e., informational and engaging tweets) while minimizing the number of false positives (learning rate: $2e-5$, training batch size). After determining the most optimal model parameters, we trained the model with all 1000 training samples.

We also attempted strategies that are also often used for unbalanced data, namely oversampling the minority class in our training dataset or undersampling the majority class in our training dataset, but found that this did

not notably improve the performance of the model. Equally, we used various pre-trained BERT models that were trained on various types of text (BERT base cased, BERT large cased and uncased, RoBERTa, BerTwitter), and found that the large pre-trained BERT model (cased) would provide the best performance. Overall, we found that BERT was able to handle the unbalanced training data quite well without additional steps. Other researchers have made similar observations about the positive performance of BERT with unbalanced training data (Tayyar Madabushi et al. 2019).

After pre-training, the full set of over 91000 tweets was passed to BERT for classification and stored in a database. Since the used language model (BERT large) is quite large and requires sufficient computational resources, the classification task was performed on a cloud server (Google Tensor Processing Unit). The performance of the classification tasks was evaluated and shows a classification performance that rivals human coding ability (for all performance metrics, see appendix A). All f1 scores (which are a valid measurement of classification performance, particularly for unbalanced classes such as in this context) are well above 90%.

C: Agencies

Agency	Acronym	Handle	Policy	Mandate	followers	Share informational tweets	Share engaging tweets
European Centre for the Development of Vocational Training	CEDEFOP	@Cedefop	Social	regulatory	8382	0.076947	0.022521
European Food Safety Authority	EFSA	@EFSA_EU	Social	regulatory	31643	0.150047	0.06252
European Institute for Gender Equality	EIGE	@eurogender	Social	regulatory	13528	0.217391	0.054426
European Institute of Innovation & Technology	EIT	@EITeu	Economic	non-regulatory	48409	0.059081	0.047827
European Medicines Agency	EMA	@EMA_News	Social	regulatory	43442	0.134188	0.050673
European Research Council	ERC	@ERC_Research	Social	regulatory	67606	0.169375	0.063438
Europol	Europol	@Europol	Social	non-regulatory	88462	0.32854	0.135355
Innovation and Networks Executive Agency	INEA	@inea_eu	Economic	regulatory	14254	0.056911	0.074422
Body of European Regulators for Electronic Communications	BEREC	@BERECeuropaeu	Economic	regulatory	3910	0.043414	0.047854
Community Plant Variety Office	CPVO	@CPVOTweets	Economic	regulatory	1711	0.066542	0.033739
European Agency for Safety and Health at Work	EU-OSHA	@EU_OSHA	Social	regulatory	19639	0.176636	0.04134
European agency for the coordination of operations at the external borders of the EU	Frontex	@Frontex	Social	non-regulatory	29242	0.344538	0.007843
European Centre for Disease Prevention and Control	ECDC	@ECDC_EU	Social	regulatory	28423	0.398061	0.052846
European Chemicals Agency	ECHA	@EU_ECHA	Social	regulatory	9098	0.166145	0.140488
European Environment Agency	EEA	@EUEnvironment	Social	non-regulatory	73972	0.366906	0.060995
European Fisheries Control Agency	EFCA	@EFCA_EU	Economic	non-regulatory	2188	0.075301	0.025602
European Foundation for the Improvement of Living and Working Conditions	Eurofound	@eurofound	Social	regulatory	12144	0.228957	0.040829
European Maritime Safety Agency	EMSA	@EMSA_LISBON	Economic	regulatory	6492	0.054406	0.007688
European Monitoring Centre for Drugs and Drug Addiction	EMCDDA	@EMCDDA	Social	non-regulatory	15028	0.2575	0.042813
European Securities and Markets Authority	ESMA	@ESMAComms	Economic	regulatory	13618	0.0199	0.010661
European Training Foundation	ETF	@etfeuropa	Economic	non-regulatory	6208	0.054962	0.042714
European Union Agency for Fundamental Rights	FRA	@EURightsAgency	Social	non-regulatory	47853	0.183552	0.038149
European Union Agency for Law Enforcement Training	CEPOL	@EU_CEPOL	Social	non-regulatory	2872	0.063798	0.080119

European Union Agency for Network & Information Security	ENISA	@enisa_eu	Social	regulatory	30241	0.071942	0.055364
European Union Agency for Railways	ERA	@ERA_railways	Economic	regulatory	2638	0.043741	0.03092
European Union Institute for Security Studies	EUISS	@EU_ISS	Social	non-regulatory	19916	0.127354	0.025215
European Union Intellectual Property Office	EUIPO	@EU_IPO	Economic	regulatory	26144	0.239063	0.138438
Plants EFSA - European Food Safety Authority	Plants EFSA	@Plants_EFSA	Social	non-regulatory	1626	0.25817	0.03268
European Aviation Safety Agency	EASA	@EASA	Social	regulatory	61667	0.034818	0.159514
Agency for the Cooperation of Energy Regulators	ACER	@eu_acer	Economic	regulatory	815	0.166667	0.016667
European Asylum Support Office	EASO	@EASO	Social	non-regulatory	24607	0.112009	0.047741
European Banking Authority	EBA	@EBA_News	Economic	regulatory	9696	0.068719	0.020759
European Defense Agency	EDA	@EUDefenceAgency	Economic	non-regulatory	18654	0.031681	0.026349
European Insurance and Occupational Pensions Authority	EIOPA	@eiopa_europa_eu	Social	regulatory	6449	0.06548	0.038434
European Agency for the Operational Management of Largescale IT Systems in the Area of Freedom, Security and Justice	eu-LISA	@EULISA_agency	Economic	non-regulatory	977	0.046828	0.107251
European Union's Judicial Cooperation Unit	Eurojust	@Eurojust	Social	non-regulatory	2834	0.243902	0.026608
European GNSS Agency	GSA	@EU_GNSS	Economic	non-regulatory	9347	0.095342	0.135355
European Union Satellite Center	SatCen	@eusatcen	Social	non-regulatory	601	0.035461	0.042553
Single Resolution Board	SRB	@EU_SRB	Economic	non-regulatory	2703	0.04814	0.029905

Chapter 5 Appendices

A: Topic annotation

Topic	Content	% of overall tweets
1	Unity against pandemic	2.96
2	Joining web events	2.00
3	Impact on job market	3.76
4	Early information on outbreak	2.72
5	Eu banking resolution against financial impacts	1.60
6	Covid survey	2.80
7	World solidarity to find cure	4.32
8	Work safety	3.84
9	Gender issues (violence against women)	5.28
10	Impact on education system	3.60
11	Tackling disinformation	2.48
12	Banking measures to contain financial crisis	3.52
13	Press conferences	2.96
14	Banking measures to alleviate personal financial hardship	6.71
15	Technological developments to fight Covid	4.56
16	General medical information about the disease	2.72
17	Delivery of scientifically verified information about the pandemic	2.40
18	Impact on employees (diffuse)	2.48
19	Call for global coordination for exit strategy	2.56
20	Military response	3.76
21	Covid research	4.88
22	Hygiene recommendations	4.64
23	ECDC risk assessments	4.00
24	Data updates (global death reports)	5.84
25	<i>No identifiable label</i>	2.88
26	Vaccine development/innovation	5.36
27	Impact on human rights	3.84
28	Logistics (getting medical equipment, returning stranded EU citizens)	1.60

B: EU Agency sample

Agency	Acronym	Handle	Included in final selection
European Centre for the Development of Vocational Training	CEDEFOP	@Cedefop	Yes
European Food Safety Authority	EFSA	@EFSA_EU	No
European Institute for Gender Equality	EIGE	@eurogender	Yes
European Institute of Innovation & Technology	EIT	@EITeu	No
European Medicines Agency	EMA	@EMA_News	Yes
European Research Council	ERC	@ERC_Research	Yes
Europol	Europol	@Europol	No
Innovation and Networks Executive Agency	INEA	@inea_eu	No
Body of European Regulators for Electronic Communications	BEREC	@BERECeuropaeu	No
Community Plant Variety Office	CPVO	@CPVOTweets	No
European Agency for Safety and Health at Work	EU-OSHA	@EU_OSHA	No
European agency for the coordination of operations at the external borders of the EU	Frontex	@Frontex	No
European Centre for Disease Prevention and Control	ECDC	@ECDC_EU	Yes
European Chemicals Agency	ECHA	@EU_ECHA	No
European Environment Agency	EEA	@EUEnvironment	No
European Fisheries Control Agency	EFCA	@EFCA_EU	No
European Foundation for the Improvement of Living and Working Conditions	Eurofound	@eurofound	Yes
European Maritime Safety Agency	EMSA	@EMSA_LISBON	No
European Monitoring Centre for Drugs and Drug Addiction	EMCDDA	@EMCDDA	No
European Securities and Markets Authority	ESMA	@ESMAComms	No
European Training Foundation	ETF	@etfeuropa	No
European Union Agency for Fundamental Rights	FRA	@EURightsAgency	Yes
European Union Agency for Law Enforcement Training	CEPOL	@EU_CEPOL	No
European Union Agency for Network & Information Security	ENISA	@enisa_eu	No
European Union Agency for Railways	ERA	@ERA_railways	No
European Union Institute for Security Studies	EUISS	@EU_ISS	No
European Union Intellectual Property Office	EUIPO	@EU_IPO	No
European Aviation Safety Agency	EASA	@EASA	No
Agency for the Cooperation of Energy Regulators	ACER	@eu_acer	No
European Asylum Support Office	EASO	@EASO	No
European Banking Authority	EBA	@EBA_News	Yes
European Defense Agency	EDA	@EUDefenceAgency	No
European Insurance and Occupational Pensions Authority	EIOPA	@eiopa_europa_eu	No
European Agency for the Operational Management of Largescale IT Systems in the Area of Freedom, Security and Justice	eu-LISA	@EULISA_agency	No
European Union's Judicial Cooperation Unit	Eurojust	@Eurojust	No
European GNSS Agency	GSA	@EU_GNSS	No
European Union Satellite Center	SatCen	@eusatcen	Yes
Single Resolution Board	EU SRB	@EU_SRB	Yes

C: Robustness check – Regression model output

Topic 1:					Topic 4:					Topic 8:							
Coefficients:					Coefficients:					Coefficients:							
(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)
screen_nameEBA_News	-0.02596	0.014074	2.472	0.0136 *		screen_nameEBA_News	0.0011640	0.0105436	0.110	0.912		screen_nameEBA_News	0.032185	0.015920	2.022	0.0434 *	
screen_nameCDC_EU	-0.02296	0.019094	-1.183	0.2369		screen_nameCDC_EU	0.0041964	0.0151654	0.277	0.782		screen_nameCDC_EU	0.013320	0.023788	0.560	0.5756	
screen_nameEMA_News	0.012806	0.016136	0.794	0.4276		screen_nameEMA_News	-0.003161	0.0122378	6.395	2.7e-10 ***		screen_nameEMA_News	-0.005164	0.017458	-0.296	0.7674	
screen_nameERC_Research	-0.033540	0.017689	-1.896	0.0582 .		screen_nameEMA_News	0.0130684	0.0143622	0.910	0.363		screen_nameEMA_News	-0.011822	0.020921	-0.565	0.5721	
screen_nameEU_SRB	-0.002262	0.017892	-0.126	0.8994		screen_nameERC_Research	0.0005056	0.0142593	0.035	0.972		screen_nameERC_Research	-0.012737	0.021405	-0.595	0.5519	
screen_nameURightsAgency	-0.004928	0.021375	-0.231	0.8177		screen_nameEU_SRB	-0.0005937	0.0130354	-0.046	0.964		screen_nameEU_SRB	-0.002286	0.019127	-0.120	0.9049	
screen_nameeurofound	-0.020276	0.019502	-1.040	0.2987		screen_nameURightsAgency	0.0001685	0.0149330	0.011	0.991		screen_nameURightsAgency	0.021858	0.024271	0.901	0.3680	
screen_nameeurogender	-0.010088	0.019531	-0.517	0.6056		screen_nameeurofound	0.0002839	0.0155239	0.018	0.985		screen_nameeurofound	0.128183	0.026891	4.767	2.09e-06 ***	
screen_nameusatcen	0.047988	0.021976	2.184	0.0292 *		screen_nameeurogender	-0.0003271	0.0144056	-0.023	0.982		screen_nameeurogender	-0.025346	0.020637	-1.228	0.2196	
---						screen_nameusatcen	0.0037467	0.0153507	0.244	0.807		screen_nameusatcen	-0.015375	0.022186	-0.693	0.4884	
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Topic 2:					Topic 5:					Topic 9:							
Coefficients:					Coefficients:					Coefficients:							
(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)
screen_nameEBA_News	-0.007784	0.018963	-0.461	0.6451		screen_nameEBA_News	0.026874	0.012597	2.133	0.0331 *		screen_nameEBA_News	0.01833	0.01422	1.289	0.197480	
screen_nameCDC_EU	-0.0001114	0.0138564	0.008	0.9936		screen_nameCDC_EU	-0.021007	0.013332	-0.751	0.4530		screen_nameEBA_News	-0.017327	0.01930	-0.900	0.368143	
screen_nameEMA_News	-0.0026260	0.0158563	-0.166	0.8685		screen_nameEMA_News	-0.019973	0.014563	-1.372	0.1705		screen_nameCDC_EU	-0.01456	0.01553	-0.937	0.348724	
screen_nameERC_Research	-0.0160571	0.0160325	-1.002	0.3168		screen_nameERC_Research	-0.013211	0.015423	-1.188	0.2351		screen_nameEMA_News	-0.01782	0.01794	-0.994	0.320598	
screen_nameEU_SRB	0.0346974	0.0169255	2.050	0.0406 *		screen_nameEU_SRB	0.071505	0.017729	4.033	5.84e-05 ***		screen_nameERC_Research	-0.01716	0.01825	-0.940	0.347474	
screen_nameURightsAgency	-0.0109267	0.0175062	-0.624	0.5326		screen_nameURightsAgency	-0.009421	0.016574	-0.568	0.5699		screen_nameEU_SRB	-0.01748	0.01715	-1.019	0.308380	
screen_nameeurofound	0.0052209	0.0189839	0.275	0.7833		screen_nameeurofound	-0.005289	0.016722	-0.316	0.7518		screen_nameURightsAgency	0.08107	0.02442	3.320	0.000927 ***	
screen_nameeurogender	0.0030152	0.0175757	0.172	0.8638		screen_nameeurogender	-0.024882	0.015427	-1.613	0.1070		screen_nameeurofound	0.10178	0.02249	4.479	0.631763	
screen_nameusatcen	-0.0175868	0.0173585	-1.013	0.3112		screen_nameusatcen	-0.024428	0.016293	-1.499	0.1341		screen_nameeurogender	0.40163	0.03024	13.283	2e-16 ***	
---						---						screen_nameusatcen	-0.01013	0.01976	-0.513	0.608146	
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Topic 3:					Topic 6:					Topic 10:							
Coefficients:					Coefficients:					Coefficients:							
(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)
screen_nameEBA_News	0.29785	0.03213	9.271	2e-16 ***		screen_nameEBA_News	0.029601	0.014600	2.027	0.0428 *		screen_nameEBA_News	0.18094	0.02604	6.948	5.98e-12 ***	
screen_nameCDC_EU	-0.29699	0.03391	-8.758	2e-16 ***		screen_nameCDC_EU	-0.024971	0.018906	-1.321	0.1868		screen_nameEBA_News	-0.08808	0.03052	-2.886	0.00397 **	
screen_nameEMA_News	-0.29407	0.03248	-9.054	2e-16 ***		screen_nameEMA_News	-0.021500	0.015916	-1.414	0.1577		screen_nameCDC_EU	-0.16705	0.02666	-6.267	5.06e-10 ***	
screen_nameERC_Research	-0.29681	0.03357	-8.842	2e-16 ***		screen_nameERC_Research	-0.016347	0.018398	-0.889	0.3744		screen_nameEMA_News	-0.15547	0.02881	-5.396	8.17e-08 ***	
screen_nameEU_SRB	-0.29677	0.03357	-8.841	2e-16 ***		screen_nameEU_SRB	-0.023689	0.017108	-1.385	0.1664		screen_nameERC_Research	-0.16454	0.02761	-5.960	3.28e-09 ***	
screen_nameURightsAgency	-0.29706	0.03318	-8.954	2e-16 ***		screen_nameURightsAgency	-0.021244	0.019873	-1.069	0.2853		screen_nameEU_SRB	-0.11684	0.02633	-4.621	4.22e-06 ***	
screen_nameeurofound	-0.29770	0.03491	-7.955	4.02e-15 ***		screen_nameeurofound	0.249535	0.031109	8.021	2.4e-15 ***		screen_nameURightsAgency	-0.17966	0.02886	-6.225	6.59e-10 ***	
screen_nameeurogender	-0.29795	0.03779	-4.523	6.68e-06 ***		screen_nameeurogender	-0.018587	0.019469	-0.955	0.3399		screen_nameeurofound	-0.17909	0.02954	-6.063	1.77e-09 ***	
screen_nameusatcen	-0.29726	0.03369	-8.824	2e-16 ***		screen_nameusatcen	-0.020033	0.019744	-1.03	0.3180		screen_nameeurogender	-0.17837	0.02859	-6.239	6.03e-10 ***	
---						---						screen_nameusatcen	-0.17035	0.02973	-5.729	1.27e-08 ***	
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Topic 7:					Topic 11:					Topic 15:							
Coefficients:					Coefficients:					Coefficients:							
(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)
screen_nameEBA_News	0.0488672	0.0157620	3.100	0.00198 **		screen_nameEBA_News	0.0249601	0.0157620	3.100	0.00198 **		screen_nameEBA_News	0.022498	0.015183	1.482	0.138658	
screen_nameCDC_EU	-0.0572168	0.0234279	-2.442	0.01473 *		screen_nameCDC_EU	-0.0399939	0.0168116	-2.379	0.01751 *		screen_nameEBA_News	-0.08808	0.03052	-2.886	0.00397 **	
screen_nameEMA_News	-0.0061499	0.0202928	0.294	0.76889		screen_nameEMA_News	-0.0061499	0.0202928	0.294	0.76889		screen_nameCDC_EU	-0.006894	0.016315	-0.423	0.672695	
screen_nameERC_Research	-0.0094857	0.0222594	-0.426	0.67008		screen_nameERC_Research	-0.0094857	0.0222594	-0.426	0.67008		screen_nameEMA_News	-0.001893	0.019532	-0.097	0.928202	
screen_nameEU_SRB	-0.0020306	0.0200700	-0.012	0.99004		screen_nameEU_SRB	-0.0020306	0.0200700	-0.012	0.99004		screen_nameERC_Research	0.088181	0.024506	3.598	0.000333 ***	
screen_nameURightsAgency	-0.0133972	0.0215260	-0.499	0.14494		screen_nameURightsAgency	-0.0133972	0.0215260	-0.499	0.14494		screen_nameEU_SRB	-0.011922	0.017231	-0.692	0.489316	
screen_nameeurofound	-0.0210047	0.0230541	-0.911	0.36242		screen_nameeurofound	-0.0210047	0.0230541	-0.911	0.36242		screen_nameURightsAgency	0.0151973	0.0207073	0.772	0.440461	
screen_nameeurogender	0.0180581	0.0230341	0.784	0.43320		screen_nameeurogender	0.0180581	0.0230341	0.784	0.43320		screen_nameeurofound	0.044067	0.021980	2.005	0.045196 *	
screen_nameusatcen	0.0473506	0.0241734	1.959	0.05036 .		screen_nameusatcen	0.0473506	0.0241734	1.959	0.05036 .		screen_nameeurogender	0.040915	0.020663	0.245	0.806514	
---						---						screen_nameusatcen	-0.019138	0.020080	-0.953	0.340720	
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Topic 12:					Topic 16:					Topic 20:							
Coefficients:					Coefficients:					Coefficients:							
(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)
screen_nameEBA_News	0.126575	0.027821	4.550	5.9e-06 ***		screen_nameEBA_News	0.0056789	0.0141470	0.401	0.688		screen_nameEBA_News	0.0182725	0.0148940	1.227	0.220117	
screen_nameCDC_EU	-0.024972	0.012728	-1.445	0.1486		screen_nameCDC_EU	-0.0049868	0.0200853	-0.248	0.804		screen_nameEBA_News	-0.0163849	0.0204035	-0.803	0.421204	
screen_nameEMA_News	-0.0010157	0.020914	-0.486	0.6273		screen_nameEMA_News	0.0712996	0.0160418	4.445	9.59e-06 ***		screen_nameCDC_EU	0.0003516	0.013412	0.022	0.982869	
screen_nameERC_Research	-0.0011212	0.023989	-0.005	0.9961		screen_nameEMA_News	0.0027485	0.0184684	0.149	0.882		screen_nameEMA_News	0.0118987	0.0192820	0.617	0.537288	
screen_nameEU_SRB	0.010598	0.020020	0.529	0.5966		screen_nameERC_Research	0.0002961	0.0191506	0.015	0.988		screen_nameEMA_News	0.0009477	0.0185601	0.051	0.959285	
screen_nameURightsAgency	0.022571	0.024739	0.912	0.3618		screen_nameEU_SRB	0.0054810	0.0176126	0.311	0.756		screen_nameERC_Research	-0.0171510	0.0202254	-0.848	0.396605	
screen_nameeurofound	-0.013725	0.023683	-0.580	0.5623		screen_nameURightsAgency	0.0047665	0.0200236	0.238	0.812		screen_nameEU_SRB	-0.0141435	0.0211916	-0.667	0.504635	
screen_nameeurogender	-0.032331	0.020428	-1.583	0.1137		screen_nameeurofound	0.0095116	0.0216770	0.439	0.661		screen_nameURightsAgency	-0.0152374	0.0194830	-0.782	0.434312	
screen_nameusatcen	-0.014910	0.022981	-0.649	0.5166		screen_nameeurogender	-0.0001241	0.0191439	-0.006	0.995		screen_nameeurofound	0.044067	0.021980	2.005	0.045196 *	
---						screen_nameusatcen	-0.0047735	0.0204163	-0.234	0.815		screen_nameeurogender	0.040915	0.020663	0.245	0.806514	
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Topic 13:					Topic 17:					Topic 21:							
Coefficients:					Coefficients:					Coefficients:							
(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)	(Intercept)		Estimate	Std. Error	t value	Pr(> t)
screen_nameEBA_News	0.0397921	0.0157184	2.532	0.0115 *		screen_nameEBA_News	0.0245182	0.0129205	1.898	0.0580 .		screen_nameEBA_News	0.0129000	0.0151495	0.852	0.394647	
screen_nameCDC_EU	-0.0062024	0.0217070	-0.286	0.7751		screen_nameCDC_EU	-0.0094315	0.0175307	-0.53								

Topic 24:

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.007026	0.019857	0.354	0.724
screen_nameEBA_News	-0.004601	0.028057	-0.164	0.870
screen_nameECDC_EU	0.179788	0.023348	7.700	2.76e-14 ***
screen_nameEMA_News	0.033408	0.026862	1.244	0.214
screen_nameERC_Research	0.010442	0.027091	0.385	0.700
screen_nameEU_SRB	-0.002725	0.024454	-0.111	0.911
screen_nameEURightsAgency	-0.006427	0.027680	-0.232	0.816
screen_nameeurofound	-0.006063	0.029130	-0.208	0.835
screen_nameeurogender	-0.001771	0.027000	-0.066	0.948
screen_nameeusatcen	0.011832	0.029269	0.404	0.686

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Topic 25:

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.009838	0.013765	0.715	0.474939
screen_nameEBA_News	0.004479	0.019178	0.234	0.815369
screen_nameECDC_EU	0.021630	0.015286	1.415	0.157330
screen_nameEMA_News	0.076685	0.020608	3.721	0.000207 ***
screen_nameERC_Research	0.014291	0.019316	0.740	0.459516
screen_nameEU_SRB	0.012585	0.017166	0.733	0.463607
screen_nameEURightsAgency	0.027829	0.021565	1.290	0.197120
screen_nameeurofound	0.050990	0.024899	2.048	0.040781 *
screen_nameeurogender	0.025360	0.019378	1.309	0.190896
screen_nameeusatcen	-0.005918	0.019647	-0.301	0.763285

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Topic 26:

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.010846	0.014483	0.749	0.4541
screen_nameEBA_News	0.008063	0.020752	0.389	0.6977
screen_nameECDC_EU	0.006099	0.016046	0.380	0.7039
screen_nameEMA_News	0.140544	0.025150	5.588	2.82e-08 ***
screen_nameERC_Research	0.056362	0.022381	2.518	0.0119 *
screen_nameEU_SRB	0.012368	0.018812	0.657	0.5110
screen_nameEURightsAgency	0.022737	0.020643	1.101	0.2709
screen_nameeurofound	-0.008188	0.020781	-0.394	0.6936
screen_nameeurogender	0.097659	0.022434	4.353	1.45e-05 ***
screen_nameeusatcen	0.015527	0.021038	0.738	0.4606

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Topic 27:

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.018167	0.013617	1.334	0.18241
screen_nameEBA_News	0.023063	0.019511	1.182	0.23741
screen_nameECDC_EU	-0.012657	0.014879	-0.851	0.39510
screen_nameEMA_News	-0.015298	0.017042	-0.898	0.36953
screen_nameERC_Research	0.058356	0.022594	2.583	0.00991 **
screen_nameEU_SRB	0.021492	0.018463	1.164	0.24462
screen_nameEURightsAgency	0.203576	0.027276	7.464	1.58e-13 ***
screen_nameeurofound	-0.016572	0.019053	-0.870	0.38458
screen_nameeurogender	-0.010451	0.018160	-0.576	0.56504
screen_nameeusatcen	-0.003138	0.019142	-0.164	0.86983

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Topic 28:

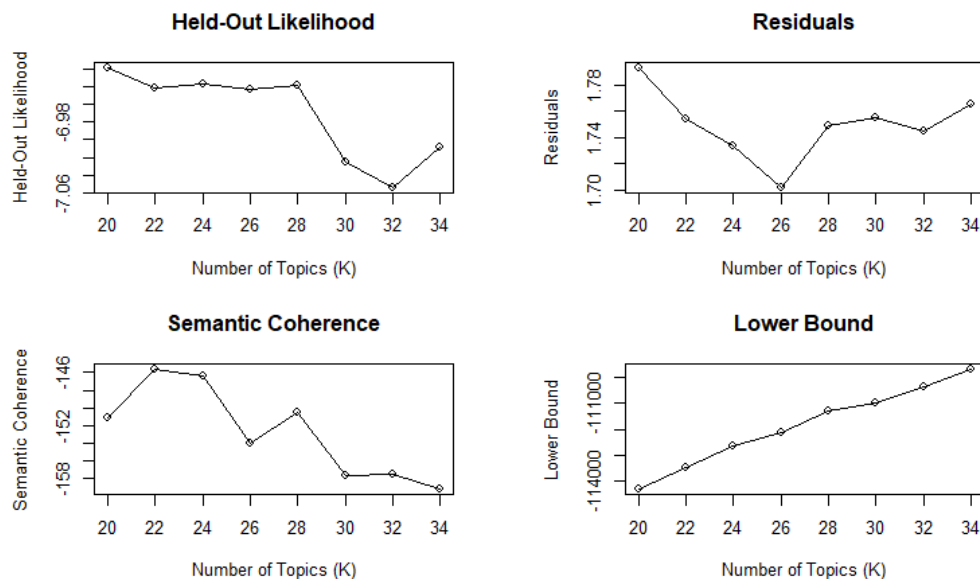
Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.0077954	0.0093898	0.830	0.40659
screen_nameEBA_News	0.0006377	0.0136924	0.047	0.96286
screen_nameECDC_EU	0.0052635	0.0106388	0.495	0.62087
screen_nameEMA_News	0.0298866	0.0137625	2.172	0.03008 *
screen_nameERC_Research	0.0459204	0.0144690	3.174	0.00154 **
screen_nameEU_SRB	0.0377888	0.0129183	2.925	0.00350 **
screen_nameEURightsAgency	-0.0052738	0.0132097	-0.399	0.68979
screen_nameeurofound	-0.0047017	0.0136283	-0.345	0.73016
screen_nameeurogender	0.0105222	0.0133822	0.786	0.43185
screen_nameeusatcen	0.0055674	0.0136369	0.408	0.68315

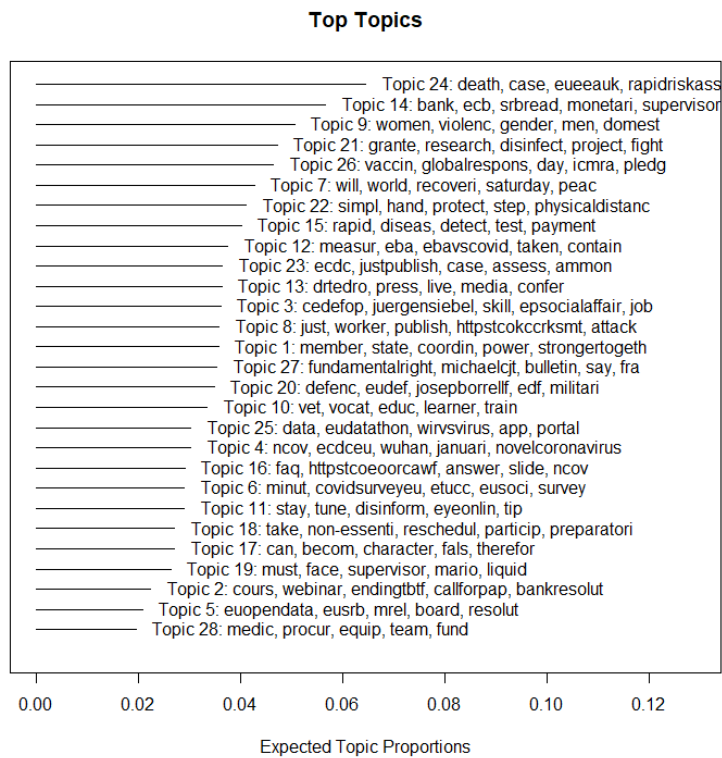
D: Topic model selection / how many topics (K) to include

Note – We first ran another metric comparison with models between 5 and 50 topics (steps of 5) to determine the generally best topic K range. A K of 28 provided the best balance between the indicators, while still yielding topics that are understandable for humans. For example, topic models with 22 or 24 topics provided multiple topics that were not understandable or coherent for human evaluators.

Diagnostic Values by Number of Topics



E: Topic labels



English summary

Words are powerful tools for regulators. During regulatory processes (such as drafting new regulations or executing existing legislation) public communication is vital for regulators: As regulators are interacting with a large variety of stakeholders, they are also confronted with a wide range of perspectives and opinions. Public communication is an important way for regulators to signal future actions, respond to criticism, or to directly interact with important stakeholders. On the other hand, suboptimal public communication can also be damaging for the regulator; It can hurt a regulator's public image. In the worst case, a regulator might lose political support, funding, and regulatory authorities. Regulators, therefore, have to use communication in calculated ways to accomplish distinct goals for their organizations.

While previous literature offers explanations about the motives behind a regulator's public communication, we do not fully understand how a regulator pursues these goals. In this dissertation, I dive into the strategies behind public communication of regulators by asking: *How do public organizations use strategic regulatory communication in regulatory governance?* More specifically, I examine public communication of various EU public agencies in various communication venues. By examining multiple different cases, I examine why regulators communicate the way they do, to what ends they may use communication, and which communicational strategies work better or worse in accomplishing a regulator's goals. Ultimately, this dissertation provides new theoretical, methodological, and empirical insights into a regulator's communication by directly investigating how regulators talk to their manifold audiences. The findings aim to contribute to a better understanding of regulatory governance and to help regulatory officials to make better decisions when communicating with the public.

Empirically, this dissertation relies on multiple datasets that were collected in the context of the NWO funded (Vidi) project “2-Capture – The Driving Forces of Regulatory Capture” (PI: Prof. Dr. Caelesta Braun). The underlying data aims to capture public communication by regulators via various communication venues: Press conferences, press releases, newspaper coverage of public agencies, as well as social media. Due to the size of the underlying datasets, I made frequent use of methods from the field of computational social sciences. Toolkits such as machine learning and natural language processing (NLP) made it possible to distill empirical insights from millions of words. Additionally, I rely on methods such as manual coding of newspaper articles to improve the quality of the underlying data.

To better understand strategic communication of regulators, the dissertation relies on four empirical research articles. Chapter 2 addresses a fundamental question of public communication in regulatory affairs: How reactive is a regulator's public communication to their environment? This chapter tests whether and how the European Central Bank (ECB) reacts to changes in newspaper reporting about the organization via means of public communication. I collected all formal communication of the European Central Bank (ECB) and news media reporting about the organization. Findings show that the ECB is

both reactive as well as strategic in what ECB officials talk or write about publicly. If the media increase its focus on one topic, the ECB will soon follow this focus to signal that it cares about the concerns of its audiences. However, the central bank reacts differently depending on which functional profile is at stake. It takes its time to respond to media attention to its core competencies (that it already has an established a sound reputation for); if media attention shifts to evolving competencies or unusual measures used by the central bank, it is much quicker to respond and typically does so in a stronger way. This suggests that regulators do not communicate sporadically but are highly sensitive to their environments when talking to the public. Not only are they sensitive to what audiences are saying about them, but they also relate the audience's concerns to the current state of their reputation and how these concerns relate to their current reputational profile.

While chapter 2 identified reputational concerns as a driver for strategic communication of a relatively uniform regulator in one regulatory domain, chapter 3 tests whether such a pattern also holds for more multi-faceted regulators and across regulatory domains. To do so, I examine media appearances of the heads of the European Commission, the Commissioners, during policy-making processes of the European Union. The chapter finds more evidence of strategic behavior in a regulator's communication output. Firstly, Commissioner statements appear more often in news media articles about technically complex legislation and less often in less complex legislation. Secondly, the observed communication pattern seems to be best described by: "Maximize the positive reputational payoffs and minimize the negative ones". If a legislative proposal is likely to pass the legislative procedure, Commissioners talk positively about the legislation and signal that they strongly support the proposal. If a proposal is politically more contested, Commissioners are much more careful in their statements and remain focused on technical facts rather than verbally supporting the proposed legislation.

Chapter 4 shifts the focus to the modern face of regulatory communication: social media. In contrast to classical news media, communication via social media is much faster paced and offers more means of direct interaction between regulatory agencies and their audiences. However, this interactive potential remains untapped if agencies do not get any attention on social media platforms. This chapter examines the determinants of social media attention (on Twitter) to 38 EU public agencies. Findings suggest that agencies have little agency over the size of their followership on Twitter: The salience that they have on Twitter is closely linked to the salience that they have in the news media. However, the findings also show that attention to individual messages can be influenced by agencies, independent of their pre-existing levels of public salience. If agencies use a more interactive tone and framing, they can provoke more responses from their audiences as well as attract more general attention to such interactive messages. At the same time, agencies rarely seem to make use of such communicational strategies, which in turn prevents them from harnessing the full interactive potential of social media.

The last empirical chapter (5) keeps the focus on social media, but from a different angle: How can agencies make sure that they look competent and relevant via means of public communication? Utilizing a

sample of 38 decentralized EU agencies, I examine how agencies signal their uniqueness during the Covid-19 pandemic – an all-encompassing, complex issue that touches upon many regulatory domains. The findings show that while all EU public agencies in the sample are communicating about the same issue, their messages are mostly unique to their organizations (and audiences) and rarely overlap. Much more, the EU agency landscape seems to dissect the issue of the Covid-19 pandemic into many smaller niche issues – a strategy that I call issue segmentation. Overall, these findings provide support for the idea that public organizations do not only use communication reactively but also proactively to shape their public profile – to signal uniqueness, competence, as well as willingness to defend their areas of expertise against interference.

What do we learn from this research? Firstly, the findings suggest that bureaucratic reputation plays a crucial role in public communication by regulators. Each chapter, one way or another, shows that regulators communicate in ways that seem to be motivated by reputational considerations. They aim to maximize reputational payoffs whenever they can; if their reputation is threatened, they aim to minimize reputational damages. Secondly, regulators are highly sensitive to their environments: They carefully evaluate the current political and societal climate surrounding the issues that they are responsible for and craft communication that considers these environmental factors. Furthermore, they are also sensitive to internal factors, such as current political support, as well as the degree of competition with other, adjacent, regulatory agencies in their field. Lastly, the findings show that what a regulator says has a direct impact on their audiences. I repeatedly find that both the news media as well as social media audiences directly react to regulatory communication by public agencies. This suggests that, beyond reputational considerations, regulatory communication can become a tool of regulation by itself – by tempering and developing the expectations of regulatory audiences.

All in all, this dissertation makes a case for the important role of communication in regulatory affairs. After all, regulation is a collaborative effort – it takes more than just the regulator to regulate. Public communication is a crucial linking pin between the administrative state and society, and we should put much care into communicating regulations effectively.

Nederlandse samenvatting

Woorden zijn krachtige hulpmiddelen voor toezichthouders. Tijdens regelgevingsprocessen is openbare communicatie van vitaal belang voor toezichthouders. Toezichthouders beheersen een verscheidenheid aan belanghebbenden terwijl ze ook worden geconfronteerd met een brede varieteit aan perspectieven en meningen. Publieke communicatie is een belangrijke manier voor toezichthouders om toekomstige acties te signaleren, te reageren op kritiek of om rechtstreeks te communiceren met belanghebbenden. Aan de andere kant kan suboptimale publieke communicatie ook schadelijk zijn voor de toezichthouder; suboptimale communicatie kan bijvoorbeeld het publieke imago van een toezichthouder schaden. In het ergste geval kan een regelgevende instantie zelfs politieke steun, financiering en regelgevende opdrachten verliezen. Toezichthouders moeten daarom communicatie op berekende manieren gebruiken om duidelijke doelen voor hun organisaties te bereiken.

Eerdere literatuur biedt uitleg over de motieven achter de publieke communicatie van een toezichthouder. Echter, dit verklaart niet volledig hoe een toezichthouder deze doelen nastreeft. In dit proefschrift duik ik in de strategieën achter publieke communicatie van toezichthouders door te vragen: *Hoe gebruiken publieke organisaties strategische communicatie in regelgevend bestuur?* Specifiek onderzoek ik de openbare communicatie van verschillende EU-overheidsinstanties. Ik onderzoek waarom regelgevers communiceren zoals ze doen, voor welke doeleinden ze communicatie gebruiken en welke communicatiestrategieën beter of slechter werken bij het bereiken van de doelen van een toezichthouder. Uiteindelijk biedt dit proefschrift nieuwe theoretische, methodologische en empirische inzichten in de communicatie van een toezichthouder door rechtstreeks te onderzoeken hoe regelgevers met hun doelgroepen praten. Deze bevindingen zijn bedoeld om bij te dragen aan een beter begrip van regelgevend bestuur en om toezichthouders te helpen betere beslissingen te nemen bij de communicatie met het publiek.

Empirisch steunt dit proefschrift op meerdere datasets die werden verzameld in het kader van het door NWO gefinancierde (Vidi) project "2-Capture – The Driving Forces of Regulatory Capture" (PI: Prof. Dr. Caelesta Braun). De onderliggende data is bedoeld om openbare communicatie door toezichthouders via verschillende communicatiekanalen te onderzoeken: persconferenties, persberichten, berichtgeving in kranten over openbare instanties en sociale media. Vanwege de omvang van de onderliggende datasets heb ik veelvuldig gebruik gemaakt van methoden uit de computational social sciences. Toolkits als machine learning en natural language processing (NLP) maakten het mogelijk om uit miljoenen woorden empirische inzichten te destilleren. Daarnaast vertrouw ik op methoden zoals het handmatig coderen van krantenartikelen om de kwaliteit van de onderliggende data te verbeteren.

Om de strategische communicatie van toezichthouders beter te begrijpen, steunt het proefschrift op vier empirische onderzoeksartikelen. Hoofdstuk 2 gaat in op een fundamentele vraag over openbare communicatie in regelgevingsaangelegenheden: hoe reactief is de openbare communicatie van een regelgevende instantie naar hun omgeving? In dit hoofdstuk wordt getoetst of en hoe de Europese

Centrale Bank (ECB) via publieke communicatiemiddelen reageert op veranderingen in de berichtgeving in kranten over de organisatie. Ik verzamelde alle formele communicatie van de Europese Centrale Bank (ECB) en berichtgeving in de nieuwsmedia over de organisatie. Uit bevindingen blijkt dat de ECB zowel reactief als strategisch is in datgene waar ECB-functionarissen in het openbaar over praten of schrijven. Als de media meer aandacht besteden aan één onderwerp, zal de ECB deze aandacht spoedig volgen om aan te geven dat zij zich bekommert om de zorgen van hun publiek. Echter, de centrale bank reageert anders afhankelijk van welk functioneel profiel in het geding is. De ECB neemt de tijd om te reageren op media-aandacht voor zijn kerncompetenties (waarvoor het al een gevestigde en solide reputatie heeft); als de media-aandacht verschuift naar evoluerende competenties of ongebruikelijke maatregelen die door de centrale bank worden gebruikt, reageert ze veel sneller en doet ze dat meestal op een sterkere manier. Dit suggereert dat toezichthouders niet sporadisch communiceren, maar zeer gevoelig zijn voor hun omgeving wanneer ze met het publiek praten. Ze zijn niet alleen gevoelig voor wat het publiek over hen zegt, maar brengen ook de zorgen van het publiek in verband met de huidige staat van hun reputatie en hoe deze zorgen verband houden met hun huidige reputatieprofiel.

Waar in hoofdstuk 2 overwegingen met betrekking tot de reputatie werden geïdentificeerd als een drijfveer voor strategische communicatie van een relatief uniforme regelgevende instantie in één regelgevend domein, wordt in hoofdstuk 3 getest of een dergelijk patroon ook geldt voor meer veelzijdige regelgevende instanties die in meerdere regelgevende domeinen actief zijn. Om dit patroon te testen onderzoek ik media-optredens van de hoofden van de Europese Commissie, de commissarissen, tijdens beleidsvormingsprocessen van de Europese Unie. Het hoofdstuk vindt meer bewijs van strategisch gedrag in de communicatie-output van een toezichthouder. Ten eerste verschijnen uitspraken van commissarissen vaker in media-artikelen over technisch complexe wetgeving en minder vaak in minder complexe wetgeving. Ten tweede, het geobserveerde communicatiepatroon lijkt het best te worden beschreven door: "Maximaliseer de positieve reputatie en minimaliseer de negatieve reputatie". Als een wetgevingsvoorstel waarschijnlijk door de wetgevingsprocedure komt, praten commissarissen positief over de wetgeving en geven ze aan dat ze het voorstel krachtig steunen. Als een voorstel politiek meer omstreden is, zijn commissarissen veel voorzichtiger in hun verklaringen en ze blijven gefocust op technische feiten in plaats van de voorgestelde wetgeving te steunen.

Hoofdstuk 4 verlegt de focus naar het moderne gezicht van regelgevende communicatie: sociale media. In tegenstelling tot klassieke nieuwsmedia verloopt de communicatie via sociale media veel sneller en biedt het meer mogelijkheden voor directe interactie tussen regelgevende instanties en hun publiek. Dit interactieve potentieel blijft echter onbenut als toezichthouders geen aandacht krijgen op sociale mediaplatforms. Dit hoofdstuk onderzoekt de determinanten van aandacht via sociale media (op Twitter) voor 38 EU-overheidsinstanties. Bevindingen suggereren dat toezichthouders weinig invloed hebben over de grote van hun 'followership' op Twitter: de bekendheid die ze hebben op Twitter hangt nauw samen met de bekendheid die ze hebben in de klassieke nieuwsmedia. De bevindingen tonen echter ook aan dat de aandacht voor individuele Tweets kan worden beïnvloed door toezichthouders, onafhankelijk van hun

reeds bestaande niveaus van publieke bekendheid. Als toezichthouders een meer interactieve toon en framing gebruiken, kunnen ze meer reacties van hun publiek uitlokken en meer algemene aandacht trekken voor dergelijke interactieve berichten. Tegelijkertijd lijken bureaus zelden gebruik te maken van dergelijke communicatiestrategieën, waardoor ze het volledige interactieve potentieel van sociale media niet benutten.

Het laatste empirische hoofdstuk (5) houdt de focus op sociale media, maar vanuit een andere perspectief: hoe kunnen toezichthouders ervoor zorgen dat ze competent en relevant overkomen via publieke communicatiemiddelen? Aan de hand van een steekproef van 38 gedecentraliseerde EU-agentschappen op Twitter, onderzoek ik hoe agentschappen hun uniciteit tijdens de Covid-19-pandemie signaleren – een allesomvattende, complexe kwestie die veel regelgevingsdomeinen raakt. De bevindingen tonen aan dat hoewel alle EU-overheidsinstanties in de steekproef over hetzelfde onderwerp communiceren, hun boodschappen meestal uniek zijn voor hun eigen organisaties (en doelgroepen) en elkaar zelden overlappen. Sterker nog, het landschap van de EU-agentschappen lijkt de kwestie van de Covid-19-pandemie op te splitsen in veel kleinere nichekwesties – een strategie die ik ‘issue segmentation’ noem. Over het algemeen ondersteunen deze bevindingen het idee dat publieke organisaties communicatie niet alleen reactief gebruiken, maar ook proactief om hun publieke profiel vorm te geven - om uniciteit, competentie en bereidheid om hun expertisegebieden tegen inmenging te verdedigen, aan te geven.

Wat leren we uit dit onderzoek? Ten eerste suggereren de bevindingen dat bureaucratische reputatie een cruciale rol speelt in publieke communicatie door toezichthouders. Elk hoofdstuk toonde op de een of andere manier aan dat toezichthouders communiceren op manieren die lijken te zijn ingegeven door reputatieoverwegingen. Ze streven ernaar om hun reputatie te maximaliseren wanneer ze maar kunnen; als hun reputatie wordt bedreigd, streven ze ernaar reputatieschade tot een minimum te beperken. Ten tweede zijn regelgevers zeer gevoelig voor hun omgeving: ze evalueren zorgvuldig het huidige politieke en maatschappelijke klimaat rond de kwesties waarvoor ze verantwoordelijk zijn en creëren communicatie die rekening houdt met deze omgevingsfactoren. Bovendien zijn ze ook gevoelig voor interne factoren, zoals de huidige politieke steun, maar ook voor de mate van concurrentie met andere, aangrenzende, regelgevende instanties. Ten slotte tonen de bevindingen aan dat wat een toezichthouder zegt een directe impact heeft op hun publiek. Ik vind herhaaldelijk dat zowel de nieuwsmedia als het publiek op sociale media direct reageren op communicatie door overheidsinstanties. Dit suggereert dat communicatie over regelgeving, afgezien van reputatieoverwegingen, op zichzelf een reguleringsinstrument kan worden – door de verwachtingen van regelgevende doelgroepen te temperen en te ontwikkelen.

Al met al pleit dit proefschrift voor de belangrijke rol van communicatie bij regelgeving. Regelgeving is immers een gezamenlijke inspanning – er is meer voor nodig dan alleen de toezichthouders om te reguleren. Publieke communicatie is een cruciale schakel tussen de staat en de samenleving, en we moeten veel zorg besteden aan het effectief communiceren van regelgeving.

About the author

Moritz Müller was born on April 22, 1993, in Haan, Germany. During his high school years at Gymnasium Hochdahl (2004-2012), he followed the path of becoming a professional trumpet player (being a member of various national youth orchestras in Germany and taking part in a special program for young musicians at the Robert Schumann Conservatory in Düsseldorf). However, his interest in politics and international affairs eventually led him to The Hague (NL), where he completed a BSc in Liberal Arts and Sciences with a major in Policy Sciences (cum laude) at Leiden University College. At Leiden University College, he discovered his interest in numbers and statistics that would follow him from here on out. Subsequently, he continued his studies at the Rotterdam School of Management (Erasmus University) and completed a MSc in Global Business & Sustainability. While completing his MSc, he worked for the Dutch Research Institute for Transitions (DRIFT), where he enjoyed conducting academic research. He was fortunate enough to be able to combine his new-found passion for academic research with his interest in politics and international affairs by starting as a PhD Candidate at Leiden University's Institute of Public Administration (as part of a NWO-funded project, led by Prof. Dr. Caelesta Braun). As of February 2021, he continues to work at the same Institute as a Postdoctoral Researcher for the NORFACE-funded research project "Reconnecting citizens to the administrative state? (ReConnect)".