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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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## 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.<sup>1</sup>

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

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<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup> 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

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<sup>2</sup> While measurement of media bias is difficult and usually subjective, media-bias ratings can be retrieved from websites such as [mediabiasfactcheck.com](http://mediabiasfactcheck.com).

<sup>3</sup> 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.<sup>4</sup> 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).

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

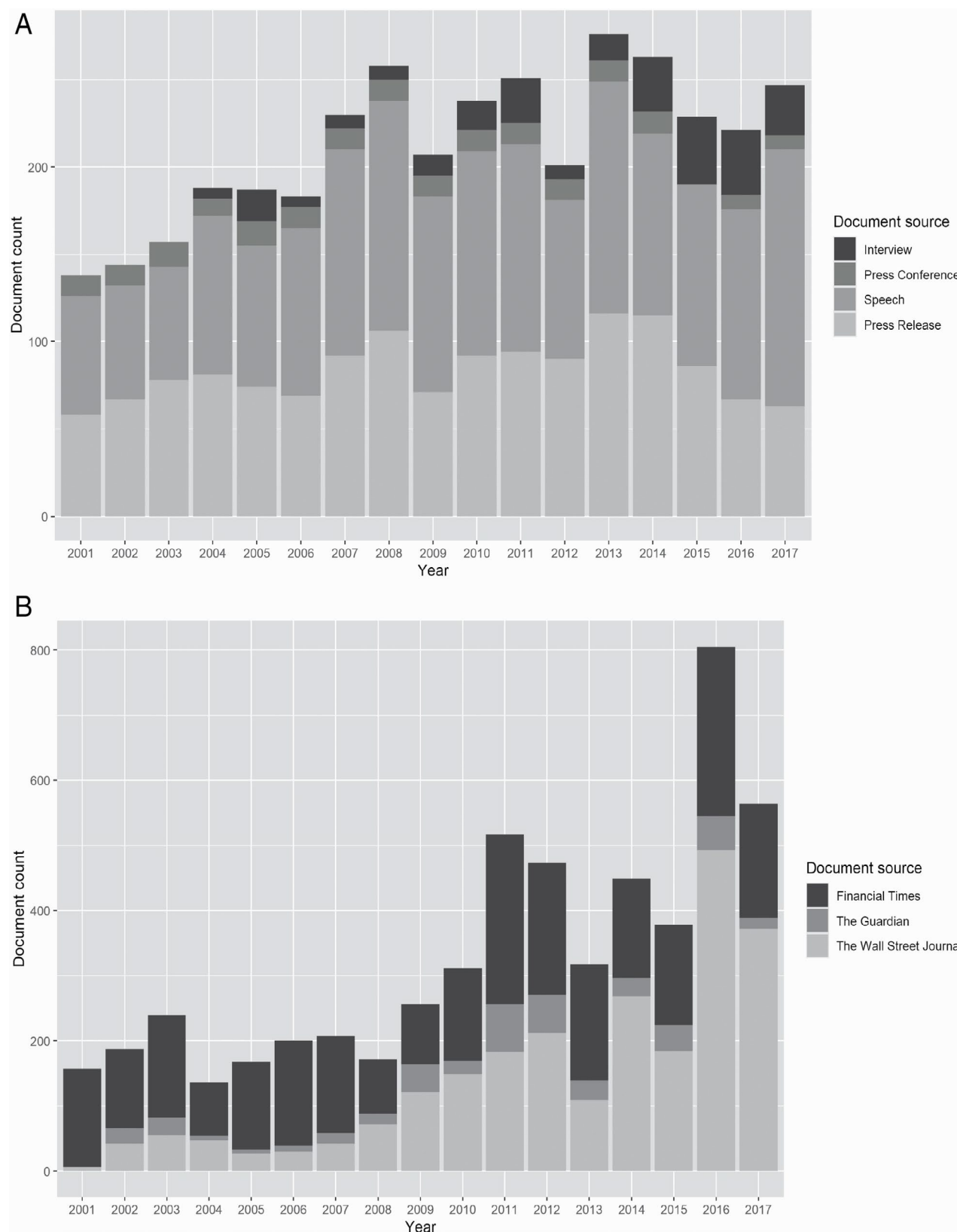


Figure 2- 1: Communication Frequency Across Sources (A: ECB database, B: Newspaper database)

## 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.<sup>5</sup> 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.’”<sup>6</sup>

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<sup>5</sup> 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.

<sup>6</sup> 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).<sup>7</sup> 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 perplexity<sup>8</sup> 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).<sup>9</sup> 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).<sup>10</sup> 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.<sup>11</sup> 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).

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

<sup>8</sup> For an overview, see Montgomery et al. (2012)

<sup>9</sup> 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).

<sup>10</sup> We included the annotated topics in online appendix A-4.

<sup>11</sup> 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.

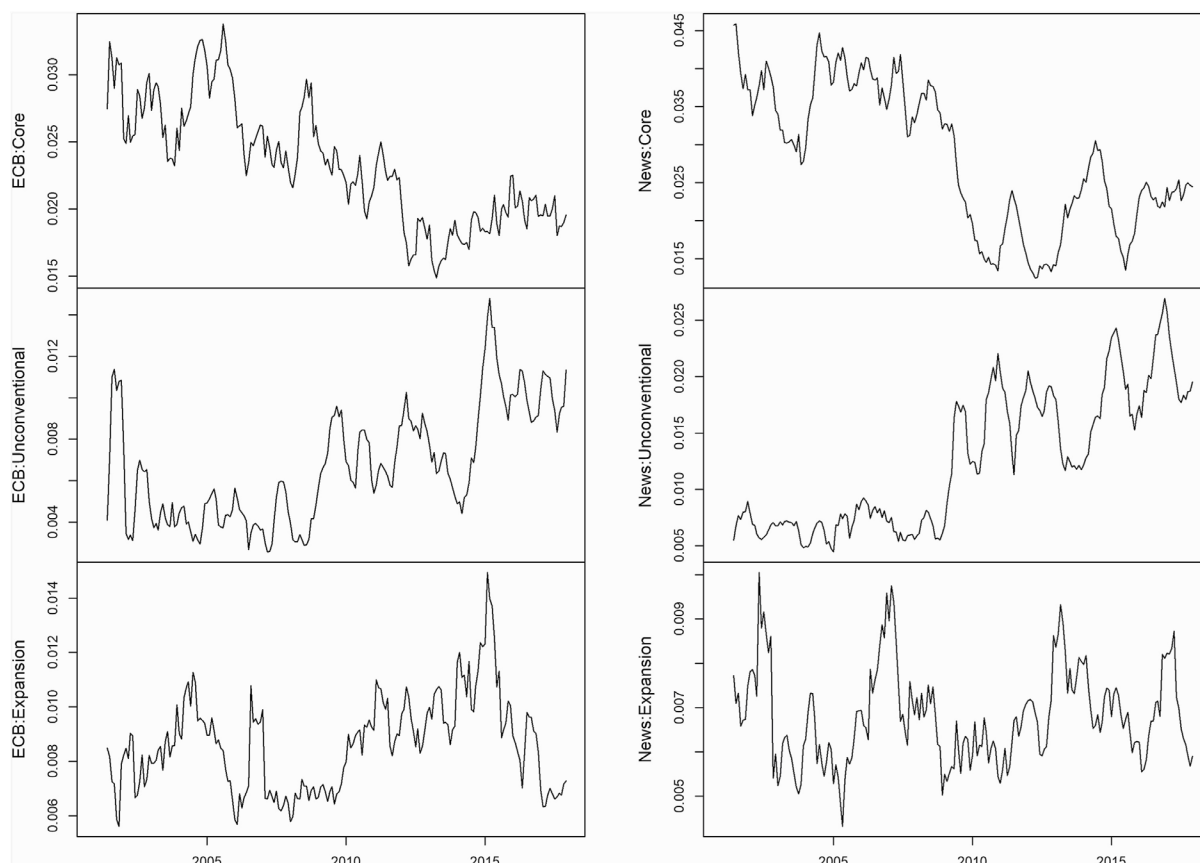


Figure 2- 2: Occurrence of target frame words in ECB communication and media coverage (smoothed, 6-month moving average). y-Axis shows the appearance of the target frame as share of dictionary word matches from overall number of words in the past 6 months (e.g., “On day X, 3% of overall used words that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

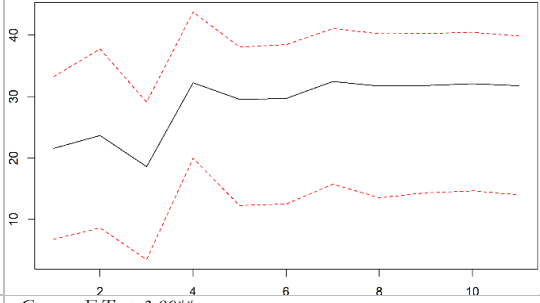
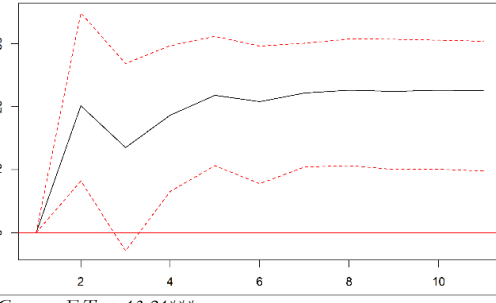
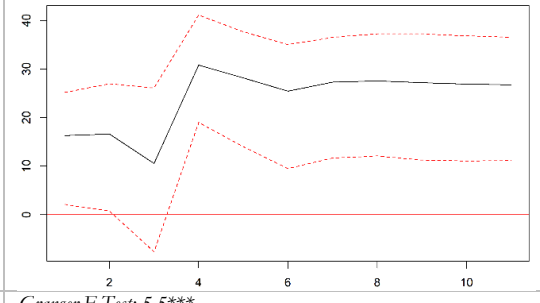
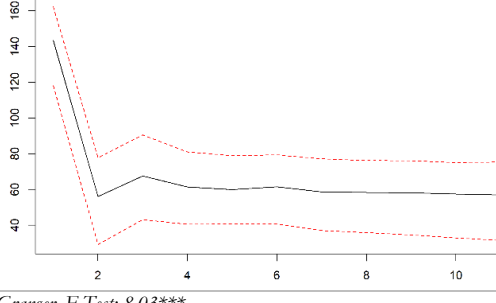
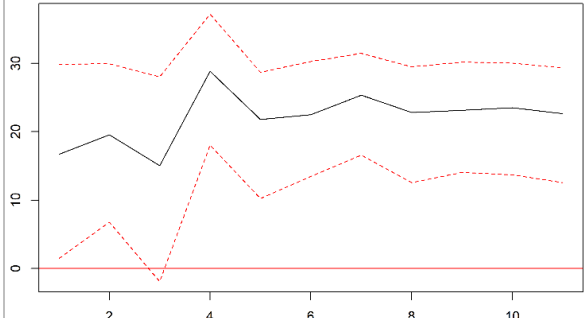
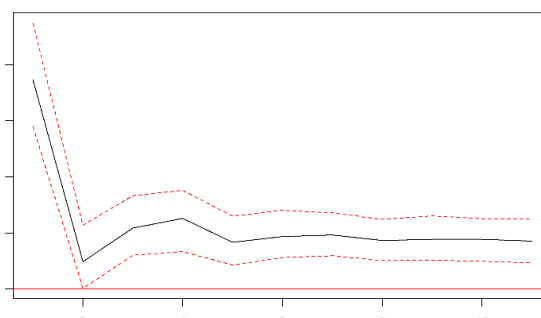
| Frame                   | Media response to ECB                                                                                            | ECB response to Media                                                                                                | With inclusion of financial crisis as exogenous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

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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