THE STRUCTURE OF STRATEGIC COMMUNICATION: THEORY, MEASUREMENT, AND EFFECTS

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A Dissertation Presented to the
FACULTY OF THE USC GRADUATE SCHOOL
UNIVERSITY OF SOUTHERN CALIFORNIA
In Partial Fulfillment of the
Requirements for the Degree
DOCTOR OF PHILOSOPHY
(BUSINESS ADMINISTRATION)

August 9, 2016

ABSTRACT

This dissertation advances a novel approach that I refer to as the structure of strategic communication. Leveraging theory on how people naturally structure their arguments, this approach contends that organizational actors deploy arguments to influence others at two structurally distinct levels—*within* the rules of the game or *about* the rules of the game. This dissertation's primary claim is that talking more about the rules of the game, which exposes the assumptions underlying our social institutions to direct examination, may have profound implications. I build evidence for this claim in two ways. First, I develop a new measurement called the *argument structure ratio (ASR)* that conceptually and empirically captures how explicit a speaker makes these assumptions in their communication. I outline a three-step methodology for measuring the ASR of any collection of written texts. Second, I theorize and empirically demonstrate how the ASR impacts an audience's reaction. Using all public speeches made by the Chairperson of the United States Federal Reserve from 1998 to 2014, I show that the more they expose the assumptions underlying the Federal Reserve System, the more their speeches produce market uncertainty. I argue that these findings fundamentally change how we think about the role of strategic communication in market contexts. More generally, this work provides a new way to conceptualize and study strategic communication that extends well beyond financial markets to a variety of different organizational contexts and across multiple levels of analysis. Taken together, this dissertation provides a theoretical and methodological foundation upon which to conduct research on the structure of strategic communication.

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ACKNOWLEDGEMENTS

My dissertation, along with my broader thinking and approach to scholarship, has been shaped by many people over the last six years. I would like to take the time here to acknowledge these individuals, as my accomplishments could not have been achieved without them. Nor could I have finished this dissertation without their encouragement.

First and foremost, I would like to thank my advisor, dissertation committee chair, and good friend, Peer Fiss. Peer has been a constant source of intellectual and emotional support for me throughout my time in the program. His mentorship enabled me to find my confidence when it waned, and my voice when I thought I had none. Knowing that Peer was always 100 percent behind me, believing in my passions, my intuitions, and my decisions, was the primary reason I am where I am today.

I would also like to thank the rest of my dissertation committee. Kyle Mayer helped me manage important relationships over my tenure in the program, and provided insightful feedback to better contextualize my work for different audiences. Scott Wiltermuth, often while beating me in a friendly game of tennis, was always kind enough to offer his honest and straightforward advice on my work and life in the profession. Jerry Hoberg was invaluable to my committee, bringing to light both the technical complexities of my work as well as the larger story my research was telling about the financial markets.

This dissertation, and the ideas within, could not have been developed if it were not for my coauthors and good friends, Sandy Green and Tom Goodnight. Sandy was the person who taught me how to identify my passion, as well as how to actually conduct research on it. I am forever grateful for Sandy's generosity in time and energy, teaching me everything he could to prepare me for this profession. Tom was the person who constantly stimulated novelty in my

thinking. Every time we talked, I walked away with a dozen research topics, all of which were entirely plausible and similarly exciting. Sandy and Tom have taught me how this profession can indeed be a manifestation of one's passions. This dissertation is evidence of that lesson.

I would also like to thank my many friends at USC who helped me in countless ways. Vern Glaser, Kari Olsen, and Nan Jia were my pillars of support, acting as sounding boards for ideas and questions that ranged from being perfectly reasonable to borderline delusional. And I am grateful that they never judged me for that. Mariam Krikorian, Roshni Raveendhran, Adele Xing, and Jordian Rahimian provided constant encouragement and support, particularly during the most trying times. Sarah Bonner was my most trusted mentor during my time at USC. I owe a lot to her advice and wisdom over the years, as well as her unending kindness.

I would also like to thank several important people who helped me on Chapter 3 of this dissertation in particular. Clare Chang, Sandhya Nadadur, and Heather Rietzfield were my wonderfully hardworking and incredibly talented research assistants. They worked tirelessly with me to understand the Federal Reserve context and code literally hundreds of speeches. I could not have completed this dissertation without them. I would also like to thank Richard Peterson and his teams at MarketPsych and Thomson Reuters for allowing me access to his wonderfully rich market sentiment data.

I owe a great deal to those who have provided me with the emotional support I needed during several trying years in this program. I would first like to thank my family, and in particular, my mom and dad, who believed in me and stood by me even during my lowest points. I know I was not always the most pleasant person to be around, and having their unending support was necessary. I also would like to thank Bruce Howard for his years of helping me understand myself and my relationships better. I have told this to Bruce before, but it is worth

saying again. While this program wasn't the most intellectually challenging thing I've ever done, it was certainly the most emotionally challenging. Bruce gave me the skills and insight to not only take on this challenge but come out the other side a more mature, integrated, better, and happier person.

Finally, I would like to thank a number of friends who heard versions of this dissertation over time and provided invaluable feedback to help nudge these ideas in the right direction and mold it into what it is today. I would like to thank Eero Vaara, David Tan, Emilio Marti, Linda Putnam, and Charlene Zietzsma. I also would like to thank Tim Pollock and the INFORMS Dissertation Proposal Competition judges, my friends at the 2015 Medici Summer School workshop, the attendees at the PhD workshop at the 2015 Alberta Institutions Conference, and the Organizations and Strategy group at USC. Finally, I want to thank the incredibly insightful feedback I received when presenting this work at the University of Georgia, Aalto University, Cambridge University, HEC Paris, Michigan State University, Texas A&M, INSEAD, Arizona State University, University of Michigan, UCLA, and the University of Alberta.

CHAPTER 1

THE STRUCTURE OF STRATEGIC COMMUNICATION

Language plays a dual role in society. The words we use can embed us further within as well as free us from our historical and culturally contingent surroundings. This two-fold understanding of language is featured prominently in many foundational texts across the humanities and social sciences. Drawing on the work of Heidegger (1927) and Wittgenstein (1953), linguists and philosophers like Burke (1969), Rorty (1981), and Habermas (1984) argue that language not only can dominate, control, and coerce human action, but it can also enable us to recognize the contingencies of our social world and push back against the status quo. Anthropologists like Geertz (1973) and sociologists like Berger and Luckmann (1966), Gramsci (1971), and Goffman (1978) echo these same themes by articulating how language is simultaneously a source of cultural hegemony and social change.

This dual role of language recently found its way into organizational and institutional analysis in the management field as a possible explanation for how actors simultaneously maintain but also change the very institutions in which they live. Organizational theorists often call this the paradox of embedded agency. The apparent conundrum is that if actors' beliefs, language, and actions are all conditioned by the institutions in which they live, how can these actors also change these very same institutions (Battilana & D'Aunno, 2009; Holm, 1995)? Language, with its dual nature, was one explanation. Indeed, scholars had already demonstrated in separate studies that language seems to explain institutional maintenance (Green, 2004; Green, Li, & Nohria, 2009; Phillips, Lawrence, & Hardy, 2004) as well as changes to our institutions

(Lawrence, Hardy, & Phillips, 2002; Seo & Creed, 2002; Suddaby & Greenwood, 2005). Despite this initial evidence, this idea that language might serve as a way out of this paradox still remained too abstract. In particular, the precise aspects of communication that actually lead to maintenance as opposed to change remained vague and elusive—until just recently.

In particular, Harmon, Green, and Goodnight (2015) proposed that the way we structure our arguments may be one approach to identifying the precise inflection point in our everyday communication that explains these two distinct outcomes. Harmon and colleagues draw on Toulmin's (1958) model of argument structure to propose that actors can communicate at two structurally distinct levels. At one level, actors can argue *within* the rules of the game, or what Harmon and colleagues call "intrafield rhetoric," leaving implicit their deeper institutionalized assumptions. At another level, actors can argue *about* the rules of the game themselves, what Harmon and colleagues call "interfield rhetoric," exposing and talking explicitly about these fundamental institutionalized assumptions. These researchers theorized that arguing within the rules of the game relates more to institutional maintenance because communication at this level reproduces and reinforces the prevailing consensus surrounding the very assumptions that were left implicit. In contrast, arguing about the rules of the game relates more to institutional change because discussing these assumptions directly exposes the contingencies of our taken-for-granted way of doing things and puts them at risk for alteration. While this basic conceptual distinction holds substantial promise, its theoretical and pragmatic implications have yet to be explored.

The aim of this dissertation is to leverage this conceptual distinction—between arguing within the rules of the game and arguing about the rules of the game—to develop a theoretically and empirically novel approach to the study of strategic communication. In doing so, this dissertation significantly advances Harmon, Green, and Goodnight's (2015)

original work in several important ways. In particular, the current depiction of two structural levels of communication remains too abstract and descriptive to be pragmatically useful for actors in organizations. Like other social theorists recognizing the dual role of language in society, Harmon and colleagues point to these two structural levels of communication as if they were pure or abstract forms and describe them as separate and distinct processes. However, everyday language usage is rarely so neatly distinguishable. As a result, we need a way to conceptualize how organizational actors might flexibly and strategically exploit these two structurally distinct levels of communication in everyday public discourse. Moreover, since organizational actors regularly use communication to influence specific audiences, we also need additional theorization surrounding the potential impact of communicating at these different structural levels. By extending Harmon, Green, and Goodnight's (2015) original ideas to situations where organizational actors use language deliberately to influence others, this dissertation aims to uncover an entirely new way of studying strategic communication.

EXISTING APPROACH TO STRATEGIC COMMUNICATION

Theoretical Perspectives

Strategic communication refers to the language used by actors with the aim to influence others. In this sense, strategic communication is often intentional, reflecting a deliberate choice by actors in regard to what and how they talk. However, strategic communication need not always be intentional or deliberate. For instance, actors may desire to influence others, but they may be uncertain about how an audience will react to a particular argument. As a result, their choice of words may result in unintended consequences which nevertheless stemmed from a strategic attempt aimed to influence others. Over the last 35 years, four theoretical perspectives—impression management, rhetorical theory, framing, and storytelling—have

developed and offer different perspectives on the study of strategic communication. Each perspective tackles a slightly different question and therefore considers different aspects of language to be the primary driving force for influencing others.

Scholars adopting an impression management perspective emphasize how actors can use language strategically to manage their own personal image or responsibility when negative events threaten how others perceive them. In particular, when one's image or reputation gets threatened, actors have a choice to either acknowledge or deny responsibility for what has transpired. Researchers have used this simple choice to explore the conditions under which acknowledging and denying responsibility is most effective (Bettman & Weitz, 1983; Elsbach, 1994; Lamin & Zaheer, 2012; Salancik & Meindl, 1984; Schlenker, 1980; Staw, McKechnie, & Puffer, 1983; Sutton & Callahan, 1987; Wade, Porac, & Pollock, 1997). For instance, investors tend to react more negatively when an organization accepts responsibility for an accident because an admission of guilt opens up the possibility of a lawsuit. In contrast, when an event is a scandal, investors will react more negatively if they deny their involvement (Marcus & Goodman, 1991). This simple decision by organizational actors to accept or deny responsibility has continued to sustain this line of research until the present day.

Scholars drawing on rhetorical theory step back from this decision to accept or deny responsibility and instead focus on the generalized forms of communication that are maximally persuasive when influencing others. While the impression management perspective is older than the rhetorical perspective in organizational analysis, rhetorical theory pre-dates the former by several thousand years. In particular, scholars adopting a rhetorical understanding of strategic communication draw primarily upon Aristotle (1991) and his argument that there exists three fundamental components of the human condition—emotion (i.e., pathos), logic (i.e., logos), and

character (i.e., ethos)—that speakers can appeal to in order to persuade audiences. Organization theorists since have examined how appealing these three components can help actors institutionalize practices (Green, 2004) or legitimate actions (Erkama & Vaara, 2010), define new organizational forms (Suddaby & Greenwood, 2005), and make sense of catastrophes (Cornelissen, Mantere, & Vaara, 2014). Scholars therefore draw upon rhetorical theory to be able to identify the universal rules for how communication resonates with an audience.

Researchers adopting a framing perspective have a similar goal as rhetoricians in that they seek to explore how communication resonates with an audience. However, instead of assuming that there are universal rules of persuasion that enabled resonance across all audiences similarly, framing theorists focus on how actors might frame a particular situation, event, or action in specific ways so as to resonate with a target audience. Drawing on the work of Goffman (1974) as well as Snow and Benford (2000), organizational theorists have explored how actors can frame important strategic decisions (Fiss & Zajac, 2006), everyday behavior (Gorgi & Weber, 2015), and potentially controversial actions in a way that resonates with specified audiences (Rhee & Fiss, 2014). By recognizing the fact that actors can use language to highlight some interpretations while hiding others, framing scholars have pointed to a more contingent understanding of how communication resonates with and influences others.

Finally, a smaller group of these scholars who explore how actors' communication resonates with target audiences have focused in on storytelling as one particularly influential tactic. In this way, storytelling might be thought of as a subset of framing theory in that stories are simply one of the many ways to highlight a preferred interpretation and hide a less appealing one. Even still, storytelling has a long history of its own apart from the framing literature that emphasizes how managers and entrepreneurs often need to be great storytellers to connect with

their desired audience (Bartel & Garud, 2009; Garud, Schildt, & Lant, 2014; Lounsbury & Glynn, 2001; O'Connor, 2004). Researchers within this perspective have shown that stories or narratives can connect to unique contextual features of the prevailing context, draw forth an emotional resonance, and highlight future opportunities for audience members (Martens, Jennings, & Jennings, 2007).

Empirical Methodology

Despite the differences between these four theoretical perspectives, all of them empirically approach the study of strategic communication in a similar fashion. In particular, the standard empirical approach is to collect public messages (e.g., press releases, IPO prospectuses, quarterly earnings transcripts, etc.) communicated by organizational actors and extract specific words or phrases embedded within the broader text. Extracting these words or phrases is an attempt to capture the theoretical elements of interest within the message. For example, if the organization apologized (e.g., Lamin & Zaheer, 2012), did they use the words "I'm sorry" anywhere in the text? If the organization framed their adoption of a practice in a particular way (Rhee & Fiss, 2014), which words did they include and exclude when they mentioned that practice? As a result, the existing empirical approach searches for and codes just a few words or phrases and ignores the rest of the broader text within which these words or phrases are embedded.

Limitations to Existing Approach

This existing approach to the study of strategic communication however has several important limitations. The primary and most substantial limitation is that this existing approach focuses almost entirely on how strategic communication operates *within* a given system of meaning. In particular, research across all four theoretical perspectives explores how strategic

communication strategies—such as apologies or denials (Lamin & Zaheer, 2012), justifications (Wade et al., 1997), rhetorical appeals (Green, 2004), framing tactics (Rhee & Fiss, 2014), or stories (Martens et al., 2007)—fit within an audience's prevailing institutionalized assumptions. Fiss and Zajac (2006: 1179) summarize the prevailing finding across this body of work by stating that audiences "will respond more positively if a firm's [communication] is in line with the institutional context."

However, this current focus overlooks the possibility that organizational actors not only talk within the rules of a given meaning system but also *about* those very rules or assumptions (Harmon et al., 2015; Toulmin, 1958). For instance, CEOs regularly talk about fundamental strategic assumptions in order to clarify a business position (Cook, 2016; Drucker, 1994) or take employees in a radically new direction (Furr & Dyer, 2014), leaders commonly discuss the assumptions that ground their professions (Suddaby & Greenwood, 2005), and politicians often debate ideological assumptions instead of how they might actually execute their policies (Simons, 1994). Despite the fact that actors often communicate directly about these assumptions, existing approaches to strategic communication contain no theoretical understanding of how exposing these assumptions influences others and the broader institution within which these actors reside. This omission is particularly troubling because the decision to either expose or hide our assumptions when communicating can impact the persuasiveness of certain strategies over others (Bitzer, 1959; Jackson & Jacobs, 1980), signal the depth of thinking engaged in by the speaker (Werder, 1999), and even impact the stability of our existing institutions (Bitektine & Haack, 2015; Harmon et al., 2015).

The second limitation concerns the way in which this existing approach conceptualizes what strategic communication actually looks like in public messages. In particular, this approach

both conceptually and empirically presumes that certain words or phrases (e.g., apologies, justifications, framing, stories, etc.) are the primary linguistic components that persuade audiences. However, by isolating and examining the impact of only these small portions of an overall text, scholars are overlooking the possibility that the persuasive force of communication comes not from these several words or phrases but from the holistic impression formed from the entire message that happens to also contain these words or phrases. This omission seems even more problematic in light of the fact that linguists (Rorty, 1981; Wittgenstein, 1953) and communication scholars (Burke, 1969; Toulmin, 1958) have long argued that the persuasive force of words and phrases cannot be understood by audiences in isolation from the broader context within which they occur.

INTRODUCING THE STRUCTURE OF STRATEGIC COMMUNICATION

This dissertation seeks to address these limitations by advancing a novel approach that I refer to as the structure of strategic communication. Structure of course can refer to a variety of things in communication. For example, linguists often talk about structure as grammar (Wittgenstein, 1953), while others refer to structure as a conversational style (Grice, 1975; Schwarz, 1996). In this dissertation, when I discuss structure I am referring specifically to *argument structure* and, more precisely, to the fact that strategic communication used by actors can occur at two structurally distinct levels of argumentation.

The Structure of Strategic Communication

The approach I put forth here leverages work by Toulmin (1958) and Harmon, Green, and Goodnight (2015) to conceptualize a novel way to study strategic communication. This approach ignores the specific communication strategies that actors might use (e.g., apologies, denials, justifications, framing, etc.) and instead focuses on the degree to which these actors

make explicit their institutionalized assumptions when communicating. To achieve this, I use aforementioned conceptual distinction in argument structure between arguing within the rules of the game and arguing about the rules of the game. I propose that arguing more within the rules, which leaves implicit these assumptions, tends to reinforce and reproduce the legitimacy of those very assumptions. In contrast, I propose that arguing more about the rules of the game exposes the contingencies of the institution and places the legitimacy of its taken-for-granted assumptions at risk. This dissertation's primary claim therefore is that talking more about the rules of the game in a given public message may profoundly impact audiences and the overall stability of our social institutions.

This new approach to the study of strategic communication also provides one way to address the two limitations noted earlier. In particular, this approach not only acknowledges the possibility that organizational actors can talk *about* the rules or assumptions that underlie our institutions, but it also conceptualizes a way to capture the degree to which actors do so. This provides a nice opportunity to develop new theory as well as a new empirical approach for measuring how strategic communication influences others. Moreover, this approach also conceptualizes communication more holistically by acknowledging that every aspect of a given message would be categorized into one of two structural levels of talk (i.e., arguments within or about the rules of the game). This provides the opportunity to conceptualize and examine the impact of an entire message on others rather than the influence of just isolated words or phrases. Taken together, this dissertation aims to build upon this basic conceptual distinction in argument structure to reformulate how scholars might study strategic communication.

Dissertation Outline

I advance this approach in two parts. First, in Chapter 2 I develop a novel construct called the *argument structure ratio (ASR)* that conceptually and empirically captures how explicit a speaker makes their assumptions in communication. Second, in Chapter 3 I put to use the ASR measure by theorizing and empirically demonstrating the profound implications of exposing these assumptions to an audience. Using all public speeches made by the Chairperson of the United States Federal Reserve from 1998 to 2014, I show that the more they expose the assumptions underlying the Federal Reserve System, the more their speeches produce market uncertainty. Chapter 4 steps back to reflect upon the theory, measurement, and effects of the ASR and draws together several broader conclusions regarding the future study of the structure of strategic communication.

CHAPTER 2

ARGUMENT STRUCTURE RATIO: MEASURING THE EXPLICITNESS OF OUR ASSUMPTIONS IN COMMUNCIATION

ABSTRACT

Existing approaches to conceptualizing and measuring the communication strategies actors use to influence others has overlooked the fact that the actors involved maintain certain assumptions that ground what it is they are doing. This work presumes that organizational actors take these assumptions for granted and therefore leave them implicit in persuasive communication. This however is not the case. Actors regularly make explicit these assumptions for a variety of reasons. This paper develops a new construct called the *argument structure ratio (ASR)* that conceptually and empirically captures how explicit a speaker makes these assumptions in communication. I propose a three-step methodology for measuring the ASR of communication that can be used on any collection of written texts obtained in archival or experimental settings. I then illustrate the validity of this measure by examining the ASR of all public speeches made by the Chairperson of the United States Federal Reserve from 1998 to 2014. Future directions for using the ASR construct in a variety of organizational contexts and across multiple levels of analysis are discussed.

Words: 173

Keywords: argument structure, strategic communication, persuasion, Federal Reserve

INTRODUCTION

Communication is a critical tool that actors regularly use to persuade others. Managers for example use communication strategically to justify performance outcomes (Staw et al., 1983), narrate their approach to business (Martens et al., 2007), frame controversial practices (Rhee & Fiss, 2014), and explain strategic decisions to their employees (Rousseau & Tijoriwala, 1999) and investors (Fiss & Zajac, 2006). Top governmental officials similarly engage in rhetorical strategies to shape how voters and market participants interpret their policies and decisions (Abolafia, 2004; Emrich, Brower, Feldman, & Garland, 2001), and social activists employ a variety of framing tactics to garner support from different constituencies (Benford & Snow, 2000; King & Soule, 2007). This still growing body of work that stretches across a number of literatures has thus sought to identify and empirically isolate a wide variety of communication strategies that actors use to inform and influence others.

This existing approach of conceptualizing and measuring communication strategies however has been limited. Specifically, this research has overlooked the fact that when trying to persuade others, the actors involved maintain certain assumptions that ground what it is they are doing (Harmon et al., 2015). For instance, when a CEO justifies the acquisition of another company to investors, the assumption underlying this communication is that "profitability is what matters here." Contrast this with when an environmental social activist publicly decries this same acquisition. The assumption underlying this communication is quite different, and likely resembles the idea that "social well-being is what matters here." These assumptions thus reflect the "rules of the game" that actors appear to be collectively playing by in a given situation (Berger & Luckmann, 1966; Friedland & Alford, 1991; Thornton, Ocasio, & Lounsbury, 2012). Since these rules at times are left unstated and taken as givens when communicating with others

(Zucker, 1977), it is perhaps unsurprising that existing research has overlooked them and failed to examine them directly.

The problem arises however when we recognize that these assumptions are often exposed and stated explicitly in our communications. CEOs regularly discuss their assumptions in order to clarify a strategic decision (Cook, 2016; Drucker, 1994) or explain a radically new business direction (Furr & Dyer, 2014), and political party leaders seem to debate their ideological assumptions sometimes more than actually discussing how they would execute their policies (Simons, 1994). And while some case study research has recently highlighted the possibility that actors can engage in discourse about these typically taken-for-granted assumptions (Green, Babb, & Alpaslan, 2008; Suddaby & Greenwood, 2005), there is no existing work that addresses how we might empirically measure the degree to which we make explicit our assumptions in communication. This omission is particularly troubling because the decision to either expose or hide our assumptions when communicating can impact the persuasiveness of certain strategies over others (Bitzer, 1959; Jackson & Jacobs, 1980), signal the depth of thinking engaged in by the speaker (Werder, 1999), and even provide an indication about the stability of our social institutions (Bitektine & Haack, 2015; Harmon et al., 2015).

This paper addresses this by developing a new construct called the *argument structure ratio (ASR)* that conceptually and empirically captures how explicit a speaker makes these assumptions in communication. I begin by briefly explaining that Toulmin's (1958) model of argument structure provides the ideal theoretical scaffolding upon which to build this measure. I then propose a three-step methodology for measuring the ASR of communication that can be used on any collection of written texts obtained in archival or experimental settings. To illustrate the validity of the ASR construct, I examine all public speeches made by the Chairperson of the

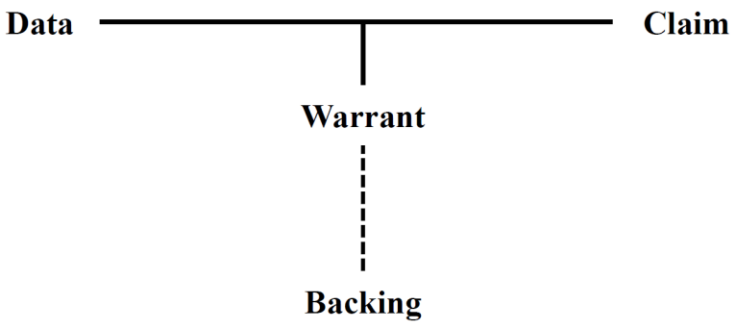
United States Federal Reserve from 1998 to 2014, and compare the ASR construct to other potentially related measures of communication. Finally, future directions for using the ASR in other organizational contexts and across different levels of analysis are discussed.

ARGUMENT STRUCTURE

The Toulmin Model

Argument structure concerns the way we naturally organize our reasoning in order to make our communication with others legitimate and persuasive. The Toulmin Model is widely regarded as one of the simplest and most powerful ways to conceptualize the structure underlying everyday arguments (see Figure 1). Toulmin (1958) contends that all arguments start with three basic structural components: an argument moves from *data* (i.e., the evidence actors draw upon) to *claim* (i.e., the conclusion actors seek to establish) by virtue of a *warrant* (i.e., the reason explains why the data support this claim). Importantly, attached to every data—warrant—claim combination is a fourth component Toulmin called *backing*, which form the assumptions that ground the overall reasonability of the argument. According to the Toulmin Model, the backing thus reflects the underlying "rules of the game" so to speak. When the backing is defined or collectively assumed in a given context, this encourages actors' to play by these very rules when choosing their data and warrants to support their claims.

FIGURE 1 – The Toulmin Model



For example, consider a situation where analysts are asking the CEO of a company questions about whether their merger with another company remains a sound business decision. The CEO might try to convince these analysts that the merger is still a sound decision (claim), justifying this assertion with financial projections that look quite promising over the next two years (data). Now the reason why this data support this claim is because mergers that continue to make money are typically sound business decisions (warrant). While the data and warrant in this case indeed work to support the claim made by the CEO, the reason why these components function properly is because the parties involved in this context all generally hold an assumption that "profitability" is what we are doing here (backing). That is, the backing provides the presumptive basis for believing that using data related to financial performance would be a valid and legitimate way to justify the claim that the merger is remains a sound business decision.

Toulmin contends that while every argument contains all four structural components, not all components need to be made explicit in the argument itself. Indeed, the example above shows how the backing in some arguments can be implicit and taken for granted by the actors involved. This situation in fact resembles most existing research on strategic communication, which takes the backing as a given and examines how actors use data or warrants to justify and persuade others of their desired claim (Elsbach, 1994; Fiss & Zajac, 2006; Lamin & Zaheer, 2012; Martens et al., 2007; Rhee & Fiss, 2014; Staw et al., 1983). While actors of course leave the backing implicit in many everyday arguments, they can also make the backing explicit and discuss those very assumptions directly (Green et al., 2008; Suddaby & Greenwood, 2005).

Two Structural Levels of Communication

Harmon, Green, and Goodnight (2015) were one of the first to recognize this and proposed that actors can thus communicate at two structurally distinct levels. At one level, actors

can communicate "within the rules of the game." This is where actors use data or warrants to argue for or against a particular claim, while leaving implicit the backing. At another level, actors can communicate "about the rules of the game." This is where actors make explicit the backing and discuss its nature and appropriateness in grounding the given context.

Consider the game of baseball as a simple example. Baseball has many rules, such as the number of outs in an inning, when the substitution of players can occur, how and when to use instant replay, the size of the strike zone, and even the etiquette its players should observe. For much of the time, the validity of these rules is taken as a given by players, coaches, fans, and sportscasters. However, when listening to post-game interviews after a controversial call occurred during the course of the game, you often hear an impressive variation in the structural level of talk. For instance, some interviewees continue to take as a given the validity of the rule undergirding the controversial call and instead discuss how they could have played differently within the prevailing rules to perhaps achieve a different outcome (i.e., arguing within the rules of the game). Other interviewees however may take issue with the legitimacy of the rule affecting the controversial call, talking about the validity of the rule itself (i.e., arguing about the rules of the game).

Importantly, within in the same interview an actor can seamlessly shift between these two structurally distinct levels. For instance, the interviewee might start by leaving the backing implicit, then transition to talking explicitly about the backing, and finally shift back to again leaving the backing implicit. The possibility of variation across these two structural levels in a single interview or speech act provides the basis for developing a new measure based on the degree to which actors make explicit their assumptions in any public message.

ARGUMENT STRUCTURE RATIO

The *argument structure ratio (ASR)* conceptually captures the variation between communication that occurs within the rules of the game (i.e., engages the structural components of data, warrant, and claim) and about the rules of the game (i.e., engages the structural components of backing). The ASR therefore measures how explicit a speaker makes these backing-related assumptions in communication. Any communication that seeks to influence others, whether obtained in archival or experimental settings, has an ASR associated with it. The ASR is empirically calculated in the following manner:

ASR = (number of arguments that expose the backing / total number of arguments)

ASR scores therefore range from 0 to 1. Communication with higher ASRs contains more backing-related talk and, thus, reflects the fact that these messages are increasingly making explicit the assumptions underlying the given context. Two considerations are worth mentioning. First, consistent with prior work that suggests that people regularly cluster their arguments into paragraph form (Green et al., 2009), each paragraph of a given message should be coded as one argument. As a result, every paragraph is coded as either exposing the backing or not exposing the backing, and the ratio above is calculated.

Second, a ratio is used instead of the raw number of arguments that expose the backing. Keep in mind that the ASR is a measure of the overall impression of a speech act, specifically in regard to the degree to which these assumptions are made explicit. As a result, a ratio captures the relative weight that a speech act exposes the backing, whereas a raw count measure does not. For instance, compare a message that has five arguments that expose the backing and 10

arguments in total, with a message that also has five arguments that expose the backing but 50 arguments in total. Counting the raw number of arguments that expose the backing treats these two messages identically, whereas a ratio recognizes that these same five backing-related paragraphs is likely going to be interpreted differently given the substantial difference in the overall message length.

In the remainder of this section, I propose a three-step methodology for measuring the ASR of communication. Following these three steps will enable a researcher to code the ASR of any communication that seeks to influence others. An illustration executing these three steps is provided later.

Step 1: Define the discursive space and corpus

A discursive space is a bounded site of persuasion in which actors use communication—verbal speech or written text—to impose their meanings on particular ideas, activities, or situations (Hardy & Maguire, 2010). The bounded aspect of this definition refers to a site where identifiable actors are interacting or in dialogue with each other. This bounded relationship can be bidirectional where multiple parties are communicating at conferences or events (Ansari, Wijen, & Gray, 2013; Suddaby & Greenwood, 2005) or unidirectional where actors give speeches or issue public messages while everyone else listens and evaluates (Martens et al., 2007; Rhee & Fiss, 2014). Boundedness is an important criterion because it helps to concretely identify the backing or assumptions underlying arguments in that particular context. By persuasion I mean any situation wherein actors use communication to influence others' beliefs or interpretations. Most public communications meet this criterion, from company press releases (Lamin & Zaheer, 2012) or annual reports (Staw et al., 1983) to employee memos (Rousseau & Tijoriwala, 1999) to testimony (Suddaby & Greenwood, 2005). Finally, I refer to communication

as verbal speech or written text to highlight that the researcher, after defining the discursive space, then needs to identify clearly a corpus, or collection of documents, that he or she wants to code for ASR.

Step 2: Clarify the two structural levels of communication in your corpus

Once the discursive space is defined and the corpus one wants to examine empirically is identified, the next step is to clarify what the two structurally distinct levels of communication look like. It is important to note that this clarification is done at the corpus level, not at the level of each individual speech act. There are two reasons for this. First, communication with others does not occur in isolation but rather always operates within a broader context and metanarrative. As such, a researcher needs to understand this broader context and the potential factors that might influence the communication (Fiss & Zajac, 2006; Lamin & Zaheer, 2012). Second, one of the primary aims of this measure is to be able to compare the ASR of multiple speech acts with each other within a given corpus. Clarifying these two structural levels at the corpus level enables the researcher to develop a standardized "ideal type" argument within that space, allowing one to compare each individual speech act against this predefined model.

To do this, the researcher should first read sample speech acts within the identified corpus as well as additional literature (e.g., research articles, popular press books, newspaper articles, etc.) so as to immerse oneself in and become familiar with the discursive space. Once the researcher has reached a point of informational saturation, I recommend documenting the different types of words and phrases that typically encapsulate standard claims, data, warrants, and backings within that corpus. Identifying these "content flags" for each of the argument structure components enables the researcher to understand clearly and in a reproducible manner the coding of paragraphs as either containing the backing or not. While the presence of backing-

related content flags in particular do not of course automatically result in coding a paragraph as exposing the backing, they do help to signal an increased likelihood that the argument should be coded as such.

At this point, researchers should keep in mind two additional considerations. First, the ASR may not have much variation in situations where the communication within that discursive space is highly institutionalized (Zucker, 1977). In these situations, the backing may be so entirely taken-for-granted that actors would not even think to talk about them (Bitektine & Haack, 2015). Even still, small changes in these types of situations can trigger mental alarms (Tost, 2011) and prompt actors to start talking about their assumptions (Zilber, 2002). Leveraging these sorts of changes in one's corpus time period can be useful research design tool. Second, the backing underlying a given corpus can sometimes change or evolve over extended periods of time. As such, researchers should use their judgment about the likelihood that the backing within their corpus has shifted during the examined time period. If it has, then identifying different content flags for different theoretically-derived time periods may be useful.

Step 3: Code your corpus based on these two structural levels

Based on the clarification between these two structural levels in the corpus, one is ready to code the ASR of each speech act. Remember that the speech act itself is the unit of analysis, while the paragraph is the unit of data collection. The researcher or trained assistants should systematically read each speech act, coding each paragraph as either exposing the backing or not exposing the backing. Upon completion of coding each paragraph, one calculates the ASR by dividing the number of paragraphs that expose the backing by the total number of paragraphs in the overall speech act.

There are several considerations to keep in mind during this coding process. First, while many paragraphs will contain only data, warrants, and claims or only backing, some paragraphs may have a combination of these two structural levels. As a general rule, whenever the backing is exposed *at all* in the paragraph, that paragraph should be coded as exposing the backing. Second, some paragraphs in a speech act may not appear to fit into one of the four structural components of the Toulmin Model. For example, sometimes speeches begin with formalities like thanking the audience for attending and press releases often have standard legal information at the end. The researcher should use his or her judgment to determine whether to exclude these paragraphs or always code them as arguments that do not expose the backing. The latter option of course reduces the ASR of a given speech act. However, this does not pose an issue if most speech acts in the corpus have similar types of paragraphs since then this reduction of the ASR will be systematically applied throughout the sample.

Finally, researchers should also follow steps recommended by experts in content analysis (Krippendorff, 2003; Neuendorf, 2001) to ensure the ASR coding is done in a reliable manner. First, ensure that you have at least one additional coder and that this coder becomes familiar with the discursive space using the same process as noted above. Second, engage in pilot coding, which entails everyone coding a handful of the same speech acts and discussing their coding decisions until a consensus is reached on each decision. Third, engage in reliability coding, which entails everyone coding a predefined number of the same speech acts without discussing their decisions (Krippendorff, 2003: 240) and checking the interrater reliability (Hayes & Krippendorff, 2007). Fourth, engage in independent coding, which entails everyone independently coding different speech acts. Fifth, ensure that interrater reliability remained

robust throughout your independent coding by having everyone code a handful of the same speech acts at the end of the sample and again calculate interrater reliability.

ILLUSTRATION AND VALIDATION: FEDERAL RESERVE SPEECHES

Research Context

To illustrate and validate the development of the ASR measure, I apply this three-step methodology to public speeches given by the Chairperson of the United States Federal Reserve (Fed). The Fed is the central banking system of the United States and was established in 1913 as a way to protect investors during financial panics by guaranteeing liquidity and acting as the lender of last resort. With its central base of operations in Washington, D.C., the presidentially appointed seven-member Board of Governors (with one member appointed as the Chairperson) oversees the twelve regional Federal Reserve Banks and the broader Federal Reserve System. The Fed's primary objective is to maintain confidence and market stability (Bernanke, 2015), making them one of the most important and powerful institutions in the world (Abolafia, 2004; Cruikshank & Sicilia, 1999; Holmes, 2013). This context is useful to illustrate the ASR because one of the primary ways the Fed tries to achieve this objective is through communicating with the public (Bernanke, 2013; Yellen, 2013).

Step 1: Define the discursive space and corpus. The discursive space in this context is a bounded set of discussions about United States monetary policymaking. This discussion revolves primarily around the Fed and occurs in both bidirectional interactions (e.g., at academic conferences, in academic institutions, popular culture books, etc.) and unidirectional speech acts (e.g., Chairperson speeches given to the public, press releases issued in the market, testimony to Congress, etc.). These unidirectional speech acts by the Fed Chairperson in particular function as acts of persuasion directed towards the United States economy and financial markets (Bernanke,

2015; Cruikshank & Sicilia, 1999; Holmes, 2013; Yellen, 2013). For this illustration, I define the corpus of interest as all public speeches given by the Fed Chairperson from 1998 to 2014 (N = 339). Since the Fed Chairperson is perhaps the most prominent actor in the United States economy (Holmes, 2013) and his or her speeches are uniquely a reflection of their own opinions rather than the Fed as a whole (Bernanke, 2015), this is a reasonable choice.

Step 2: Clarify the two structural levels of communication in your corpus. I began this step by reading a random sample of Chairperson speeches during my defined time period. I supplemented this reading with academic articles (e.g., Abolafia, 2004, 2012; Chen & Clements, 2007; Fligstein, Brundage, & Schultz, 2014) and popular press books about the Fed and central banking in the United States (e.g., Bernanke, 2015; Cruikshank & Sicilia, 1999; Holmes, 2013; Paul, 2009; Shiller, 2000; Steil, 2013). Based on this background knowledge, I documented the different types of words and phrases that typically encapsulate standard Fed Chairperson claims, data, warrants, and backings within that corpus (see Table 1). Most important in this coding scheme is the backing. In this context, the backing reflects a stable set of assumptions underlying the objectives, nature, and boundaries of United States monetary policymaking. The backing is therefore defined clearly by the Fed's dual Congressional mandate (i.e., to maximize employment and maintain price stability) and the set of conventional tools (e.g., open market operations, discount rate, reserve requirements) used to conduct monetary policy. These objectives and tools thus form the "rules of the game" that are regularly taken as givens by most market participants.

TABLE 1 – Two Structural Levels of Fed Communication

Structural Level	Component	Basic Argument and Related Content Flags
Arguing "within the rules of the game"	*Claim*	*Conclusions about the state of the US economy .* "the economy is…[stable/recovering/slowing…]"
	Data	*Economic-based evidence .* "inflation rate" "unemployment rate" "GDP" "production investment" "asset values" "economic indicators"
	Warrant	*Explaining why evidence supports these conclusion .* "inflation rate is slowing economic recovery" "economic indicators show evidence for a slowing economy"
Arguing "about the rules of the game"	*Backing*	*Objectives, nature, or boundaries of US monetary policymaking .* "central banking" "framework" "maximum employment" "price stability" "conventional tools" "macroprudential supervision"

Step 3: Code your corpus based on these two structural levels. Based on these two predefined structural levels of communication within the Fed speech corpus, three research assistants and I coded every paragraph within all 339 Fed Chairperson speeches as either exposing the backing or not. Paragraphs that do not do expose the backing use data and sometimes warrants to draw conclusions about a claim, although they need not engage in all three components. For instance, in a speech on September 26, 2005 to the American Bankers Association, Chairperson Greenspan makes an initial claim, supports this claim with data, and then reasserts the claim.

> This enormous increase in housing values and mortgage debt has been spurred by the decline in mortgage interest rates, which remain historically low (*claim*). Indeed, the thirty-year fixed-rate mortgage, currently around 5 3/4 percent, is about 1/2 percentage point below its level of late spring 2004, just before the Federal Open Market Committee (FOMC) embarked on the current cycle of policy tightening (*data*). This decline in mortgage rates and other long-term interest rates in the context of a concurrent rise in the federal funds rate is without precedent in recent U.S. experience (*claim*) (Greenspan, 2005).

Similarly, in a speech on January 3, 2014 to the American Economic Association, Chairperson Bernanke makes an initial claim and then supports this claim with a variety of data.

> The economy has made considerable progress since the recovery officially began some four and a half years ago (*claim*). Payroll employment has risen by 7-1/2 million jobs from its trough (*data*). Real GDP has grown in 16 of 17 quarters (*data*), and the level of real GDP in the third quarter of 2013 was 5-1/2 percent above its pre-recession peak (*data*). The unemployment rate has fallen from 10 percent in the fall of 2009 to 7 percent recently (*data*). Industrial production and equipment investment have matched or exceeded pre-recession peaks (*data*) (Bernanke, 2014).

In contrast, when the Chairperson exposes the backing, he or she begins discussing the nature and boundaries of monetary policy itself. For example, in a speech in given at the Federal Reserve Bank of St. Louis on October 11, 2001, Chairperson Greenspan lays bare the very assumptions underlying the Federal Reserve System.

> We at the Federal Reserve are given two mandates that are not often spelled out explicitly. First, to implement an effective monetary policy to meet our legislated objectives (*backing*). Second, to do so in a most open and transparent manner in recognition that we, as unelected officials, are accountable both to the Congress from which we derive our monetary policy mission and to the American people (*backing*) (Greenspan, 2001).

Similarly, in a speech on October 18, 2011 at the Federal Reserve Bank of Boston's 56th Economic Conference, Chairperson Bernanke reaffirms the Fed's dual Congressional mandate, followed by a discussion about how inflation targeting fits into their monetary policy framework.

> The Federal Reserve is accountable to the Congress for two objectives—maximum employment and price stability, on an equal footing—and it does not have a formal, numerical inflation target. But, as a practical matter, the Federal Reserve's policy framework has many of the elements of flexible inflation targeting. In particular, like flexible inflation targeters, the Federal Open Market Committee (FOMC) is committed to stabilizing inflation over the medium run while retaining the flexibility to help offset cyclical fluctuations in economic activity and employment (*backing*) (Bernanke, 2011).

For each speech, I then calculated the ASR by taking the ratio of the paragraphs that exposed the backing divided by the total paragraphs in the speech. I ensured reliability of this measure by engaging in reliability coding for the first 60 speeches (Krippendorff's alpha = .88) and validated the robustness of this measure by again conducting reliability coding for the last 10 speeches (Krippendorff's alpha = .84).

Face Validity

I conducted two tests to assess the face validity of the ASR measure. First, if ASR is indeed capturing the overall impression of the speech act that relates specifically to the degree to which the backing is made explicit, then one might expect the titles of these Fed speeches to somehow also reflect that overall impression. That is, since titles typically reflect the overarching emphasis of the speech, we should expect low ASR speeches to have titles that signal a discussion about the stability of the economy. In contrast, we should expect high ASR speeches to have titles that ignore the economy but instead signal a discussion about the very nature of United States monetary policymaking itself. A random selection of four speeches in the bottom and top 10 percent of ASRs in the overall sample confirms this expectation (see Table 2), providing some initial face validity to this construct.

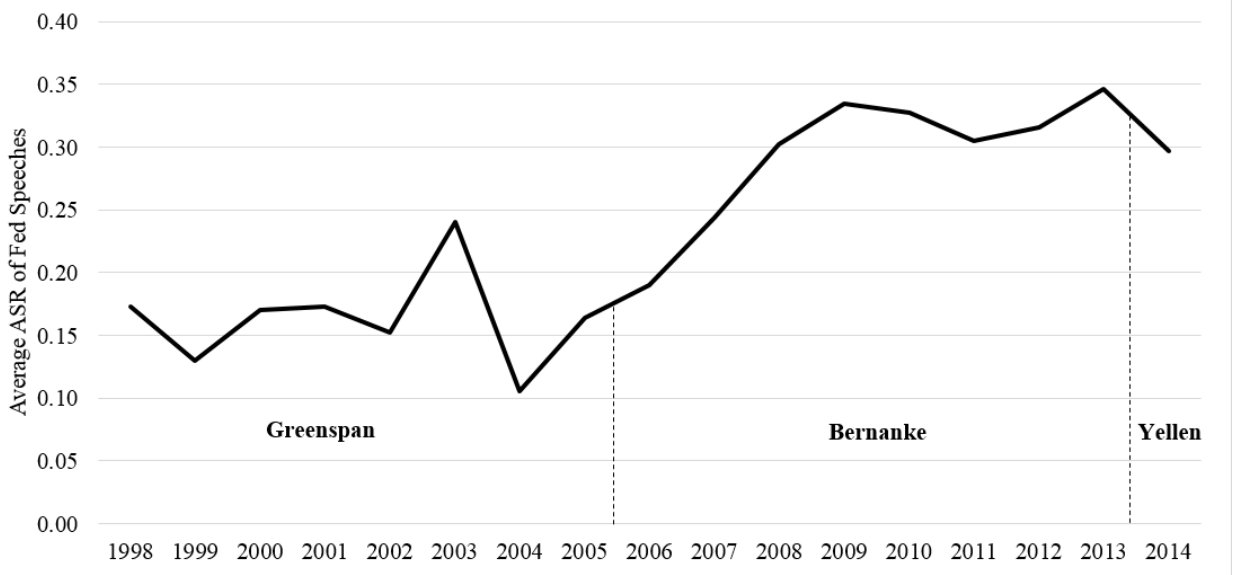
TABLE 2 – Sample Fed Speech Titles and Associated ASR

Date	Speaker	Speech Title	ASR
11/2/1999	Greenspan	Mortgage Markets and Economic Activity	0.05
6/28/2001	Greenspan	Impact of Energy on the Economy	0.03
6/9/2010	Bernanke	Fostering Workforce Development	0.00
6/7/2011	Bernanke	The U.S. Economic Outlook	0.07
10/19/2000	Greenspan	Challenges for Monetary Policymakers	0.29
8/26/2005	Greenspan	Reflections on Central Banking	0.34
1/5/2007	Bernanke	Central Banking and Bank Supervision in the United States	0.64
10/19/2007	Bernanke	Monetary Policy under Uncertainty	0.63

Second, we also should be able to theorize the conditions under which one would expect ASR to be higher and validate this expectation empirically. Identifying such conditions is not as simple as it may appear, since the use of argument structure is likely to be a strategic decision on the part of the Fed to some degree. However, there is one major environmental jolt that occurred during the period from 1998 to 2014 that should theoretically have forced the Fed Chairperson to

expose more of its backing. Specifically, the financial crisis starting in late 2007 shook the very foundations of the United States economy (Lounsbury & Hirsch, 2010) and central banking (Abolafia, 2012). Indeed, by late 2008 the federal funds rate—the Fed's primary monetary policy tool—was essentially zero, forcing the Chairperson and the broader central banking community to reexamine their fundamental assumptions and monetary policy framework in order to figure out what to do. This rate remained zero through 2014, leading central bankers to continue discussing the very nature of monetary policymaking in the United States. Using the financial crisis as a natural experiment, we would expect the ASR to steadily increase during this timeframe and remain high throughout the latter years in my sample. Figure 2 graphs the average ASR of Fed Chairperson speeches during this time period and strongly confirms this expectation.

FIGURE 2 – Average ASR of Fed Chairperson Speeches from 1998 to 2014



Comparison with Other Measures

To the best of my knowledge, there is no comparable measure to the ASR. Despite the fact that no other measures claim to directly capture the explicitness of assumptions in

communication, there are at least three constructs that may indirectly tap into this fundamental conceptual distinction. First, words differ in their level of abstraction. Some words are more concrete in that they refer to tangible objects, persons, or actions that one can often point to and observe in reality. Other words refer to more abstract concepts, hypothetical constructs, or generalized ideas that are more easily objectified and harder to point to and observe in reality. One might hypothesize that talk about the backing is thus inherently more abstract than talk about data, warrants, and claims, since the backing reflects the generalized, objectified assumptions underlying what it is we are doing here. To examine this possibility, I calculated the level of *abstractness* or *concreteness* in each speech using three distinct measures of this concept: Mergenthaler's (1996) word dictionary of abstract nouns (e.g., nouns often ending in –ism, -age, -ness, etc.), Friendly, Franklin, Hoffman, and Rubin's (1982) measure of concreteness imagery that is also known as the Toronto Word Pool, and Brysbaert, Warriner, and Kuperman (2014) measure of concreteness words and two-word expressions.

Second, based on this same line of thinking, one might also propose that speeches with higher exposed backing should also exhibit more *vagueness* because talking about objectified, abstract assumptions will likely lack verbal clarity. I examine this possibility by using Hiller, Fisher, and Kaess's (1969) word dictionary (e.g., maybe, various, perhaps, probably, etc.) that assesses the level of vagueness in each speech. Third, a final potentially related measure to the ASR is the level speech act *complexity*. Similar to the argument for vagueness, one might propose that talking more about the backing is simply going to be a more complex endeavor than discussing everyday normal data and claims. To explore this, I use the Flesch-Kincaid reading grade level (Kincaid, Fishburne Jr, Rogers, & Chissom, 1975), which is used extensively in the field of education as well as in writing insurance and legal documents (McClure, 1987). The

score is based on a formula that considers the total number of words, sentences, and syllables in a text, and produces the U.S. grade level required to understand that text.

Table 3 reports the correlations between the ASR and these other measures. The only measure to correlate significantly with the ASR is speech complexity. This is perhaps unsurprising when considering that fact that it is simply harder to articulate and communicate about one's fundamental assumptions. As such, it makes perfect sense that when trying to do so, the Fed Chairperson uses more words and sentences to get his or her argument across. Nevertheless, the correlation is 0.42, suggesting a meaningful relationship with the ASR but not a substitute by any means. It may seem puzzling at first that the ASR is not correlated with abstractness, concreteness, and vagueness. However, this finding makes sense when considering the fact that these measures attempt to capture the abstractness, concreteness, and vagueness of the object of the sentence, while failing to differentiate between whether that object relates to a claim (i.e., the economy) or the backing (i.e., the framework for monetary policy). In contrast, the ASR ignores how abstract, concrete, or vague one describes an object, and instead focuses on capturing the variation in the argument's object. Given these considerations, the ASR appears to uniquely capture a novel conceptual distinction in our communication.

TABLE 3 – Comparing ASR with Other Measures

	1	2	3	4	5
1. ASR					
2. Abstractness (Mergenthaler 1996)	0.03				
3. Concreteness (Friendly et al. 1982)	-0.06	-0.06			
4. Concreteness (Brysbaert et al. 2014)	-0.01	-0.25**	0.49**		
5. Vagueness (Hiller et al. 1969)	-0.09	0.08	-0.04	-0.04	
6. Complexity (Kincaid et al. 1975)	0.42**	-0.06	0.04	0.05	-0.05

CONCLUSION AND FUTURE DIRECTIONS

This paper developed a new measure of how actors communicate called the *argument structure ratio (ASR)*, which conceptually and empirically captures how explicit a speaker makes their assumptions in communication. Existing research until now has generally ignored or overlooked these assumptions underlying how we communicate, presuming that they are taken-for-granted in a particular context (Elsbach, 1994; Fiss & Zajac, 2006; Lamin & Zaheer, 2012; Rhee & Fiss, 2014). By identifying these assumptions and when they are made explicit in communication, the ASR measure adds an altogether new dimension of communication to this still growing body of research. As a result, the ASR opens up a number of avenues for future research in different contexts and across multiple levels of analysis.

At the individual and group level, managerial or leader communication could be examined to explore the role of ASR in consensus-building. For instance, communicating major changes within an organization or team can be challenging (Rousseau & Tijoriwala, 1999), and making explicit one's assumptions could potentially build consensus in some situations but also alienate employees in others. The ASR might also be useful in examining conflict management situations (Dewulf et al., 2009; Putnam & Holmer, 1992), where one group of people may be exploiting these assumptions to force change while another group is strategically avoiding discussion of these assumptions because they want to avoid risking changes to their existing framework. Researchers studying employee voice (Burris, 2011; Detert, Burris, Harrison, & Martin, 2013) may find the ASR construct useful as well when examining the broader communicative conditions under which individual employees are likely to speak up and question the assumptions underlying their organization.

We might also examine how the ASR of CEO or top management communication at the organizational level influences different stakeholders. For example, organizational founders are required to communicate with prospective investors with their prospectuses when going public (Martens et al., 2007). Scholars could explore how the ASR of these communications impact the firm's their ability to raise capital. Similarly, given the importance of quarterly earnings calls with analysts (Lee, 2015) one might explore how the ASR of this communication influences analysts' ratings after the meeting. More generally, organizations communicate through press releases and other public communications all the time, defending their actions (Lamin & Zaheer, 2012) and framing their decisions (Rhee & Fiss, 2014). Researchers could examine how the ASR of these communications impact how the stock market and media react.

Researchers might also find examining the ASR at the institutional and societal level fruitful. For example, since different institutional systems and cultures maintain very different assumptions (Griswold, 2012), it would be interesting to examine how revealing one's assumptions might produce different effects across nations. One might also consider examining the ASR over time at the discursive space or societal level to gain insight about collective beliefs of actors in that space. Consider again Figure 2 that graphs the average ASR from 1998 to 2014. This graph suggests that the ASR, when tracked over time, might shed light on the underlying collective distress emerging within a given system. With that in mind, it may be possible to explore the ASR as either a leading or lagging indicator of market bubbles and busts.

The ASR thus provides scholars studying a variety of different communication-related phenomena a novel and powerful tool. Given its distinctiveness from the way most research across these different research areas conceptualize communication, I believe that the ASR will enable researchers to gather interesting and altogether new insights in the future.

CHAPTER 3

THE EFFECT OF ARGUMENT STRUCTURE ON MARKET UNCERTAINTY: FEDERAL RESERVE CHAIRPERSON SPEECHES FROM 1998 – 2014

ABSTRACT

This study investigates how communication that exposes an institution's assumptions to direct examination creates uncertainty and instability in the market. Leveraging theory on how we naturally structure our arguments, I develop a novel measurement called the *argument structure ratio (ASR)* that conceptually and empirically captures how explicit a speaker makes these assumptions. Using all public speeches made by the Chairperson of the United States Federal Reserve from 1998 to 2014, I demonstrate that the more they expose the assumptions underlying the Federal Reserve System, the more their speeches produce market uncertainty, as measured by market volatility (i.e., the VIX Index). This however creates a practical tension for the Federal Reserve, since they are simultaneously responsible for being transparent about their monetary policy operations but also for reducing market uncertainty. To resolve this tension, I build on theory related to the role of emotion in markets and identify two conditions under which the Chairperson can still discuss these assumptions without creating uncertainty. This study contributes a new perspective on the role of strategic communication in market contexts, offering new insights for institutional theory, the sociology of financial markets, and the study of argument structure in other organizational contexts.

Words: 197

Keywords: strategic communication, argument structure, emotions, institutions, markets

INTRODUCTION

In recent years, an increasing number of people are paying attention to how prominent actors' communications influence markets. Popular business press for example often expresses concern over how corporate leaders manage investors' expectations (Hutton, 2001; Lev, 2011; Schweitzer, Brooks, and Galinsky, 2015) and how just a few words from top governmental officials can move entire markets (Leubsdorf, 2015; Hilsenrath, 2015). These concerns have been reinforced by several decades of academic research that explores how prominent actors' public messages influence the way market participants interpret their activities and future behavior (Staw, McKechnie, and Puffer, 1983; Wade, Porac, and Pollock, 1997; Westphal and Zajac, 1998; Emrich et al., 2001). This line of research has shown that carefully crafted messages can help to manage important organizational issues, such as the justification of potentially controversial practices (Elsbach, 1994; Graffin, Carpenter, and Boivie, 2011; Lamin and Zaheer, 2012; Zavyalova et al., 2012; Rhee and Fiss, 2014) or the decision to engage in broader strategic changes (Elsbach, Sutton, and Principe, 1998; Arndt and Bigelow, 2000; Fiss and Zajac, 2006; Kennedy and Fiss, 2009). The continued growth of this research highlights the importance of and sustained interest in understanding how strategic communication affects the direction and stability of markets.

In this study, I take a social constructionist view of strategic communication in markets. This view sits in contrast to the financial economics understanding of communication as information that reduces asymmetries (Akerlof, 1970; Spence, 1973), thereby reducing uncertainty at both the individual and market levels (Van Buskirk, 2012). A social constructionist view holds that communication is not just raw information but instead a mode of meaning-making that can shape people's beliefs and interpretations (Berger and Luckmann,

1966; Goffman, 1974). This view has led scholars to identify a number of different strategies that actors might use, such as apologies and denials (Marcus and Goodman, 1991), justifications (Wade, Porac, and Pollock, 1997), stories (Lounsbury and Glynn, 2001), framing tactics (Gorgi and Weber, 2015), and narratives (Martens, Jennings, and Jennings, 2007). By focusing on how communication operates within specific market contexts, this work has demonstrated that using strategies that fit within those institutionalized rules and assumptions tend to produce more favorable market reactions. For example, Lamin and Zaheer (2012) find that the effectiveness of a firm's strategies to defend their sweatshop labor practices differed on Main Street vs. Wall Street because "these worlds operate by separate moralities." Rhee and Fiss (2014) similarly show that the market reacts more positively when a firm frames their reasons for adopting the poison pill in a manner that aligns with the dominant institutional logic. As Fiss and Zajac (2006: 1179) note, "markets will respond more positively if a firm's [communication] is in line with the institutional context."

However, this tendency to focus on how strategic communication operates *within* a given system of meaning overlooks a substantial portion of communication regularly used by prominent actors in market contexts. Anecdotal evidence and case studies suggest that prominent actors not only talk within the rules of a given meaning system but also *about* those very rules. Just as sportscasters can shift from talking about the implementation of a rule on the field to talking about the validity of the rule itself, it is often the responsibility of prominent actors to provide commentary about the very institution in which they are an authority. Indeed, CEOs regularly talk about fundamental strategic assumptions in order to clarify a business position (Drucker, 1994; Cook, 2016) or take employees in a radically new direction (Furr and Dyer, 2014), leaders commonly discuss the assumptions that ground their professions (Suddaby and

Greenwood, 2005), and politicians often debate ideological assumptions instead of how they might actually execute their policies (Simons, 1994). Yet despite the clear prevalence of actors communicating directly about these collectively held assumptions, there is little theoretical understanding of how exposing these assumptions influences others and the broader institution within which these actors reside. This is particularly troubling because several scholars have speculated that opening up the foundations of an institution to direct examination may have destabilizing effects for the system itself (Harmon, Green, and Goodnight, 2015; Bitektine and Haack, 2015).

This study advances a theoretical approach to explore how the financial market responds to communication from prominent actors when they expose an institution's assumptions to direct examination. To do so, I draw on Toulmin's (1958) model of argument structure—which includes the structural components of *data*, *warrant*, *claim*, and *backing*—to propose that actors can communicate at two structurally distinct levels in the same message. At one level, actors can argue within the rules of the game, which is the type of talk much of the existing research concerns. This is where actors use *data* or *warrants* to argue for a particular *claim*, while leaving implicit the assumptions—or *backing*—that ground the prevailing institutionalized context. By leaving implicit these assumptions, I propose that this structural level of talk tends to reinforce and reproduce the legitimacy of those very assumptions. At another level, actors can argue about the rules of the game themselves. This is where actors talk explicitly about the *backing*, which I argue exposes the contingencies of the institution, placing the legitimacy of its taken-for-granted assumptions at risk. I use this distinction to develop a novel measurement—called the *argument structure ratio (ASR)*—which captures the variation between these two structurally distinct levels in communication. Strategic messages with high ASRs contain a large proportion of backing-

related talk and, therefore, reflect the fact that these messages are making explicit the assumptions underlying a given meaning system. My primary argument in this paper is that strategic messages with higher ASRs point to the contingencies and therefore potential instability of those very assumptions that undergird a given institutional arrangement and, as a result, will increase uncertainty.

I contend that examining the argument structure of public messages alters how scholars and practitioners understand the role of strategic communication in markets and institutions more generally. First, by exploring the effects of opening up an institution's assumptions to direct examination, this study extends our existing social constructionist view of strategic communication in markets. Organization theorists widely agree that assumptions form the basis of our institutions (Berger and Luckmann, 1966), providing taken-for-granted guidelines for how we organize ourselves (Suchman, 1995; Thornton, Ocasio, and Lounsbury, 2012). While we often leave these assumptions implicit in daily life (Zucker, 1977; Green, Li, and Nohria, 2009), I show that making them explicit may have important and potentially destabilizing effects on institutions and markets. Examining the implications of the ASR of strategic communication thus reveals a new way of thinking about the role of social assumptions and consensus undergirding a community of actors. Second, this study also suggests a substantial qualification to the information asymmetry reduction argument held by financial economists. While this perspective assumes that more communication should reduce overall uncertainty in the market (Spence, 1973), this study suggests that this may not always be true. In particular, I show that more communication can actually increase uncertainty if it exposes the fundamental assumptions underlying the prevailing institution to direct examination.

I test these arguments in an empirical context where the prominent actors expressly use strategic communication to *reduce* market uncertainty: public speeches made by the Chairperson of the United States Federal Reserve (Fed). Specifically, I examine how the ASR of Fed speeches from 1998 to 2014 affects market uncertainty, as measured by market volatility (i.e., the VIX Index). My findings show that in general more communication from the Fed reduces uncertainty in the market as one might expect, but that over and above this effect, the more the Fed makes explicit their assumptions (i.e., by talking more about the backing), the more this actually increases market uncertainty. I then theorize how this market reaction is likely an emotional response and, if so, how a deeper understanding of the role of emotions in markets can offer a theoretically-driven but pragmatic solution to when the Fed can talk about the backing without creating these undesirable effects on the market. First, I theorize how the emotional positivity of their speeches can mask the sensitive nature of the backing. Second, using propriety daily market sentiment data from MarketPsych and Thomson Reuters, I explore how the level of fear in the business news media leading up to the speech also can mitigate negative reactions to the discussion of the assumptions underlying the Federal Reserve System.

UNITED STATES FEDERAL RESERVE

Federal Reserve System

The Federal Reserve is the central banking system of the United States. The Fed was established in 1913 to protect investors during financial panics by guaranteeing liquidity and acting as the lender of last resort. Based in Washington, D.C., the presidentially appointed seven-member Board of Governors (with one member appointed as the Chairperson) oversees the twelve regional Federal Reserve Banks and the broader Federal Reserve System. The structure of the Fed is unique in that they are "independent within the government" rather than "independent

of government" (Federal Reserve Board, 2016). This structure, along with their staggered 14-year terms for Governors, provides the Fed with unusual but arguably necessary independence from political pressure and involvement. As a result, the Fed's basic framework changes infrequently, with the last major modification coming with the Federal Reserve Reform Act of 1977.

Since this last reform the fundamental assumptions that ground the basic framework of the Federal Reserve System have remained reasonably stable. These assumptions concern the nature and boundaries of United States monetary policymaking, which includes the Fed's fundamental objectives and the monetary policymaking tools they use to achieve those objectives. The Fed's objectives, which are also known as the Fed's dual Congressional mandate, are to maximize employment and maintain price stability. To achieve these objectives, the Fed uses a variety of conventional tools—like engaging in open market operations, setting the discount rate, or changing member bank reserve requirements—to conduct monetary policy. These objectives and tools form the "rules of the game" underlying the institution of United States monetary policymaking. These fundamental assumptions thus form the taken-for-granted foundation of a bounded, specialized discourse about United States monetary policy involving highly educated and sophisticated participants (e.g., the Fed, economists, option traders, etc.).

The presumptive nature of these objectives and operations are elemental to the stability of the United States economy and entire financial system, making the Fed one of the most important and powerful institutions in the world (Cruikshank and Sicilia, 1999; Abolafia, 2004; Holmes, 2013). Because of this, the Fed also retains a broader responsibility to maintain confidence and market stability (Bernanke, 2015). Prior to the 1990s, the Fed's method of achieving this was to "never explain, but behave predictably" (Yellen, 2013). So long as the Fed

did not act in unexpected or surprising ways, the idea was that market participants would find certainty and comfort through simply observing such predictability. But by the early 1990s, the Fed began to realize that their effectiveness in influencing the market also depended on their ability to shape people's expectations of the future, "specifically by helping the public understand how it intends to conduct policy over time, and what the likely implications of those actions will be for economic conditions" (Yellen, 2013). The Fed recognized that the most direct means of achieving this was through communicating with the public (Bernanke, 2013).

Federal Reserve Communications

Since 1996, the Fed has used communication to manage the public's expectations and maintain market stability. One of the most influential communication channels has been speeches given by the Fed Chairperson. These speeches are formal, planned presentations given all over the world (e.g., Washington, D.C., regional Federal Reserve Banks, market competition conferences, academic institutions, etc.). Although speeches are physically presented to local audiences, the transcripts for these speeches are made available to the broader public on the Federal Reserve website when the speech begins. Speeches cover a wide range of topics entirely of the Chairperson's own choosing (Bernanke, 2015). Importantly, these speeches are expressly *not* the opinion of the Board of Governors but instead reflect the opinions of the Chairperson him or herself. In this way, speeches differ in meaningful ways from the two other major forms of Fed communication—press releases and testimony—both of which are more routinized, constrained, and therefore repetitive in their wording than are speeches. Speeches thus offer the Chairperson an important and unique opportunity to personally influence the markets.

The last two decades have demonstrated just how critical Fed communication has become in trying to maintain overall market stability and confidence (Bernanke, 2013, 2015; Holmes,

2013). Indeed, for much of this time, either conventional monetary tools failed to influence the economy in the way economists would predict or these tools reached their practical limits (e.g., the federal funds rate reached zero), leaving many to feel as though the Fed was left "using communication—mere words—as its primary monetary policy tool" (Yellen, 2013). The old adage—when the Fed speaks, the world listens—became increasingly more apparent during this time period. But it had also become surprisingly unclear exactly what the world was listening to. The traditional answer from financial economics of course was that the market was listening to these communications to simply gather new information that should reduce the overall level of uncertainty about the future direction of the economy. However, anecdotal evidence continually pointed to occasions when Fed communications actually created uncertainty instead of reducing it (Holmes, 2013). I therefore propose that one reason for the ambiguous direction of the effect of the Fed's communication is that the market may also be listening to the structural level at which the Fed is talking—whether they are leaving their assumptions implicit or exposing them to public scrutiny. To examine this possibility, I examine the underlying argument structure of strategic communications from the Fed and its potential effect on the market. To do so, I first review what argument structure is and develop theory as to why it matters in the context of the Fed.

ARGUMENT STRUCTURE AND MARKET UNCERTAINTY

Argument Structure

Argument structure concerns the way we naturally organize our reasoning in order to make our communication with others legitimate and persuasive. Aristotle (1991) developed one of the first approaches to conceptualizing argument structure. Aristotle suggested that the most persuasive arguments were naturally arranged into syllogistic forms. Syllogisms traditionally

contain three structural components: a *major premise* (e.g., if the acquisition of a company improves financial performance, then it is a sound business decision) and a *minor premise* (e.g., the acquisition of Company Alpha improves financial performance) that necessarily leads to a *conclusion* (e.g., therefore, the acquisition of Company Alpha is a sound business decision). Since Aristotle's time, a large amount of research in communication and rhetorical studies has explored how different syllogistic structures impact the persuasiveness of arguments (Bitzer, 1959; Jackson and Jacobs, 1980; Conley, 1984). Several organization theorists have used the Aristotelian syllogism in their research (Heracleous and Barrett, 2001; Green, Li, and Nohria, 2009); however, this model of argument structure has gained little traction in organizational analysis.

This is in part due to two limitations of the syllogistic approach when studying strategic communication in organizations and institutions. The first is that syllogisms fundamentally are deductive proofs, suggesting that clearly stated premises should necessarily persuade an audience of a desired conclusion. This however leaves little room for the political contestation many researchers tell us occurs regularly in institutions (Holm, 1995; Fligstein, 1997; Seo and Creed, 2002; Covaleski, Dirsmith, and Rittenberg, 2003). This leads to the second and perhaps most important limitation, which is that syllogisms have no way to conceptualize the source of the socially shared assumptions implicitly underlying our arguments. For instance, the previously stated major premise (i.e., actions that improve financial performance are sound business decisions) is grounded by the assumption that "profitability" is the generally accepted purpose of business operations. This may not be true however because organizing one's actions around the profitability assumption is not the only way to conduct business. Nevertheless, the syllogistic approach does not account for the existence or potential contestation of these assumptions.

These limitations led British philosopher Stephen Toulmin to develop an alternative approach to argument structure that I argue resonates better with our understanding of strategic communication and meaning structures underlying our institutions. Like Aristotle, Toulmin (1958) begins with the same three structural components: actors he argues provide *data* (i.e., minor premise) to support a *claim* (i.e., conclusion), which is further supported by virtue of a *warrant* (i.e., major premise, explaining why the data support the claim). But unlike Aristotle, Toulmin observes that everyday arguments rarely start with abstract assertions that deductively lead to conclusions. Instead, arguments tend to function in the opposite direction, beginning with claims and only contain data and warrants to the extent that the audience demands further justification. This picture of argumentation is not only far more realistic for how organizational actors actually justify their decisions (Pfeffer, 1981; Staw, McKechnie, and Puffer, 1983), but it also provides room for political contestation (Toulmin, Rieke, and Janik, 1984; Bouwmeester, 2013).

Crucially, Toulmin also differs from Aristotle in that he adds to his model an important fourth structural component called the *backing* (see Figure 1). The backing is the often implicit assumptions that form the basis for the most appropriate way to ground the argument (Stephen Toulmin, 1958; Goodnight, 1993). In the example above, the implied backing was "profitability," which provides the presumptive basis for believing that using data related to financial performance would be a valid and legitimate way to justify the claim that acquiring Company Alpha was a sound business decision. With the conceptual addition of the backing, I argue that the Toulmin Model provides a theoretical foundation that resonates strongly with a wide group of organization theorists who conceptualize our social world as being grounded on

often implicit, socially constructed but nevertheless shared assumptions (Berger and Luckmann, 1966; Friedland and Alford, 1991; Townley, 2008; Thornton, Ocasio, and Lounsbury, 2012).

In this study, the concept of the backing is critical because it provides a conceptual and empirical way to point to an observable second structural level of communication (Harmon, Green, and Goodnight, 2015). Indeed, much of our daily communication takes place within the rules of the game at the *data-warrant-claim* level, leaving implicit the backing. This is the level of communication that most of the existing research on strategic communication examines (Green et al., 2009; see also Elsbach, 1994; Lamin & Zaheer, 2012; Rhee & Fiss, 2014). However, prominent actors also regularly talk about the *backing*, discussing these assumptions directly and talking "about the rules of the game" underlying the existing institutionalized arrangement (Bitektine and Haack, 2015). Several scholars have recently conceptualized communication occurring at these two structurally distinct levels as entirely separate processes (Harmon, Green, and Goodnight, 2015), but we can also imagine that every day public communication simultaneously contains both of these structural levels in an attempt to make a maximally persuasive argument.

Argument Structure Ratio

To explore this possibility, I develop a new theoretical construct that I call the *argument structure ratio (ASR)*. Conceptually, the ASR captures the variation between communication that occurs within the rules of the game (i.e., engages the structural components of *data*, *warrant*, and *claim*) and about the rules of the game (i.e., engages the structural components of *backing*). Theoretically, the ASR assesses the degree to which a message makes explicit the assumptions underlying the existing institutionalized arrangement. Thus, messages with high ASRs contain a large proportion of backing-related talk.

Consider the game of baseball. Baseball has many rules, such as the number of outs in an inning, when the substitution of players can occur, how and when to use instant replay, the size of the strike zone, and even the etiquette its players should observe. For much of the time, the validity of these rules is taken as a given by players, coaches, fans, and sportscasters. However, when listening to post-game interviews after a controversial call occurred during the game, you often hear an impressive variation in the structural level of talk. For instance, some interviewees continue to take as a given the validity of the rule undergirding the controversial call and instead discuss how they could have played differently within the prevailing rules to perhaps achieve a different outcome (e.g., low ASR messages). In contrast, other interviewees may take issue with the appropriateness of the rule affecting the controversial call, talking about the validity of the rule itself (e.g., high ASR messages).

Now consider the context of the Fed, where the game is not baseball but United States monetary policymaking. The rules underlying this game, as described earlier, are related to the objectives and conventional tools that form the basis of the Federal Reserve System. And just as in post-game baseball interviews, Fed Chairperson speeches can exhibit the same variation in argument structure. For instance, in speeches where the Chairperson is talking primarily within the rules of the game, he or she typically is making claims about the state of the US economy and providing economic data to support these claims. For example, in a speech to the Economic Club of Washington, D.C. on December 7, 2009, Chairperson Bernanke asserts an initial claim about the recent recovery of the economy and then provides three pieces of data to justify this claim:

> A number of factors support the view that the recovery will continue next year (*claim*). Importantly, corporations are having relatively little difficulty raising funds in the bond and stock markets (*data*), stock prices and other asset values have recovered significantly from their lows (*data*), and a variety of indicators suggest that fears of systemic collapse have receded substantially (*data*) (Bernanke, 2009).

In contrast, in speeches where the Chairperson is primarily talking about the rules of the game, he or she articulates the backing explicitly by discussing the nature or boundaries of monetary policy. For example, in a speech given at the Federal Reserve Bank of St. Louis on October 11, 2001, Chairperson Greenspan lays bare the assumptions underlying the Federal Reserve System:

> We at the Federal Reserve are given two mandates that are not often spelled out explicitly. First, to implement an effective monetary policy to meet our legislated objectives (*backing*). Second, to do so in a most open and transparent manner in recognition that we, as unelected officials, are accountable both to the Congress from which we derive our monetary policy mission and to the American people (*backing*) (Greenspan, 2001).

I argue that the variation in the amount of backing-related talk in a Fed Chairperson's speech will lead to very different inferences about the stability of the Federal Reserve System as an institution and, by extension, the United States economy.

Argument Structure Ratio and Market Uncertainty

The more the Fed Chairperson leaves the backing implicit in their public communications (i.e., speeches with low ASRs), the more it reinforces the collective comfort over and legitimacy of those assumptions underlying the United States Federal Reserve System (Harmon, Green, and Goodnight, 2015). This is consistent with the notion in institutional theory that completely legitimate ideas, practices, or organizations essentially "go without saying" (Meyer and Scott, 1983; Suchman, 1995; Green, Li, and Nohria, 2009; Tost, 2011). Indeed, if the backing is legitimate, then naturally it too should "go without saying." Moreover, if the Fed Chairperson is talking and decided not to discuss these assumptions, then this provides even more authoritative proof that these assumptions are indeed legitimate (Green, 2004; Rhee and Fiss, 2014; Bitektine and Haack, 2015: 51). By reinforcing the legitimacy of the Federal Reserve System, the Fed Chairperson is implying that we need not even question the stability of the institution that sits at

the epicenter of the United States market economy. This sense of collective comfort allows market participants to feel more at ease deferring to this shared feeling of stability instead of cultivating their individual judgment, leading to a "greater conformity and isomorphism" in judgments and decisions openly expressed in the market (Bitektine and Haack, 2015: 53–54; Meyer and Rowan, 1977; DiMaggio and Powell, 1983). As a result, low ASR speeches narrow the overall range of expected directions the market could go in the future, thereby reducing market uncertainty.

In contrast, the more the Fed Chairperson makes the backing explicit in their public communications (i.e., speeches with high ASRs), the more it creates anxiety by putting at risk the legitimacy of those assumptions underlying the United States Federal Reserve System (Harmon, Green, and Goodnight, 2015). Since the backing typically goes without saying and is presumed legitimate, the Fed Chairperson pointing to these assumptions exposes the contingencies of the institution and signals to market participants the possibility that there might be a problem with the legitimacy of the United States monetary policy framework (Bitektine and Haack, 2015: 58). Indeed, if the Fed was not reexamining those assumptions themselves (Bernanke, 2015) or these assumptions were not being questioned by external parties thereby forcing the Fed to address them publicly (Paul, 2009), then the Chairperson would have had little reason to state them. This is especially true when it comes to Chairperson, who is in charge of maintaining the stability of that very system (Holmes, 2013). By signaling a risk to the legitimacy of the Federal Reserve System, the Fed Chairperson is implying that this institution sitting at the epicenter of the United States market economy may be questioned (Meyer and Scott, 1983; Suchman, 1995; Green, Li, and Nohria, 2009; Tost, 2011). I argue that this will prompt market participants to feel a reduced sense of collective comfort and thus increased

anxiety about deferring to this now seemingly unstable institutional foundation (Tost, 2011; Voronov and Vince, 2012; Haack, Pfarrer, and Scherer, 2014). This in turn I propose will lead them to rely more on their individual judgments of what is going on in the market, producing greater heterogeneity in overall market judgments and decisions. As a result, high ASR speeches expand the overall range of expected directions the market could go in the future, thereby increasing market uncertainty.

Hypothesis 1. The ASR of Fed Chairperson speeches will be positively associated with market uncertainty.

If this prediction is true, it creates a critical tension for the Fed. On the one hand, the Fed's broader responsibility is to maintain market stability by reducing uncertainty, not increasing it (Abolafia, 2004; Bernanke, 2015). On the other hand, the Fed at times *must* discuss their fundamental assumptions if they are to maintain transparency regarding their monetary policy operations as promised (Bernanke, 2013). Under what conditions then can the Fed discuss these assumptions without creating market uncertainty? Conceptually, the answer to this question may rest with the role emotions plays in my Hypothesis 1 prediction. In particular, I argued that the Fed Chairperson exposing their assumptions will dislodge the feelings of collective comfort and security that ground the Federal Reserve System, thereby producing emotional anxiety that creates uncertainty within the market about the future state of the US economy. If this is the case, then a deeper understanding of how other emotion-based considerations might counteract this effect could offer a theoretically-driven solution.

EMOTION IN MARKETS

Emotion has long played a prominent role in markets. Early work painted a negative picture of human emotion, likening them to our underlying "animal spirits" that produced

unpredictability in markets (Keynes, 1936). This notion was popularly captured in Nobel Prize-winner Robert Shiller's (2000) book, *Irrational Exuberance*, echoing the same phrase Alan Greenspan uttered in his December 5, 1996 speech that sent shockwaves through capital markets around the world (Greenspan, 1996; Wessel, 1996). More recently however scholars have started to demonstrate that emotion is far from unpredictable (Pollock and Rindova, 2003; Tetlock, 2007; Tetlock, Saar-Tsechansky, and Macskassy, 2008; Pfarrer, Pollock, and Rindova, 2010) and can operate in market contexts in two distinct yet reciprocal ways: 1) emotional communication can directly affect people's market actions and 2) people's existing emotional state can influence how they react to financial market events. I explore both of these relationships in order to theorize the conditions under which the Fed Chairperson should be able to expose their assumptions without creating market uncertainty.

Speech Emotion

The idea that emotional language can influence people's beliefs and actions is not new. Aristotle (1991) was one of the first to argue that emotion is an important aspect of the human condition that speakers can appeal to in order to persuade audiences. Organization theorists since have examined how appeals to emotion can help actors institutionalize practices (Green, 2004) or legitimate actions (Erkama and Vaara, 2010), define new organizational forms (Suddaby and Greenwood, 2005), and make sense of catastrophes (Cornelissen, Mantere, and Vaara, 2014). To explore the potential impact of a Fed speech's emotion, we first need a way to conceptualize the different types of emotional content in communication.

Communication valence, or talking in a positive versus negative tone, is arguably the most basic distinction between emotions found in communication (Tversky and Kahneman, 1981; Pennebaker, Mehl, and Niederhoffer, 2003). Further supporting the usefulness of this

distinction is a number of studies that demonstrate the organizational benefits of communicating in a positive rather than negative tone. For instance, information conveyed in a positive light generally leads audiences to rate people's performances as better (Levin, 1987), perceive management control systems as stronger (Schneider, Holstrum, and Marden, 1993), support organizational practices more (Davis and Bobko, 1986), and generally evaluate issues more favorably (Levin, Schneider, and Gaeth, 1998). These beneficial effects of communicating in a positive tone hold in financial markets as well. Davis, Piger, and Sedor (2012) show that using a positive tone in earnings press releases produces a better short term stock market reaction, even after controlling for firm characteristics related to fundamentals (Huang, Teoh, and Zhang, 2013). These researchers argue that strategically conveying information in a positive tone signals an optimistic outlook (even if untrue), thus creating confidence and certainty in the future.

I propose that the Fed Chairperson may engage in this very same linguistic strategy. In particular, since one of the Fed's responsibilities is to build market confidence, the Fed Chairperson may at times seek to narrate or give their speech in a more positive tone in order to signal optimism about the future. I would expect that doing this would produce a main effect of reducing market uncertainty, consistent with the aforementioned research that shows positive tone produces favorable market reactions. More important, I also argue that this would have a moderating effect on Hypothesis 1. Specifically, giving a speech in a positive tone enables the Fed Chairperson to encase his or her talk about the backing in an overarching positive-sounding story. Doing so increases the likelihood that market participants will interpret the Fed's statements about their assumptions as a positive signal that their message is reasonable and well-supported. As a result, the explicit discussion of one's fundamental assumptions will be less likely to come across as worrisome or anxiety-producing and, thus, will not signal as great of a

risk to the legitimacy of the Federal Reserve System. The Fed Chairperson therefore should be able to discuss the backing directly without producing market uncertainty so long as the speech is conveyed in an overtly positive tone.

Hypothesis 2. The positive tone of the Fed Chairperson's speech will weaken the positive effect of the ASR on market uncertainty.

Audience Emotion

Markets are also already full of emotion, which can impact how people react (Shiller, 2000; Kahneman, 2011). In this sense, emotions operate as part of people's baseline and color their interpretations of and reactions to market events (Pollock and Rindova, 2003). Mountains of anecdotal evidence highlight how emotions influence our decisions made every day (Gino, 2015), from choosing short-term investment decisions (Statman, 2013) to understanding long-term macroeconomic issues (Carrns, 2013). Academic research has recognized this role of emotions in markets as well, demonstrating that the presence of certain emotions can amplify an audience's reaction to events (Barberis, Shleifer, and Vishny, 1998; Baker and Wurgler, 2006). Arguably the most powerful amplifying emotion that arises regularly in financial markets is fear (Krugman, 2001), which is also cited as the emotional driver of market bubbles as well as the very financial panics the Fed seeks to avoid (Shiller, 1988, 2000; Holmes, 2013; Bernanke, 2015).

Fear produces two key features that likely influence how people will react to events in market contexts. First, fear creates an arousal in people that heightens their attention. Indeed, psychologists (Niedenthal and Kitayama, 2013) and economists (Kahneman, 2011) alike argue that arousal from emotions like fear modifies "the allocation of attentional resources and heightens sensitivity to environmental cues" (Lane, Chua, and Dolan, 1999: 889). Second, fear

also creates pessimism about the future. In particular, psychologists have found that being in a state of fear predisposes individuals to interpret events and their environment with increased pessimism and negativity (Lerner and Keltner, 2001; Lerner, Small, and Loewenstein, 2004). Taken together, markets that contain elements of fear are thus more likely to lead market participants to pay closer attention and negatively overreact to events than participants in markets containing little to no fear.

Based on these considerations, it seems likely that at least some amount of fear would need to be present already in the market for my original Hypothesis 1 to hold. In particular, market participants would need to be aroused enough to actually pay attention to the Fed speeches, and this heightened attention may in turn lead to greater scrutiny of backing-related talk and more pessimism about the presumably unstable Federal Reserve System. If this is theoretically the case, then the removal of this fear from the market should diminish this predicted effect. Specifically, when there are low levels of fear leading up to a Fed speech, I argue that market participants will likely be paying less attention to the speech, and that the attention they do allocate will involve less scrutiny of any included backing-related talk. Indeed, the Fed stating their assumptions in an environment that contains low levels of fear will increase the likelihood that market participants will interpret the Chairperson's overall message in a more positive and less pessimistic way. In other words, this lack of heightened emotion in people's baseline will thus provide a safer and less reactive set of conditions in which to expose these assumptions. The Fed Chairperson therefore should be able to discuss the backing directly without producing market uncertainty so long as there are low levels of fear prior to the speech.

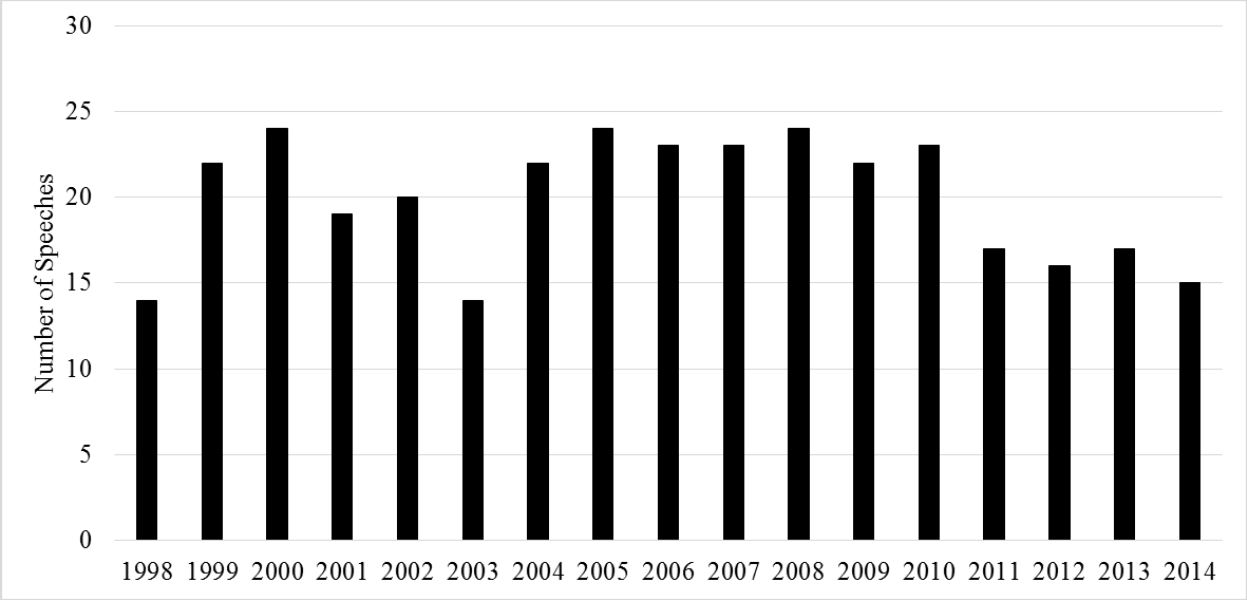
Hypothesis 3. Low levels of fear prior to the Fed Chairperson's speech will weaken the positive effect of the ASR on market uncertainty.

METHODS

Sample

My initial sample consisted of all Fed Chairperson speeches given between January 1, 1998 and December 31, 2014, totaling 344. Five speeches were removed because, based on an outlier analysis, their studentized residuals exceeded plus or minus three. While the findings remain consistent with outliers included, I removed them because the average spike in market uncertainty on these days was 10 times that of all other days. To examine why and also to validate further the reasonability of removing these outliers, I examined what happened in the markets on these particular days. Unsurprisingly, I found that extreme market events co-occurred with the Fed speeches on these days that both significantly increased uncertainty (i.e., Greece's sovereign credit rating downgraded to junk, 2010 Flash Crash, and Italy's borrowing costs hit all-time record high) as well as decreased uncertainty (i.e., Eurozone approved Greece loan, and US Supreme Court announces long-awaited ruling). The final sample thus consisted of 339 speeches. Of these, 159 were given by Alan Greenspan, 166 by Ben Bernanke, and 14 by Janet Yellen (see Figure 3).

FIGURE 3 – Fed Chairperson Speeches from 1998 - 2014



Endogeneity

In the ideal experiment, I would be able to randomly assign the ASR of Fed speeches and observe the change in the level of market uncertainty on the day of the speech. Since I am unable to perform this ideal experiment, I face a situation in which market factors that influence market uncertainty may also influence how the Fed talks. I acknowledge that Fed speeches can be influenced by some market factors, since the Fed's job is to pay attention and respond to market conditions. However, we also know that the Fed's communication, over and above these existing factors, can independently influence market uncertainty (Cruikshank and Sicilia, 1999; Nikkinen and Sahlström, 2004; E.-T. J. Chen and Clements, 2007). Therefore, my empirical design tries to isolate this independent effect specifically with respect to the ASR. I also report the results from a number of supplementary tests to provide further evidence of the robustness of my main findings.

Dependent Variable

I measure *market uncertainty* using the VIX volatility index. The VIX is a daily index calculated by the Chicago Board Options Exchange "by averaging the weighted prices of S&P 500 puts and calls over a wide range of strike prices" (Chicago Board Options Exchange, 2003: 2). The VIX thus represents option traders' estimates of the direction of the S&P 500 over the next month by providing an aggregate measure of the dispersion or variance of option prices on any given day. The higher the variance across option traders' beliefs about where the market will go in the next month, the more uncertainty there is in the market. The VIX is an appropriate measure for market uncertainty for three reasons. First, the VIX is the world's premier barometer for measuring expected market volatility (Chicago Board Options Exchange, 2003). And since scholars and market participants interpret expected volatility as the market's expectation of the average volatility over the remaining life of the option contract (Merton, 1973), it is reasonable that the uncertainty is reflected in this measure (Nikkinen and Sahlström, 2004). Second, the VIX is the standard approach finance scholars use to measure market uncertainty (Connolly, Stivers, and Sun, 2005; Ang et al., 2006; Andersson, Krylova, and Vähämaa, 2008; Bia'lkowski, Gottschalk, and Wisniewski, 2008). Third, option traders represent a highly educated and sophisticated audience and are important participants within this highly specialized discourse about United States monetary policymaking.

To remain consistent with existing finance research that examines the impact of Fed communication on the VIX (Nikkinen and Sahlström, 2004; E.-T. J. Chen and Clements, 2007; Nikkinen, Sahlström, and Äijö, 2007; Jamali, 2009; Vähämaa and Äijö, 2011), I use a two-day event window (t_{-1} to t_0) to measure the change in market uncertainty produced by a Fed speech.[1]

[1] A two-day event window is more appropriate than shorter event windows, like 15-minutes (Ederington and Lee, 1993) or 45-minutes (C. R. Chen, Mohan, and Steiner, 1999), because of the type of information I am examining.

That is, I measured the change in the VIX from the market close on the day before the speech to the market close on the day of the speech. The speech date was determined by the date and time stamp on the speech itself, and corroborated with the date and time information I received from my Freedom of Information Act Request No. G-2015-00191. I employ the following regression model:

$$\ln(VIX_{it}/VIX_{it-1}) = \alpha + \beta ASR_{it} + \eta Controls_{it} + \varepsilon_{it}$$

Independent Variables

Argument structure ratio. Speeches were coded for their ASR by the author and three business school undergraduate students with familiarity on macroeconomics and monetary policy. The coding process followed five steps, consistent with recommendations for content analysis (Neuendorf, 2001; Krippendorff, 2003). First, I wrote a detailed manual for how to code for the ASR, which was used to train the three undergraduate coders. Second, we engaged in pilot coding. To do so, all four coders coded 20 speeches (five at a time) independently and we subsequently discussed our coding decisions until we reached a consensus on each speech. Third, we engaged in reliability coding. To do so, all four coders coded 60 speeches, or 18 percent of the final sample, which is an appropriate number in this context (Krippendorff, 2003: 240). Interrater reliability was acceptable (Krippendorff's alpha = 0.88) (Hayes and Krippendorff, 2007), suggesting consistency across the four coders. Fourth, we engaged in independent coding.

These shorter event windows studies examine how the market reacts to a single information point released at the same time of the day (e.g., unemployment rate). The information I am examining is not a single number or decision, but instead a speech that takes some time to be digested by the market. A two-day event window is also more appropriate than longer event windows, like 15 or 30 days, because the VIX is a sensitive measure that absorbs information quickly. This makes longer event windows more empirically challenging when trying to control for alternative influences. Because of this, scholars that examine VIX over periods of time longer than a few days are typically exploring only correlational relationships between the VIX and other macroeconomic factors (e.g., Connolly, Stivers, and Sun, 2005; Andersson, Krylova, and Vähämaa, 2008), and not looking at changes in the VIX during an event window as I am here.

To do so, the remaining speeches were randomly assigned to one of the four coders. Fifth, to validate ongoing interrater reliability, I randomly selected ten speeches towards the end of our independent coding that we again all coded, noting no substantial deviations from original reliability testing (Krippendorff's alpha = .84).

The unit of analysis of the ASR is the speech, calculated by the following formula:

ASR = (number of arguments that expose the backing / total number of arguments)

There are two considerations to keep in mind. First, a ratio is used instead of the raw number of arguments that expose the backing because the relative influence of a single backing-related argument will differ substantially depending on the length of the overall speech. Second, following prior work (e.g., Green et al., 2009), we coded each paragraph as one argument. Conceptually, the paragraph was the appropriate unit of data collection because people regularly cluster their arguments into paragraph form, which is especially true in formal speeches when they are trying to enhance transitional clarity for their audience. Pragmatically, coding at a finer-grained level (e.g., each individual sentence) would be challenging. Since on average there were 25 paragraphs per speech, and 6 sentences per paragraph, we would have gone from manually coding over 8,000 paragraphs to coding over 50,000 sentences. Moreover, since the majority of paragraphs remained clearly at one of these two levels, this further validated the reasonableness of the paragraph as an appropriate unit of data collection. For the handful of paragraphs that were less clear cut, all coders followed the same general rule: If the Fed Chairperson exposed the backing *at all*, the paragraph was coded as arguing about the rules of the game.

For a paragraph to be coded as arguing within the rules of the game (i.e., the backing was not exposed), the Chairperson must engage only in the structural components of data or warrants to draw conclusions about a claim. However, they need not engage in all three components. Most

frequently, the Chairperson provided some sort of evidence about actions that they have taken or economic-related metrics they have collected in order to make some sort of a claim about the state of the economy. For instance, in a speech on September 26, 2005 to the American Bankers Association, Chairperson Greenspan makes an initial claim, supports this claim with data, and then reasserts the claim.

> This enormous increase in housing values and mortgage debt has been spurred by the decline in mortgage interest rates, which remain historically low (*claim*). Indeed, the thirty-year fixed-rate mortgage, currently around 5 3/4 percent, is about 1/2 percentage point below its level of late spring 2004, just before the Federal Open Market Committee (FOMC) embarked on the current cycle of policy tightening (*data*). This decline in mortgage rates and other long-term interest rates in the context of a concurrent rise in the federal funds rate is without precedent in recent U.S. experience (*claim*) (Greenspan, 2005).

Similarly, in a speech on January 3, 2014 to the American Economic Association, Chairperson Bernanke makes an initial claim and then supports this claim with a variety of data.

> The economy has made considerable progress since the recovery officially began some four and a half years ago (*claim*). Payroll employment has risen by 7-1/2 million jobs from its trough (*data*). Real GDP has grown in 16 of 17 quarters (*data*), and the level of real GDP in the third quarter of 2013 was 5-1/2 percent above its pre-recession peak (*data*). The unemployment rate has fallen from 10 percent in the fall of 2009 to 7 percent recently (*data*). Industrial production and equipment investment have matched or exceeded pre-recession peaks (*data*) (Bernanke, 2014).

For a paragraph to be coded as arguing about the rules of the game (i.e., the backing was exposed), the Chairperson at some point must explicitly and directly engage the backing. This most frequently occurs when the Chairperson reflects on the nature and boundaries of monetary policy objectives and conventional tools. For instance, in a speech on October 18, 2011 at the Federal Reserve Bank of Boston's 56th Economic Conference, Chairperson Bernanke reaffirms the Fed's dual Congressional mandate, followed by a discussion about how inflation targeting fits into their monetary policy framework.

> The Federal Reserve is accountable to the Congress for two objectives—maximum employment and price stability, on an equal footing—and it does not have a formal, numerical inflation target. But, as a practical

> matter, the Federal Reserve's policy framework has many of the elements of flexible inflation targeting. In particular, like flexible inflation targeters, the FOMC is committed to stabilizing inflation over the medium run while retaining the flexibility to help offset cyclical fluctuations in economic activity and employment (*backing*) (Bernanke, 2011).

Similarly, in a speech on April 16, 2014 to the Economic Club of New York, Chairperson Yellen discusses the challenges of monetary policy when the primary conventional tool—the federal funds rate—is pinned near zero. Yellen discusses how the Fed was forced to expand the boundaries of their monetary policy toolkit and consider alternative, perhaps less conventional tools.

> The idea that monetary policy should react in a systematic manner in order to blunt the effects of shocks has remained central in the FOMC's policymaking during this recovery. However, the application of this idea has been more challenging. With the federal funds rate pinned near zero, the FOMC has been forced to rely on two less familiar policy tools the first one being forward guidance regarding the future setting of the federal funds rate and the second being largescale asset purchases. There are no time tested guidelines for how these tools should be adjusted in response to changes in the outlook. As the episodes recounted earlier illustrate, the FOMC has continued to try to adjust its policy tools in a systematic manner in response to new information about the economy. But because both the tools and the economic conditions have been unfamiliar, it has also been critical that the FOMC communicate how it expects to deploy its tools in response to material changes in the outlook (*backing*) (Yellen, 2014).

Speech positive tone. Following existing work (Pfarrer, Pollock, and Rindova, 2010; Rhee and Fiss, 2014), I used text analysis software Linguistic Inquiry and Word Count (LIWC) to create an index that captures the relative amount of positive emotional words in relation to all the words in the speech. Positive emotional content is captured using a dictionary approach, whereby words psychometrically related to positive emotion (e.g., happy, good, nice, positive, great, favorable, etc.) are compared against all the words in each Fed speech. This positive emotion word dictionary was compiled and validated by Pennebaker and his colleagues (2007; 2007; 2010).

Audience Fear. I was granted full access to the Thomson Reuters Market Psych Indices database. This proprietary database contains daily indices on 48 different emotions present in the

United States media from January 1, 1998 to present. Every five minutes, their algorithms scrape business news media sources using word dictionaries associated with these 48 emotions. At the end of the day, an average is taken to create a daily index for each market emotion. Their business news sources include Reuters and top business print newspapers, as well as Internet business news sources starting in 2005. For the purposes of this paper, I am using the daily fear index (e.g., containing words like worrisome, concerning, anxious, fearful, panicky, etc.). While it would have been ideal to have a direct measure of option traders' fear, no such measurement exists. However, option traders and other market participants pay careful attention to the business news media (Pollock and Rindova, 2003), making this a reasonable proxy for audience fear. I constructed an audience fear variable by taking the average of the fear index over a three-day window (t_{-3} to t_{-1}) before the day of the speech, thereby capturing the market's emotional baseline from which they would hear the speech.[2]

Control Variables

To remain as orthodox in my research design as possible, I controlled for key variables in organization theory research on strategic communication as well as in financial economics research on the Fed and the VIX. I also added control variables unique to my specific research question that may play a conceptually meaningful role. I grouped these control variables into three categories based on distinct theoretically-driven concerns underlying my research design.

Existing market conditions. First, I controlled for conditions present in the market before each Fed speech that could simultaneously influence the ASR of these speeches and produce changes in market uncertainty directly. For instance, I controlled for existing market uncertainty

[2] To provide additional comfort surrounding the accuracy and reasonableness of this audience fear variable, I also validated that this measure correlated with other Thomson Reuters Market Psych emotional indices in the way that one would expect during the same three-day window. As expected, fear positively correlated with gloom (r = 0.77) and stress (r = 0.81) and negatively correlated with sentiment (r = -0.46) and optimism (r = -0.54).

prior to the speech because greater preexisting uncertainty could encourage the Fed to talk more about their backing and, at the same time, increase future variation in the VIX. I calculated the *VIX raw* by taking its 30-day average prior to each speech. I also controlled for existing market conditions directly linked to Fed policies. Specifically, I controlled for the *unemployment rate* and *inflation rate* because they are market indicators of the Fed's operations and performance with regard to their dual mandate of maximizing employment and maintaining price stability, respectively. I gathered this data from the Bureau of Labor Statistics. Since using average monthly rates prior to each speech created issues of multicollinearity but did not change my findings, I decided instead to use the slope of the previous six months unemployment and inflation data. While not ideal, this control variable has the added benefit of capturing the direction the economy appears to be moving rather than the static values of unemployment and inflation.

I also controlled for whether the prevailing monetary policy conditions reflected an *expansionary* or *contractionary* time period. If the most recent FOMC meeting resulted in lowering the federal funds rate (e.g., expansionary monetary policy), the observation was coded "1," otherwise it was coded "0." If the most recent FOMC meeting resulted raising the federal funds rate (e.g., contractionary monetary policy), the observation was coded "1," otherwise it was coded "0." Moreover, since 2008 there have been increasing levels of dissent within these FOMC meetings (Plosser, 2015; Hilsenrath, 2016). The level of dissent across the 12 voting members in these meetings could provide an important signal about the legitimacy of the monetary policy framework, prompt the Chairperson to discuss their backing in future speeches, and create more uncertainty in the market. Besides the Chairperson, the voting members include the six other Governors from the Board in Washington, D.C. and five rotating Presidents from

regional banks (with the New York Fed president always voting). Since Governors are part of the Board in D.C. but regional Presidents are not, the meaning of a dissent from these two parties may indicate different things to the market. As such, I controlled for *dissent governor* and *dissent president* separately by counting the number of dissenting votes from each group at the last FOMC meeting prior to each speech.

I also controlled for several conditions surrounding the Fed speech itself. For instance, I controlled for the *speech location* because speeches given in Washington, D.C. may contain qualitatively different messages than speeches given elsewhere around the world. Indeed, Washington, D.C. has been the headquarters of the Federal Reserve System since its inception in 1913 and is also the meeting location of the FOMC. For these reasons, Washington, D.C. is considered both domestically and internationally the epicenter of central banking and monetary policymaking. I coded speeches located in Washington, D.C. as "1," otherwise "0." Finally, consistent with work in finance that suggests that releasing new information into the market earlier in the week produces more volatility (Chang, Pinegar, and Ravichandran, 1993; Dubois and Louvet, 1996; Choudhry, 2000; Connolly, Stivers, and Sun, 2005), I controlled for the *weekday* on which the speech took place. Speeches given on Mondays were coded as "1," Tuesdays as "2," and so on.

Contemporaneous information. Second, I controlled for new information released into the market around the same time as when the Fed speech is given because such information could hypothetically be correlated with the ASR of the speech and more importantly directly impact market uncertainty rather than the speech. Prior work suggests that three scheduled macroeconomic news releases have a major impact on the financial markets (Ederington and Lee, 1993; Nikkinen and Sahlström, 2004): the *Consumer Price Index report*, the *Producer Price*

Index report, and the *Unemployment report*. I compiled the dates of these major announcements from the Bureau of Labor Statistics. A dummy variable is created for each report, coded "1" if the report was released on the same day as the speech, "0" if not. I also control for additional information the Fed itself introduced into the market. I control for *BOG speeches* if a Governor also gave a speech on the same day as the Chairperson, *testimony* if another member of the Fed testified to Congress on that same day, and *press releases* if the public relations department at the Fed issued any type of press release on that same day. For each of these items, a dummy variable was coded "1" if the information was released on the same day as the speech, "0" if not.

Speech characteristics. Third, I also controlled for additional characteristics of the Fed speech itself that may be the source of change in market uncertainty rather than my ASR measure. Since longer speeches may contain more information for market participants to interpret, thereby reducing information asymmetry and uncertainty (Spence, 1973; Van Buskirk, 2012), I controlled for the *speech word count*. I also controlled for the actual level of *speech uncertainty* to ensure that it is not simply the Chairperson sounding more uncertain that is creating market uncertainty. I used the Financial Sentiments Dictionary created by Loughran and McDonaold (2011) to measure the percentage of words in each speech related uncertainty (e.g., uncertain, variability, depend, contingency, fluctuate, indefinite, etc.).

One prominent characteristic of Fed Chairperson communication that supposedly influences the market is called "Fedspeak," which according to former Fed Vice Chairperson Alan Blinder (2001) is complex, abstract, or vague language used by Fed Chairpersons to obfuscate sensitive subjects so as to avoid unnecessary market uncertainty. In an interview on September 16, 2007, Alan Greenspan referred to Fedspeak as an intentional form of "syntax destruction, which sounded as though [he] were answering the question but in fact had not" (60

minutes, 2007). I controlled for the three primary aspects of Fedspeak. I controlled for *speech complexity* using the Flesch-Kincaid reading grade level (Kincaid et al., 1975), which is used extensively in the field of education as well as in writing insurance and legal documents (McClure, 1987). The score is based on a formula that considers the total number of words, sentences, and syllables in a text, and produces the U.S. grade level required to understand that text. This measure comes as close as possible to Greenspan's notion of "syntax destruction." I controlled for *speech abstractness* using a word dictionary compiled and validated by Mergenthaler (1996) that contains a comprehensive list of abstract nouns (e.g., nouns often ending in –ism, -age, -ness, etc.). I controlled for *speech vagueness* using a partial dictionary compiled and validated by Hiller and colleagues (1969) that contains words that signal a lack of verbal clarity (e.g., maybe, various, perhaps, probably, etc.).

Researchers have suggested that the positive tone of communication cannot be understood in isolation from its negative tone (Pfarrer, Pollock, and Rindova, 2010). Thus, to control for how negative emotion contained in the speech may counteract the positive emotion used, I controlled for *speech net emotion* by using the LIWC index called "affect," which nets all positive emotional content (i.e., the variable noted above) with all negative emotional content.

Finally, I controlled for the topic of the speech. Since topics are inherently context-dependent, no a prior categories were available. To address this, I inductively derived topics by reading a randomized selection of 40 speeches, continually writing down possible topics as I read. After 40 speeches, I had a list of eight topics. I then read another randomized selection of 40 speeches to validate these topics, identifying a ninth topic. The nine topics were: the state of the economy, the financial crisis, financial literacy, central banking, the banking system, globalization, economic history, commencement addresses, and remarks based on special

occasions. I discussed these nine topics with my three research assistants who were intimately familiar with the context, noting no issues and no additional topics. One of the research assistants and I then coded all speeches using a forced-choice methodology with these nine topics, with interrater agreement of 99 percent. I controlled for these nine topics using dummy variables.

RESULTS

To conduct this event study analysis, I used OLS regression with topic- and year-fixed effects to estimate the effect of Fed speeches' ASR on market uncertainty.[3] Descriptive statistics and correlations for all variables are shown in Table 4. As the table shows, market uncertainty for the two-day window (t_{-1} to t_0) is negative. Comparing days with Fed speeches (M = -0.0051, SD = .06) to days without Fed speeches (M = 0.0000, SD = .07) shows a marginally significant difference, $t(4294) = 1.677$, $p < .10$, indicating that Fed speeches in general reduce the VIX Index by 0.5 percent. This provides preliminary evidence consistent with the financial economists' view that more communication reduces information asymmetries and thus reduces market uncertainty.

[3] Including speaker-fixed effects to this specification produces the same results. However, I remove them for my primary analyses because speaker-fixed effects correlate with year-fixed effects.

TABLE 4 – Descriptive Statistics and Pearson Correlation Statistics

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1.	Market uncertainty	-0.005068	0.06												
2.	ASR	0.23	0.22	0.09											
3.	Speech positive tone	3.42	1.01	-0.05	-0.08										
4.	Audience fear	0.0084	0.00	0.05	-0.22	-0.16									
5.	VIX raw	21.84	8.83	-0.01	0.05	0.05	0.19								
6.	Unemployment rate	0.0087	0.12	0.03	0.05	0.07	0.09	0.63							
7.	Inflation rate	-0.0174	0.26	0.02	-0.11	-0.07	0.15	-0.29	-0.40						
8.	Expansionary monetary policy	0.16	0.37	0.04	0.01	0.05	0.15	0.35	0.36	-0.09					
9.	Contractionary monetary policy	0.18	0.39	0.14	-0.17	-0.12	0.17	-0.28	-0.18	0.17	-0.20				
10.	Dissent governor	0.04	0.19	0.00	-0.10	0.00	0.13	0.06	-0.08	0.10	-0.08	0.16			
11.	Dissent president	0.47	0.64	-0.17	0.16	0.18	-0.20	-0.01	-0.12	-0.06	0.13	-0.28	0.01		
12.	Speech location	0.29	0.46	0.07	-0.10	0.18	-0.02	0.02	0.08	0.01	0.02	-0.01	-0.05	-0.03	
13.	Weekday	3.50	1.50	-0.16	0.00	-0.05	-0.04	-0.01	0.05	-0.01	-0.02	-0.02	-0.11	0.03	-0.16
14.	Consumer Price Index report	0.07	0.25	0.06	0.08	0.03	0.03	-0.03	-0.09	0.04	-0.02	-0.04	-0.05	0.02	0.06
15.	Producer Price Index report	0.06	0.24	0.14	0.05	-0.10	0.01	0.01	0.06	0.00	0.06	0.04	0.02	-0.04	0.08
16.	Unemployment report	0.05	0.23	-0.09	0.05	-0.02	-0.07	0.04	0.08	-0.03	0.01	0.06	-0.05	-0.05	-0.09
17.	BOG speeches	0.23	0.42	-0.01	-0.03	-0.11	0.11	-0.01	-0.01	0.02	0.05	0.08	0.01	-0.11	-0.01
18.	Testimony	0.08	0.28	0.05	-0.02	0.12	0.05	0.06	0.01	-0.04	-0.01	0.00	0.06	0.01	0.11
19.	Press releases	0.51	0.50	-0.06	0.06	0.07	-0.02	0.07	0.07	0.01	0.04	-0.05	0.06	0.13	0.16
20.	Speech word count	2667.45	1210.28	-0.06	0.23	-0.41	-0.01	0.06	0.09	-0.09	0.03	-0.08	-0.09	-0.03	-0.30
21.	Speech uncertainty	1.24	0.68	-0.01	0.08	-0.05	0.03	-0.08	-0.09	0.04	-0.05	0.05	0.02	0.02	-0.03
22.	Speech complexity	15.95	1.80	0.05	0.42	-0.27	-0.11	0.03	0.01	-0.07	0.00	-0.06	-0.05	0.09	-0.04
23.	Speech abstractness	10.18	1.62	-0.16	0.03	0.04	0.02	-0.07	-0.08	-0.04	-0.08	-0.04	-0.04	-0.02	-0.12
24.	Speech vagueness	1.12	0.37	-0.06	-0.08	-0.14	-0.08	-0.08	-0.07	0.00	0.05	-0.06	-0.05	0.04	-0.15
25.	Speech net emotion	5.22	1.13	0.02	0.13	0.70	-0.13	0.09	0.11	-0.06	0.08	-0.10	0.01	0.11	0.03

		Mean	SD	13	14	15	16	17	18	19	20	21	22	23	24
14.	Consumer Price Index report	0.07	0.25	0.03											
15.	Producer Price Index report	0.06	0.24	0.01	-0.07										
16.	Unemployment report	0.05	0.23	0.22	-0.06	-0.06									
17.	BOG speeches	0.23	0.42	0.10	0.02	0.01	-0.07								
18.	Testimony	0.08	0.28	-0.05	-0.04	0.10	-0.02	-0.06							
19.	Press releases	0.51	0.50	-0.23	0.03	0.03	-0.08	-0.03	0.06						
20.	Speech word count	2667.45	1210.28	0.02	0.01	0.03	0.00	0.00	-0.11	-0.03					
21.	Speech uncertainty	1.24	0.68	0.14	0.12	0.05	-0.08	0.07	0.05	-0.04	0.11				
22.	Speech complexity	15.95	1.80	0.01	0.04	-0.02	0.00	-0.08	0.02	-0.05	0.36	-0.01			
23.	Speech abstractness	10.18	1.62	0.05	-0.05	0.07	-0.01	-0.01	-0.03	-0.03	0.09	0.12	-0.06		
24.	Speech vagueness	1.12	0.37	-0.02	0.03	-0.04	-0.06	-0.07	-0.06	0.02	0.28	0.02	-0.05	0.08	
25.	Speech net emotion	5.22	1.13	-0.06	0.10	-0.01	-0.04	-0.05	0.03	0.03	-0.07	0.01	-0.14	0.09	-0.04

Note: 339 speeches from 1/1/1998 - 12/31/2014. Correlations above absolute value of 0.11 (0.14) are significant at 0.05 (0.01) for two-tailed test.

I also find that the mean for ASR is 0.23, as seen on Table 4, which indicates that speeches tend not to expose the backing most of the time (since the ASR ranges from 0 to 1). This is reasonable given most of our everyday language does not discuss directly our fundamental taken-for-granted assumptions. Greenspan's ASR (0.16) did however differ from Bernanke's (0.29) and Yellen's (0.27). Figure 2, which recall charts the average ASR for each year during the sample period, suggests that major external influences like the Financial Crisis of 2008 may have encouraged Bernanke and Yellen to discuss the assumptions underlying monetary policy more often. Yet this figure also demonstrates a degree of construct validity for the ASR because institutional theorists have suggested that discussion of institutional assumptions may increase as the cognitive legitimacy of a given system declines (Green, Li, and Nohria, 2009; Harmon, Green, and Goodnight, 2015), which is what occurred during the Financial Crisis of 2008.

Table 5 reports the results of the OLS regression models. Model 1 represents the baseline model, which includes only control variables. Examining patterns within these variables validates several expectations we should have about trends in the data. For instance, consistent with the financial economics view of communication (Van Buskirk, 2012), I find that longer speeches reduce market uncertainty. Speeches given earlier in the week also produce more uncertainty than speeches given later in the week, a finding consistent with prior finance research (Connolly, Stivers, and Sun, 2005). In line with the anticipated aims of engaging in Fedspeak (60 minutes, 2007), more abstract speeches reduce market uncertainty. Furthermore, signals related to potential disruptions in the economy—time periods of contractionary monetary policy—also relate to increases in market uncertainty as one might expect. Interestingly, increased dissent from regional presidents in the last FOMC meeting leads to reductions of uncertainty on Fed

speech days. This may be because dissent from the regional president creates uncertainty about the specific situation inside the Fed that may dissipate once the Chairperson gives a speech and reassures the market.

TABLE 5 – Regression Models Predicting Market Uncertainty (t_{-1} to t_0)

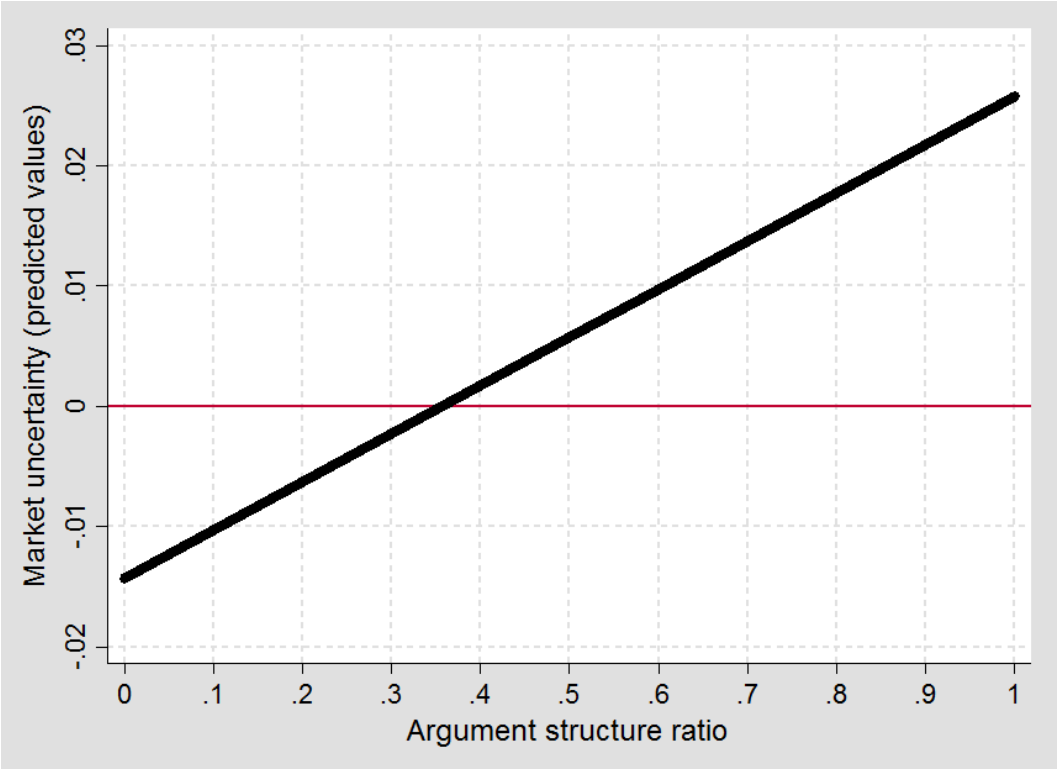
	Model 1	Model 2	Model 3	Model 4	Model 5
ASR		0.040***	0.030**	0.046***	0.035**
		(0.017)	(0.017)	(0.018)	(0.018)
Speech positive tone			-0.012**		-0.011**
			(0.006)		(0.006)
ASR * Speech positive tone			-0.044***		-0.040**
			(0.018)		(0.018)
Audience fear				-2.247	-2.829
				(2.776)	(2.697)
ASR * Audience fear				28.448***	23.698**
				(11.356)	(10.874)
VIX raw	0.000	0.000	0.000	0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Unemployment rate	0.021	0.024	0.019	0.025	0.020
	(0.059)	(0.059)	(0.060)	(0.059)	(0.060)
Inflation rate	0.013	0.016	0.015	0.016	0.016
	(0.015)	(0.015)	(0.016)	(0.015)	(0.016)
Expansionary monetary policy	-0.000	0.002	0.003	-0.002	-0.001
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Contractionary monetary policy	0.023*	0.025*	0.025*	0.025*	0.025**
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Dissent governor	0.008	0.009	0.007	0.014	0.011
	(0.019)	(0.019)	(0.019)	(0.019)	(0.018)
Dissent president	-0.021***	-0.021***	-0.019***	-0.018***	-0.017**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Speech location	-0.003	-0.001	0.000	-0.002	-0.001
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Weekday	-0.006**	-0.005**	-0.006**	-0.005**	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Consumer Price Index report	0.017	0.014	0.015	0.018	0.018
	(0.016)	(0.016)	(0.015)	(0.015)	(0.014)
Producer Price Index report	0.030*	0.027	0.025	0.026	0.024
	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)
Unemployment report	-0.016	-0.019	-0.015	-0.018	-0.015

	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)
BOG speeches	-0.001	-0.002	-0.003	-0.000	-0.002
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Testimony	0.005	0.006	0.013	0.012	0.017
	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)
Press releases	-0.010	-0.010	-0.010	-0.008	-0.008
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Speech word count	-0.000**	-0.000**	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Speech uncertainty	0.002	0.001	0.000	-0.000	-0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Speech complexity	0.002	0.001	0.000	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Speech abstraction	-0.005***	-0.006***	-0.006***	-0.006***	-0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Speech vagueness	-0.002	-0.000	-0.002	-0.002	-0.003
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Speech net emotion	0.000	-0.000	0.005	-0.001	0.004
	(0.003)	(0.003)	(0.005)	(0.003)	(0.005)
Constant	0.036	0.055	0.047	0.057	0.041
	(0.049)	(0.049)	(0.050)	(0.050)	(0.050)
Observations	339	339	339	339	339
R-squared	0.244	0.256	0.279	0.277	0.296
Adjusted R-squared	0.127	0.139	0.160	0.158	0.173
df	45	46	48	48	50
Average model VIF	2.38	2.38	2.48	2.40	2.50

Note: Results show robust regressions with robust standard errors in parentheses. Significance tests are one-tailed for directional hypotheses, two-tailed for control variables. All models include year- and topic-fixed effects.
*** p<0.01, ** p<0.05, * p<0.1

Model 2 adds the focal independent variable to test Hypothesis 1, which predicted that the ASR of Fed Chairperson speeches will be positively associated with market uncertainty. Consistent with this hypothesis, I find support across all models for the idea that the more the Chairperson exposes the institution's fundamental assumptions to direct examination, the more market participants become uncertain (see Figure 4). What this means is that a one standard deviation increase in ASR (i.e., 0.22) will increase market uncertainty (i.e., the VIX Index) on the day of the speech by 0.90 percent.

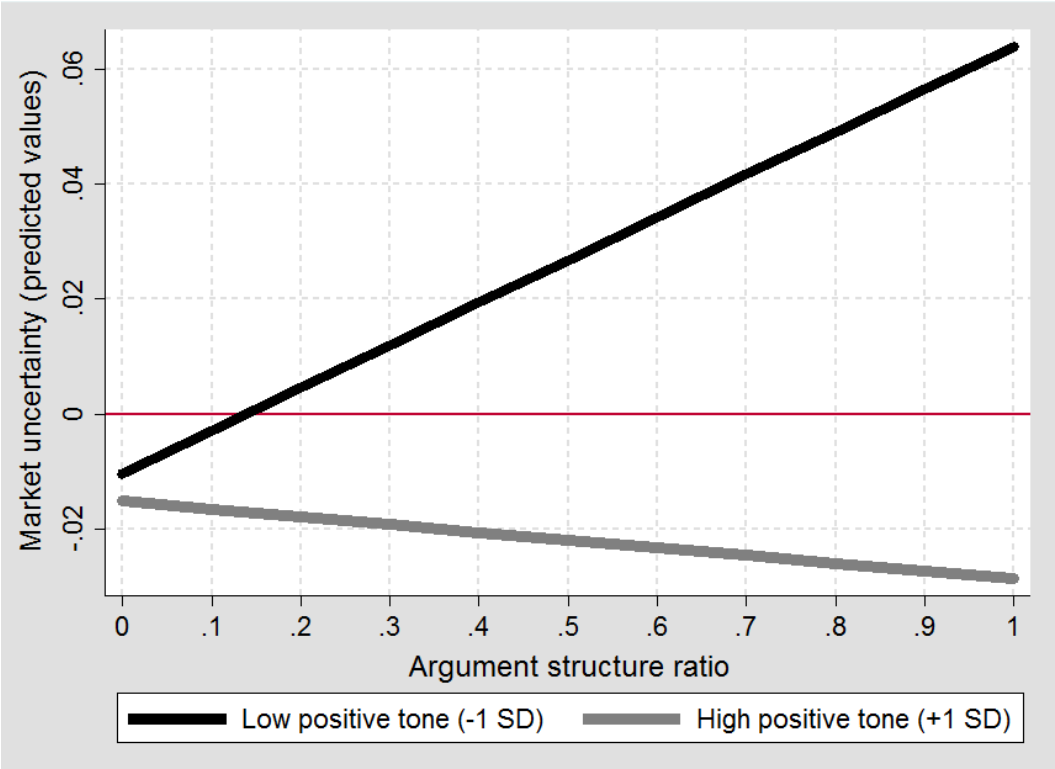
FIGURE 4 – Main Effect of ASR on Market Uncertainty



Model 3 adds the first moderating variable and interaction term to test Hypothesis 2, which predicted that the positive tone of the Fed Chairperson's speech will weaken the positive effect of ASR on market uncertainty. I find that the positive tone of the speech had an independent negative effect on market uncertainty, suggesting that more positive speeches tend to decrease market uncertainty, a finding that we would expect based upon prior literature. I also find a significant interaction (see Figure 5), which indicates that as the positive tone of the speech increases, the positive effect of ASR on market uncertainty decreases, thus supporting Hypothesis 2. In addition, the economic significance of the ASR's impact increases when there is a *low* amount of positive tone in a speech. Specifically, when a speech's positive tone is one

standard deviation *below* its mean, a one standard deviation increase in ASR (i.e., 0.22) will increase market uncertainty (i.e., the VIX Index) on the day of the speech by 1.72 percent.

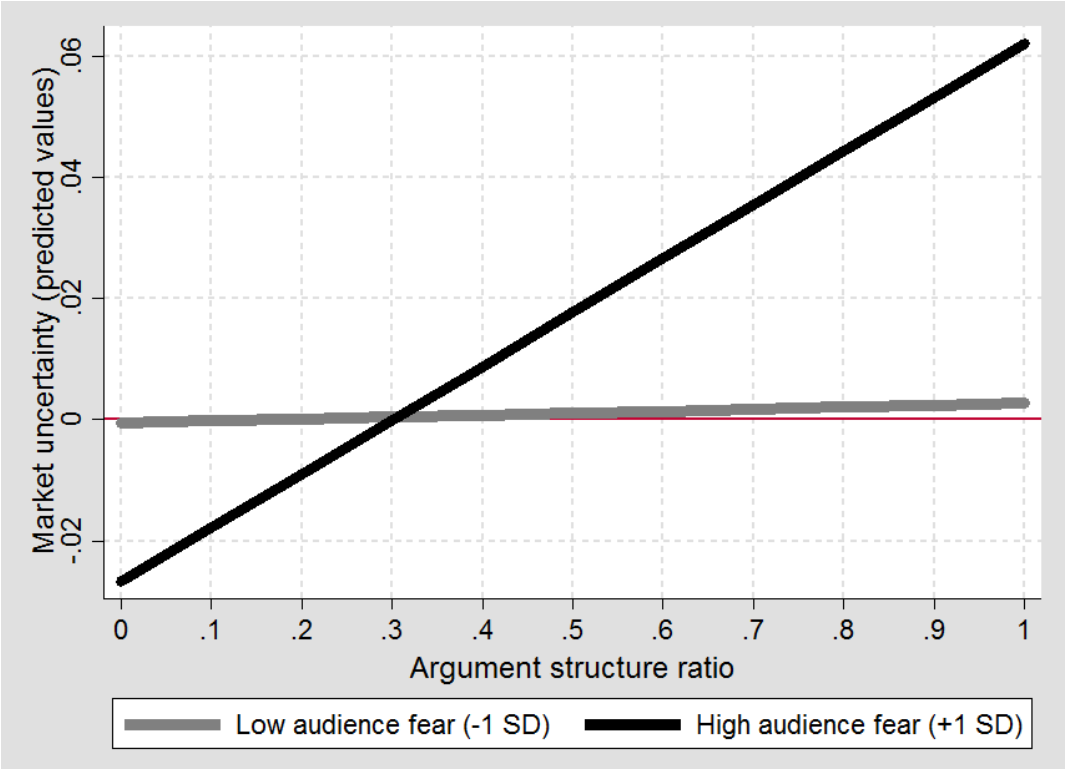
FIGURE 5 – Interaction between ASR and Speech Positive Tone



Model 4 adds the second moderating variable and interaction term to test Hypothesis 3, which predicted that low levels of fear prior to the Fed Chairperson's speech will weaken the positive effect of ASR on market uncertainty. I find that this hypothesis is also supported by evidence of a significant interaction (see Figure 6). This suggests that when the audience's fear prior to the speech is high, the positive association between ASR and market uncertainty holds. However, when the audience's fear is low, this relationship is mitigated, providing support for Hypothesis 3. Moreover, the economic significance of the ASR's impact also increases when there is a *high* degree of audience fear before a speech. Specifically, when the audience's fear is

one standard deviation *above* its mean, a one standard deviation increase in ASR (i.e., 0.22) will increase market uncertainty (i.e., the VIX Index) on the day of the speech by 2.03 percent.

FIGURE 6 – Interaction between ASR and Audience Fear



Endogeneity Considerations

There are two general endogeneity concerns with regard to this research design. The first relates to reverse causality, where changes in market uncertainty on the day of the speech influence the ASR of the Fed speech given that day. Conceptually, this concern faces a temporal disconnect between when the speeches are written and presented. Speeches are typically written several weeks in advance (Bernanke, 2015) and are not released publicly until the time the speech begins. As such, changes in market uncertainty on the day of a speech are unlikely to influence the writing of that speech weeks beforehand. Empirically, my research design also

controlled for market uncertainty prior to each speech, providing additional comfort surrounding this concern for reverse causality.

The second and perhaps more pertinent concern relates to the presence of a confounding variable, where something simultaneously influences the ASR of Fed speeches and market uncertainty in the exact manner as predicted. I address this concern conceptually, empirically, and with a lab experiment. Even though I of course cannot completely remove this concern, my hope is that these tests when considered together provide reasonable comfort regarding the predicted and observed relationship between the ASR of Fed speeches and market uncertainty.

Conceptual tests. In order for the concern regarding a confounding variable to hold, we should theoretically expect that market conditions that are likely to create uncertainty will also lead the Fed to talk more about the backing. However, I find that the Fed actually exhibits the opposite tendency. As Table 4 indicates, the economy being in a time of contractionary monetary policy relates to increases in market uncertainty (i.e., positively correlates at 0.14) but to decreases in the ASR of Fed speeches (i.e., negatively correlates at 0.17). In other words, the Fed actually seems to avoid talking about the backing under the precise conditions that are most likely to produce the most uncertainty. This is further validated by the fact that ASR increases when fear is diminishing (i.e., negatively correlates at 0.22). The tendency to behave in this way is suggestive of the fact that the ASR could be a strategic choice on the Fed's part, since it somewhat makes sense to stop talking about sensitive assumptions if the market is already anxious. This observation however does make the existence of a confounding variable less likely.

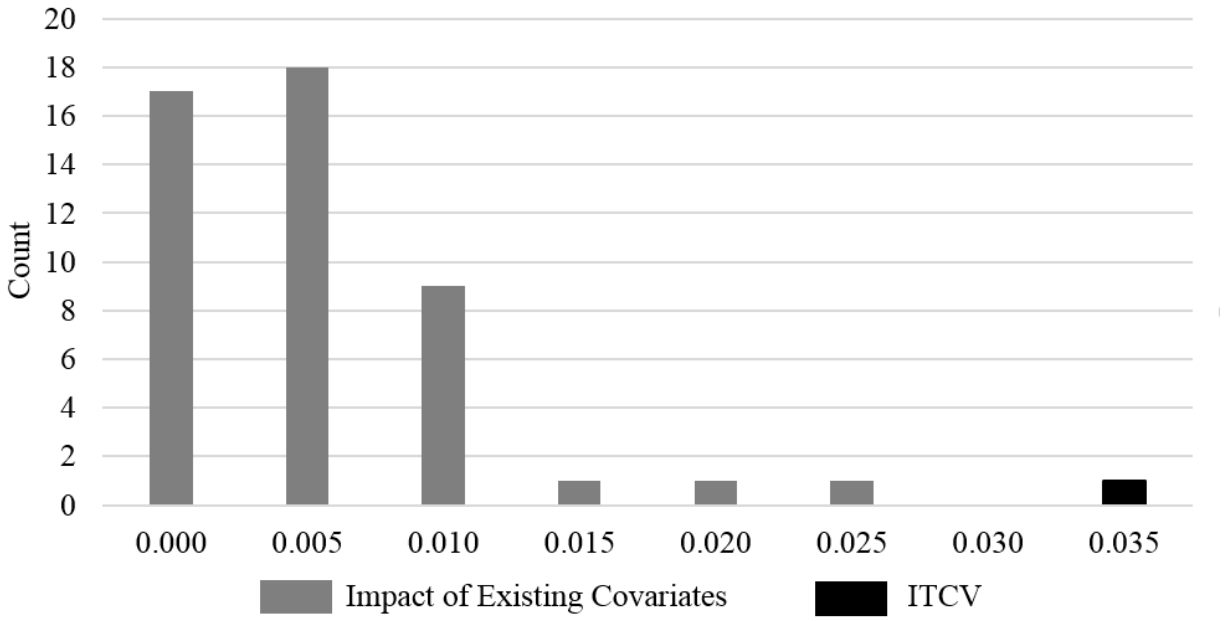
Furthermore, if the ASR of Fed speeches is just a reflection of the existing conditions present in the market rather than a strategic choice, then we should expect the ASRs of speeches

given temporally near one another to be similar. To examine this expectation, I took all 339 speeches and calculated the number of calendar days between each of them. I selected speech pairs that were within three days of one another. There were 55 pairs meeting this condition, for a total of 110 speeches. When comparing these proximal speeches, I found that the average difference in ASR between each pair was 0.21 (or roughly one standard deviation), and that the second speech in 25 of the 55 pairs had a higher ASR. These observations violate the expectation that market conditions are the primary determinant of the ASR. To further validate this point, I reproduced support for Hypothesis 1 ($B = .067$, $p = .032$) despite the fact that the sample was only 110 speeches. This provides additional support that the ASR of Fed speeches is indeed influencing market uncertainty independently of existing market conditions.

Empirical tests. There are also several standard empirical methods that further mitigate concerns related to a confounding variable. As noted earlier, I controlled for all major variables in organization theory research on strategic communication, in financial economics research on the Federal Reserve and the VIX. Furthermore, even if one is unable to successfully identify, measure, and thus control for a potentially confounding variable, scholars have developed an empirical method to calculate how large this hypothetical confounding variable would have to be to invalidate the inferences made from his or her predictions (Frank, 2000). Following this approach, I first calculated the Impact Threshold for a Confound Variable (ITCV), which is the statistical size a confounding variable would have to be to invalidate the inference made in Hypothesis 1 by diminishing its effect to be below significance. In my study, a confounding variable would have to be positively correlated with both the ASR and market uncertainty at 0.18, making my ITCV equal to .033. Next, I compare the ITCV with the impact of all other covariates in my model (see Figure 7). When doing so, I find that the size of the confounding

variable needed to invalidate my results is between 3 – 10 times *larger* than every other standard control variable used in existing literature. This provides some additional comfort that identifying a variable this large, which would invalidate my inference, is somewhat less likely.

FIGURE 7 – Reference Distribution of Impact for Covariates



Lab experiment. I also conducted a controlled lab experiment that executed as close of the "ideal experiment" as possible, whereby I randomly assigned the exposure of backing to one condition and not the others. Since gaining access to the same audience as in the above analysis (i.e., option traders) is unlikely and unrealistic, I decided to conduct this test with everyday working adults. Using this audience however required that I change the argument that participants read from Fed speeches, which requires a reasonable level of economics and monetary policy familiarity, to a simple business-related statement about the profitability when

acquiring a company, which requires very little specialized knowledge. The clear downside to this design is that it does not test the same Fed speeches or same audience's reaction. However, in the context of the other analyses conducted here, the benefit of this experiment is that it tightly controls for alternative influences that could be at play in a non-experimental setting and importantly demonstrates a causal relationship between my independent and dependent variable.

I paid 120 Mechanical Turk workers $1 each to participate in an online study. These participants were 50 percent female, with an average age of 37 (SD = 10.98) and 14 years (SD = 10.93) of full-time work experience. Participants were randomly assigned into one of three conditions, each of which read a simple statement from a company about a recent acquisition decision and then answered the following question: "How uncertain are you that the acquisition of Company Alpha is a sound business decision?" Answers could range from 0 (not at all uncertain) to 100 (completely uncertain). The first condition was the baseline condition and contained a claim and one piece of data (note that the Toulmin labels were not seen by the participants): "We are acquiring Company Alpha (*claim*). This decision improves our financial performance (*data*)." The second condition contained the same claim and data, but also added a second piece of data: "We are acquiring Company Alpha (*claim*). This decision improves our financial performance (*data*). This will also allow us to reinvest our excess cash to benefit our shareholders directly (*data*)." Finally, the third condition contained the original claim and data, but instead added a direct statement about the backing: "We are acquiring Company Alpha (*claim*). This decision improves our financial performance (*data*). The basis for this decision is grounded in the assumption that profitability is what matters here (*backing*)." If the financial economics view is correct, then the second and third conditions should both reduce uncertainty because they contain more information than the baseline condition. However, if the theory I

developed here is correct, then the second condition should reduce uncertainty but the third condition should increase it.

The statistical test of interest here is not a comparison between condition means, but a comparison of their variances. While the mean in each of the three conditions represents the average level of individual level uncertainty, the variance in each condition represents the aggregate level of uncertainty of the audience as a representative collective (which is what the VIX Index is assessing). The appropriate statistical test to examine differences in variances is Levene's test (Levene, 1960). I control for gender, age, and number of years worked. As expected, the second condition ($M = 32.18$, $\sigma^2 = 413.74$) had a significantly lower variance than the first baseline condition ($M = 43.47$, $\sigma^2 = 734.41$), $F(1, 79) = 4.77$, $p = .032$. This comparison produced a significant difference in the means as well ($F(1, 79) = 4.626$, $p = .035$), suggesting that more data reduces the overall aggregate level of uncertainty as well as the average level of an individual's uncertainty. This supports the financial economics view. However, also as expected, the third condition had a significantly higher variance ($M = 44.00$, $\sigma^2 = 1175.90$) than the first baseline condition, $F(1, 79) = 6.22$, $p = .015$. This provides causal evidence from a tightly controlled experiment that exposing the backing can produce a greater variance across participants' reactions.

Robustness Checks

I conducted a number of robustness checks based on concerns that may arise given the time period of my data or the research design itself. For instance, since my data contains one of the largest financial crises of the last century, one might wonder if my findings are primarily driven by this unique time period rather than being a more stable effect. Including year fixed-effects should empirically control for this temporal variation in my dependent variable.

Nevertheless, to explore this even further, I first removed the year-dummy variables from my regressions and replaced them with a financial crisis period dummy. I explored period dummies of two years (i.e., 2007 – 2008), three years (i.e., 2007 – 2009), four years (2007 – 2010), and from 2007 on. In all cases, all three of my hypotheses were again strongly supported. Moreover, none of these dummy variables interacted with my ASR variable to predict market uncertainty. Furthermore, if I also add to these financial crisis period dummies a year-continuous dummy variable (i.e., 1998 = 1, 1999 = 2, etc.) to capture the trending effects of the economy getting worse over time, I again find consistent results. This indicates that my results are not driven by the financial crisis period and instead appear to be a stable mechanism across these years.

Yet other factors during the financial crisis may be influencing my results. Specifically, starting in late 2008 the Fed started to engage in unconventional monetary policy with something called quantitative easing. This represented a relatively unusual practice whereby the Fed purchased securities directly from the market in order to lower interest rates and increase the money supply. These purchases in turn were reflected on the Fed's balance sheet as assets, increasing nearly 500 percent between 2008 and 2014, from about $900 billion to over $4.5 trillion. It is fair to say that quantitative easing has thus influenced how the Fed views the boundaries of their own monetary policy framework and has also had a large impact on the broader market (Yang and Zhou, 2016). I tried to control for quantitative easing by taking the average total assets on the Fed's balance sheet for the month prior to each speech, but this produces issues of multicollinearity and thus I left it out of my primary analyses. Nevertheless, whether I include this variable with or without the year fixed-effects, I still find consistent support for all my predictions.

One might also question whether it matters how the Chairperson talks about the backing for this effect to hold. For example, while most of the time the Chairperson makes reflections about the existing backing in a very descriptive manner, at times he or she talks about changing the backing or what the backing may look like in the future. This sort of change- and future-oriented language is potentially different from descriptive statements about the existing system and may be what is primarily driving my effects. To examine this possibility, myself and one research assistant re-coded every single paragraph that exposed the backing to determine if it referred in any way to change or if it was future-oriented. Of all the paragraphs that exposed the backing, 9.3 percent related to change and 10.3 percent were future-oriented. I then calculated the percentage of backing-related paragraphs in each speech that referred to these two factors. Controlling for both of these considerations again produced consistent results, suggesting that it does not matter how the Chairperson talks about the backing per se, just that he or she exposes it.

One might also propose that just talking about the backing *itself* is unexpected and, thus, it is the unexpectedness and not the ASR of the speech that is driving my results. To explore this potential alternative mechanism, I created an *ASRChange* variable by subtracting a speech's ASR by the chronologically previous speech's ASR. If it is really the unexpectedness of talking about one's assumptions that is driving my results, then this newly created variable should predict market uncertainty, since a greater change in ASR from the last speech should be increasingly unexpected. However, running Model 2 with this new predictor variable produces a nonsignificant result ($p = .291$). I also re-ran Model 2 with this new variable as a control instead and it does not change my original results. This provides some evidence that it is not just the unexpectedness of talking about the backing that is driving my results, but again just the exposure of the backing itself.

Finally, I also validated that my results were robust in a number of additional ways. In particular, I would expect that my results should not hold for the two-day event window before the day of the speech (t_{-2} to t_{-1}) since the speech is not made public until the date and time denoted on the transcript. Consistent with this expectation, ASR did not predict market uncertainty ($B = .01$, $p = .631$) for this time period. Similarly, consistent with existing research that demonstrates that the influence of new information on the VIX Index does not typically last longer than one day (Nikkinen and Sahlström, 2004), I found that that the effect of the ASR dissipates in the two-day event window after the day of the speech (t_0 to t_{+1}) ($B = -.01$, $p = .636$). Lastly, I examined alternative specifications for a number of control variables to ensure that my results were robust to these changes. I tried using the actual federal funds rate as well as the change in this rate instead of dummy variables for expansionary and contractionary monetary policy, a two-day (t_{-2} to t_{-1}) and four-day (t_{-4} to t_{-1}) window for my audience fear variable instead of a three-day window, and several different windows (e.g., 15-day and 180-day) for calculating the average for VIX raw instead of a 30-day average. My findings remained consistent across these specifications.

DISCUSSION AND CONCLUSIONS

This study set out to examine how the market responds to communication from prominent actors when they expose an institution's assumptions to direct examination. Using all public speeches made by the Chairperson of the United States Federal Reserve from 1998 to 2014, I demonstrated that the more they make explicit the assumptions underlying the Federal Reserve System, the more their speeches produced uncertainty in the market. Moreover, since the Fed generally wants to avoid increasing uncertainty but at times must discuss these assumptions, I theorized how they might exploit the way emotion works in markets to achieve

both of these objectives simultaneously. Specifically, I showed how increasing the emotional positivity of their speeches and discussing these assumptions when there are low levels of fear in the market are two ways to avoid these undesirable market effects. I suggest that this study contributes a new perspective on the role of strategic communication in market contexts.

In particular, this work builds on but also substantially extends the social constructionist view of communication in markets. This still growing body of research tends to focus on identifying different communication strategies that operate *within* a set of institutionalized rules and assumptions that are taken as givens (Fiss and Zajac, 2006; Martens, Jennings, and Jennings, 2007; Lamin and Zaheer, 2012; Rhee and Fiss, 2014). It is true that these rules and assumptions underlying our social institutions are often left implicit and taken for granted in everyday life. But this of course is not always the case. What happens when prominent actors in that community start to expose these assumptions to public scrutiny? This is not a question scholars in this space have yet asked, perhaps in part because we academics also take certain assumptions as givens (e.g., like how strategic communication supposedly works). By pulling back our collective vantage point, this study seeks to expand our understanding of the possibilities for how communication interacts with our socially constructed institutions.

This study also provides an important qualification to the financial economics view of communication. This still dominant perspective contends that more communication should reduce information asymmetries between parties (Akerlof, 1970; Spence, 1973) and therefore reduce the overall level of uncertainty in the market (Van Buskirk, 2012). Although reversing this finding has seemed unlikely, there have been ways to mitigate this effect. For instance, communicating too much can produce a tapered-off effect because people cannot process all that new information (Graffin, Carpenter, and Boivie, 2011), and more communication about

something people already know may have no effect at all (Tetlock, 2007). However, this study points to a fundamental distinction in the communication itself—its structural level—that challenges this prevailing finding. Specifically, I show that more communication can actually increase uncertainty if it exposes the assumptions underlying the existing institution to direct examination. By pulling apart these two structurally distinct levels of communication, this study provides an important caveat to a dominant assumption for how information operates in markets.

The arguments made in this paper also further our understanding of how emotions operate in financial markets. While scholars have become increasingly interested in the role of emotion in these contexts (Tetlock, 2007; Pfarrer, Pollock, and Rindova, 2010; Rhee and Fiss, 2014), existing work has primarily emphasized how emotions amplify market reactions (Barberis, Shleifer, and Vishny, 1998; Baker and Wurgler, 2006). This study demonstrates how actors might leverage emotion to not only amplify but also suppress these reactions. In particular, while low amounts of positive tone and high levels of audience fear amplify market reactions when discussing the backing, I also find that increasing positive tone and talking when there are low levels of fear are ways to suppress this same reaction. By better understanding emotion—both in one's own communication and in the market itself—this study points to several ways actors might better control how an audience is likely to react.

More broadly, this work points to an important market-level outcome—uncertainty—that organizations may not always consider directly but could be important to success. Indeed, organizations tend to focus on the direction of their audience's evaluations, or their stock price, and how their actions or communications influence the change in this level of favorability towards their activities. Perhaps unsurprisingly, management theorists also tend to focus on stock price as their primary dependent variable when examining the symbolic impact of organizational

activities on the market (Fiss and Zajac, 2006; Martens, Jennings, and Jennings, 2007; Rhee and Fiss, 2014). However, organizations and scholars are also interested in an audience's aggregate level of uncertainty (Sanders and Boivie, 2004), which reflects the degree of social consensus underlying the audience's evaluation. By exploring the market uncertainty as an outcome, this study seeks to renew our theoretical and practical interest in the importance of social consensus underlying our institutions (Mead, 1962; also see Bitektine & Haack, 2015) and how organizations might directly impact their audience's overall level of agreement in their evaluations of their activities.

Implications for Institutional Theory

This study has several important implications for institutional theory. In particular, this work contributes to how we theorize and empirically examine the microfoundations of institutions. Institutional theorists have conceptualized the micro-level plumbing of institutions in a variety of different ways (Powell and Colyvas, 2008) by using frameworks based on emotion (Voronov and Vince, 2012; Creed et al., 2014), social psychological evaluations (Bitektine, 2011; Tost, 2011), interaction rituals (Gray, Purdy, and Ansari, 2015), and practices and performances (Smets, Morris, and Greenwood, 2012; Lok and De Rond, 2013). Several scholars have argued that communication may also be a promising approach to understand the microfoundations of institutions. For instance, Loewenstein, Ocasio, and Jones (2012) suggest that vocabularies—or a related collections of words—may be one possible way to understand the how meaning coheres within our institutions (e.g., Suddaby and Greenwood, 2005; Dunn and Jones, 2010).

I propose an alternative approach that conceptualizes *arguments* as the micro-level plumbing that maintains and changes our institutions. While vocabularies reflect the words

actors typically use in different institutionalized contexts, arguments inject agency into how actors use communication strategically to stabilize or destabilize institutions. In this sense, these approaches may actually be quite complementary in that arguments are precisely how actors use vocabularies to accomplish their goals. However, unlike the vocabularies approach, an argument approach importantly mirrors the structural depth and taken-for-granted nature inherent in our nested institutions (Friedland and Alford, 1991; Thornton, Ocasio, and Lounsbury, 2012). Specifically, argument structure reflects the underlying implicit meaning structure of our institutions, enabling scholars to actually observe whether or not actors make explicit these assumptions or not. This study thus provides a conceptual as well as empirical approach to link the taken-for-granted components of our institutions with the communicative aspects of everyday symbolic action.

This in turn may generate important insights for our understanding of cognitive legitimacy. While substantive forms of legitimacy (e.g., pragmatic and moral) are relatively simple to observe and measure because they reflect the presence of people's evaluation about an organization or action (Suchman, 1995; Bitektine, 2011; Tost, 2011), cognitive legitimacy reflects how much institutional actors take for granted the assumptions and thus actually represents the increasing absence of an evaluation itself (Green, Li, and Nohria, 2009). Indeed, things that are entirely cognitively legitimate are not questioned, considered, or thought of, representing a uniquely powerful form of legitimacy (Suchman, 1995). How then are we as scholars supposed to study or examine changes in cognitive legitimacy directly? This study proposes that the ASR is a conceptual and empirically observable component in our strategic communication that has a direct relationship with people's cognitive legitimacy and, by extension, the stability of our institutions. For instance, low ASR communication strengthens the

presumed cognitive legitimacy, reinforcing the taken-for-grantedness of the backing (Aldrich and Fiol, 1994: 652), and further stabilizing the very foundations of the institutions (Holm, 1995; Tost, 2011). In contrast, high ASR communication disrupts cognitive legitimacy because it makes explicit the very assumptions that were previously taken-for-granted, triggering mental alarms (Tost, 2011) or existential crises (Voronov and Vince, 2012), and increasing the risk for changes to the foundation of the institution (Holm, 1995; Suddaby and Greenwood, 2005).

Implications for the Sociology of Financial Markets

This study also makes an important contribution to a new but fast-growing literature on the sociology of financial markets (Lounsbury and Hirsch, 2010; Carruthers and Kim, 2011; Knorr Cetina and Preda, 2012). This body of work argues that financial economists failed to understand and prevent the recent collapse of the global financial system and looks to sociological insights to improve traditional theories of market behavior. One of the primary insights coming out of this work is that market behavior does not function the way we might think because prominent actors that oversee our system (e.g., top political officials, the Federal Reserve, regulatory committees, etc.) have become conditioned by the historically situated assumptions underlying our institutions (Rubtsova et al., 2010). Fligstein, Brundage, and Schultz (2014) adopt this line of thinking when they examined transcripts from the Fed's FOMC meetings, arguing that the Fed's "main analytic framework for making sense of the economy, macroeconomic theory, made it difficult for them to connect the disparate events that comprised the financial crisis into a coherent whole" (p. 2). Abolafia (2012) echoes this same thinking by arguing this historically conditioned thinking can translate into Fed communication being a source of technocratic control. Drawing on sociological notions of how discourse can be a conduit for hegemony (Bakhtin, 1982; Steinberg, 1999), Abolafia elicits the following warning:

> The danger is that proficient masters of spin become so confident in their technical discourse that the restraints of uncertainty and legitimacy are no longer sufficient to encourage prudent questioning of the current operating models. The result is that discourse dominates the dialectic of technical rationality and the pragmatism of expert judgment is neglected…The threat is that the domination of any technical discourse inhibits the power of judgment to the point where the discourse is performing the policy rather the experts operating a discourse (Abolafia, 2012: 112).

My findings suggest a potential problem with this overall line of thinking. In particular, I find that the Fed not only recognizes but also discusses the nature and boundaries of their framework or operating model (i.e., the backing) directly. It seems reasonable to expect that if the Fed was blinded entirely by their own assumptions as Fligstein and Abolafia suggest, then the Fed would not be discussing their backing at all and we should not observe any variation in the ASR. My finding may in part be due to the fact that I examined the Chairperson's personally-developed speeches rather than the FOMC meeting transcripts. Indeed, FOMC meetings are held primarily to discuss the operations and implementation of monetary policy and, thus, unsurprisingly tend to contain mostly conversations within the rules of the game (i.e., little direct discussion of the backing). In contrast, speeches are occasions where the Chairperson reflects more broadly about his or her beliefs regarding monetary policy operations and about the framework itself. My empirical results thus suggest that the Fed may have been more aware of their own framework's limitations than prior work has assumed (see Bernanke, 2015). Nevertheless, despite the fact that Greenspan and others' have openly acknowledged flaws in their monetary policy framework (PBS News Hour, 2008), being aware of these limitations is different than fixing them.

With that being said, my findings also point to the possibility that the Fed, whether intentionally or unintentionally, could still be using the ASR of their communication as a tool for market control. While my results primarily emphasize the effects of opening up the Fed's

assumptions to direct examination (i.e., high ASR speeches), *not* exposing the backing (i.e., low ASR speeches) may be thought of as an equally strategic decision to keep markets from raising questions, particularly in times of turmoil. Consistent with the themes in Abolafia's work, I argued that low ASR speeches imply the legitimacy of and stability within the Federal Reserve System and, by extension, the broader market economy. Importantly, this ignores the fact that the legitimacy and stability of this very system perhaps should have been questioned but that this questioning has been disallowed. The theoretical framework proposed here thus highlights that while prominent market actors' thinking may not be as conditioned by their own assumptions as we might have thought, their strategic use of argument structure may still have controlled the prevailing market discourse.

Future Research Directions

This study also generates a number of opportunities for future research. In particular, while this study focused on the VIX Index as the market's reaction, sociological approaches to financial markets have convincingly argued that the architecture of markets is not universalistic but instead socially constructed and culturally contingent (Fligstein, 2001; Fligstein and Calder, 2001; Lounsbury and Hirsch, 2010). Thus, examining only the VIX Index prioritizes a highly sophisticated audience that is embedded within the capital markets and overlooks other potentially important audiences. Although using the VIX Index in this case was a reasonable decision given my stated theoretical aims and that it is widely accepted as the premier barometer for measuring market uncertainty, it would be useful and important to also examine how the ASR impacts other market audiences. For instance, examining how bond or foreign currency markets respond to the ASR of Fed speeches may reveal deeper concerns underlying the stability of interest rates. Exploring how audiences outside the capital markets may be interesting as well,

such as how regulatory authorities alter their policy decisions or how the media amplifies or spins the Fed's original message. Such considerations could shed light on potential cultural contingencies within markets and demonstrate how the same message might be refracted in different ways.

Future research might also considering exploring the ASR of strategic communication from a wider variety of actors. The primary reason for emphasizing prominent actors in this study was that the speaker likely needs to be an authority within the social institution in which they are talking for people to listen or take their discussion of the backing seriously. Indeed, we will typically ignore the person standing on the corner shouting about the end of the world through a megaphone, but we may listen to that same message if conveyed to us by our priest. It is possible however that non-authorities could garner the same amount of attention in certain public forums. For example, some have argued that social media has democratized the notion of authority, enabling just about anyone to voice their opinions and create a platform upon which the world will listen (Edgerly et al., 2009). Moreover, minority actors can sometimes force authority figures to address or at least recognize their concerns publicly. This dynamic, which is a basic assumption underlying the social movements literature (King and Soule, 2007; King, 2008), occurs regularly with politicians, organizations, or sports icons who are constantly scrutinized in the public light. Thus, while this study only examined prominent actors, there are a number of other forces that likely play a role in this story and are certainly worthy of future consideration.

This also raises the question about the extent to which these findings would extend to other contexts. The Fed Chairperson is certainly in a unique position, being perhaps *the* most influential speaker when it comes to communicating within the market (Cruikshank and Sicilia,

1999). This uniqueness was required because my dependent variable of interest was at the market level uncertainty of the entire S&P 500. My contention is that these findings are likely to generalize to situations where the speaker's prominence and a community of actors interested in what the speaker has to say are similarly commensurate. For instance, managers often attempt to influence their employees' opinions during organizational change efforts (Meyer, Brooks, and Goes, 1990). Since uncertainty and social consensus of employees regarding the future direction of their organization is critical in this situation (Rousseau and Tijoriwala, 1999), one might consider looking at how the ASR of organizational change communication influences employee morale. Corporate leaders similarly use strategic communication to manage the expectations of a variety of external audiences. For instance, organizational founders are required to communicate with prospective investors with their prospectuses when going public (Martens, Jennings, and Jennings, 2007). Given the critical role uncertainty plays in a firms' success when going through an IPO (Sanders and Boivie, 2004; Pollock and Gulati, 2007; Pollock, Rindova, and Maggitti, 2008), one might predict that talking more about their business plan assumptions would diminish their ability to raise capital. Moreover, CEOs and CFOs also communicate with analysts on a regular basis (Lee, 2015), and the ASR of their quarterly earnings calls may influence the divergence of analysts' ratings after the meeting. Further research might seek to extend the findings found in this study to a variety of other important organizational contexts.

One of the classic sociological observations made by Berger and Luckmann (1966: 64) is that our "institutions are built upon language." Since that time, a number of theorists have referenced this theme (Friedland and Alford, 1991) and have tried to explain better what exactly they meant (Suddaby and Greenwood, 2005; Loewenstein, Ocasio, and Jones, 2012). This study seeks to provide additional clarity to Berger and Luckmann's abstract assertion by pointing

concretely to our communicative assumptions—or what Toulmin calls the backing—as what specifically our institutions are built upon. In this sense, I view the development of the ASR construct as both a theoretical and empirical entry point into the further study of how language operates within—and at the boundaries of—our social institutions.

CHAPTER 4

CONCLUSION

This dissertation advances a novel approach that I refer to as the structure of strategic communication. Drawing on the idea that actors can deploy arguments at two structurally distinct levels—within the rules of the game or about the rules of the game—I argue that talking more about these rules, which exposes the assumptions underlying our social institutions to direct examination, has profound implications. To show evidence for this claim, I first developed a construct called the *argument structure ratio (ASR)* that measures how explicit a speaker makes these assumptions in communication. I then theorized the impact of the ASR on the market, demonstrating that the more the Fed Chairperson makes explicit their assumptions, the more their communication produces uncertainty in the United States financial market. Taken together, this dissertation presents a unified approach to begin studying the structure of strategic communication.

I argue that this approach has the potential to revitalize a large body of research on strategic communication that has grown increasingly stale. In particular, existing work in this space seems to be somewhat stuck asking the same question and arriving at the same answer. Specifically, scholars for the last 30 years or so have explored the question of how to use communication strategically to receive a favorable reaction from an audience (Elsbach, 1994; Erkama & Vaara, 2010; Green, 2004; Lamin & Zaheer, 2012; Marcus & Goodman, 1991; Martens et al., 2007; Pollock & Rindova, 2003; Rhee & Fiss, 2014; Vaara, Tienari, & Laurila,

2006). This in turn led to the cataloguing of different strategies actors might use (e.g., apologies, denials, justifications, framing, stories, etc.) and the testing of when different strategies worked and when they did not. Across a variety of studies and contexts, the same recurring answer to this question was that a strategy was most effective when it met the expectations of the target audience (Fiss & Zajac, 2006). However, since there are countless ways in which this fit or resonance with an audience might occur, researchers in this space seem to be stuck cataloguing examples of the same mechanism with no end in sight.

Interestingly, these researchers might gain some insight by reflecting upon how social psychologists studying persuasion handled an almost identical impasse over 30 years ago. Early persuasion researchers during the 1950s and 1960s, like organizational scholars, drew upon Aristotle and others to catalogue all the factors that influenced the persuasiveness of a message. Their lists of potential influences grew so large and so fine-grained that findings from seemingly identical persuasion studies started to contradict each other, suggesting a frightening conclusion that the number of factors needed to be considered to predict how persuasion works might be unrealistic. While this led some researchers to give up on this topic of study, others sought to reformulate the way persuasion should be studied. Specifically, these scholars—like Petty and Cacioppo (1986) among others—suggested that we should ignore the countless strategies of persuasion and instead refocus our attention on the fact that these strategies can be processed in two fundamental ways and that this difference in processing is what we should study. By shifting the focus of study to a less contingent and more stable aspect of how communication works to influence others, social psychologists were able to revive and reenergize the study of persuasion for decades thereafter.

This dissertation aims to shift the focus of strategic communication in organizational analysis in an analogous way. Like persuasion researchers 30 years ago, I am similarly suggesting that we should place less of an emphasis on the countless strategies of persuasion, since we already know that there are any number of things actors can say and the effectiveness of such strategies will depend upon a variety of factors. Instead, I advocate that we focus on the fact that these strategies can be communicated across two structurally distinct levels, which reflects the degree to which actors make explicit their assumptions, and that this difference in the explicitness of assumptions is what we should study. By shifting our focus from the specific *content* of communication to its underlying *argument structure*, my aim is to reformulate the way strategic communication might be studied in the future.

More specifically, I believe that a focus on argument structure could help to revitalize the study of strategic communication in three significant ways. First, conceptualizing communication as argument structure suggests an entirely new mechanism through which strategic communication impacts audiences. Recall that the prevailing mechanism for how communication works is based on the notion of fit, or what some refer to as resonance. That is, the more communication fits or resonates with an audience's expectations, the more effective it is. The reason this mechanism works however is because these scholars are focused on the content or strategies of communication. Specifically, if the content is something the audience can relate to, then it is more appealing or attractive. This mechanism may even reflect a deeper evolutionary mechanism based on the idea of homophily, which was hinted at by Aristotle (1991) when he pointed out that similarity and conceptual closeness in rhetoric can enhance the credibility of the speaker.

However, by shifting the focus from the content to argument structure, this dissertation points instead to a mechanism related to an emotional reaction to the exposure of something that should not be exposed. In particular, an audience reacts with increased uncertainty when the assumptions underlying institutions are exposed not because doing so is unexpected but rather because doing so highlights the contingencies of deeply held assumptions that we feel uncomfortable considering directly. Talking about that which should not be talked about thus produces existential anxiety that has to do with our fundamental understanding of the social world now being at risk. This mechanism thus takes seriously the historical basis of our social institutions. Cultural and institutional knowledge gets passed on from generation to generation, and the standard ways of doing things in everyday situations goes unquestioned for decades (Zucker, 1977). While existing theories of communication of course acknowledge these historically embedded assumptions, the approach proposed here points directly at these typically taken-for-granted assumptions and examines precisely what happens when they are unearthed.

Second, this new conceptualization of how strategic communication works naturally opens up an opportunity for the development of novel independent variables that prior work has overlooked. In particular, this dissertation seeks to make a substantial contribution by developing an entirely a new methodological approach to measure variation in argument structure—what I called the ASR. The ASR stands in stark contrast to existing communication strategies. For instance, while existing strategies capture the content of what is said, the ASR captures the depth to which the speaker goes to convey this point. Moreover, while existing strategies capture only words or phrases as the aspects of communication influencing others, the ASR demonstrates how the overall impression of an entire message can impact an audience. The ASR thus is unlike any communication strategy existing scholars have considered. As I elaborate in greater detail in the

following section, I believe that the ASR provides a valid, reproducible, and powerful tool for researchers to leverage across a variety of contexts and levels of analysis in future research.

Third, this new conceptualization also reveals different ways strategic communication impacts audiences. Existing work has generally examined how communication strategies produce more favorable reactions from audiences. This led to the aforementioned focus on how communication content can produce shifts in people's beliefs (e.g., changes in stock price, evaluations of legitimacy, etc.). However, by changing our focus from communication content to argument structure, this dissertation highlights how the ASR of communication impacts an equally important outcome to audience favorability—audience uncertainty. Despite not being studied consistently as an outcome in organizational analyses, the overall level of uncertainty or social consensus of an audience is an important outcome for organizations. Indeed, uncertainty impacts investing patterns, commitment to action, and the ability for organizations to raise capital (Sanders & Boivie, 2004). Moreover, while organizations may often want to reduce audience uncertainty, they also may seek to increase uncertainty so as to obfuscate sensitive issues and distract investors (Graffin et al., 2011).

Taken together, the aim of this dissertation is to revitalize the study of strategic communication by reformulating how communication influences others. While the theory, measurement, and effects of the ASR discussed in this analysis provides one example of how to explore these ideas, there may be other ways to extend these basic principles. In particular, I believe that there are many ways to leverage the ASR as a theoretical and empirical construct to explore interesting questions in a variety of other contexts. At a more general level, I argue that this dissertation might also be thought of as a theoretical starting point to explore other types of structure underlying strategic communication. I therefore close this dissertation with an

exploration of these considerations with the aim to encourage future research in this new and exciting space.

LEVERAGING THE ARGUMENT STRUCTURE RATIO

ASR Further Theorizing

Researchers interested in leveraging the ASR to explore its impact in other contexts might consider examining the boundary conditions of the theory proposed here. Indeed, my primary argument was that strategic messages with higher ASRs point to the contingencies and therefore potential instability of those very assumptions that undergird a given institutional arrangement and, as a result, will increase uncertainty. However, this argument makes two important assumptions. First, I assumed that the backing or assumptions in the research context were relatively stable. Second, I assumed that the audience evaluating the ASR was deeply embedded within the institution whose assumptions were being exposed. Further theorizing is warranted to explore the impact of ASR when either of these assumptions are violated.

In particular, the backing underlying an institution is not always stable. For example, consider the Internet IPO boom during the late 1990s. During this time, a number of companies were going public and claiming an association with the Internet to ride the wave of investor hype. However, the Internet at this point was still relatively new and the rules of the game so to speak were still being formulated. The stability of the assumptions in this context stands in stark contrast to the stability of the assumptions underlying Federal Reserve System, the latter of which had been left unchanged for decades. When the backing is not yet stable and these assumptions are still being formulated, exposing these assumptions may not increase uncertainty. Indeed, the mechanism that I argued creates uncertainty—questioning that which should not be questioned—does not exist when the backing is not yet stable. As a result, it is possible that

exposing assumptions that are still being formulated will have no effect or may even decrease uncertainty. More work is needed to theorize this important boundary condition.

Scholars might also benefit from further theorization related to how audiences not deeply embedded within the institution being questioned might react to the ASR. I argued here that options traders react with uncertainty when the Fed exposes the assumptions underlying United States monetary policymaking to direct examination. However, these option traders are highly sophisticated and already embedded within the economics and central banking institutionalized frameworks. Indeed, they already take for granted the objectives and tools used by the Fed. As a result, when the Fed points to the assumptions underlying these considerations, the option traders react as I predicted. The same may not be said for audience members that are not embedded in the same way. For instance, your average everyday citizen likely does not have the same level of sophistication or education regarding United States monetary policymaking. As a result, when the Fed exposes these assumptions, this revealing moment may not be nearly as emotionally jarring. This observation suggests that more theorization could be useful to better understand the broader impact of the ASR.

ASR in Other Contexts

The ASR also presents an opportunity for scholars to explore potentially novel effects within their research contexts of interest. In particular, I contend that the ASR might be used to revisit some existing questions in the literature from an entirely new perspective. Specifically, the large body of research on strategic communication discussed at length in this dissertation has examined a number of important contexts where organizational actors use language to influence others. Exploring the impact of the ASR in these contexts may elicit new insights. For instance, entrepreneurs are required to communicate with prospective investors through a prospectus when

going public. While prior work has extensively explored how storytelling influences these firms' ability to raise capital (Martens et al., 2007), researchers might also look at how the ASR of these communications impact investor uncertainty as another important mechanism of IPO success (Sanders & Boivie, 2004). Moreover, organizations also regularly communicate with a variety of stakeholders through press releases. While researchers have shown that defending or acknowledging their actions influences their legitimacy (Lamin & Zaheer, 2012) and that their framing can portray their decisions in a more desirable light (Rhee & Fiss, 2014), future work could examine how the ASR of these communications may create or reduce uncertainty surrounding these very same reactions.

Scholars might also leverage the ASR to explore entirely new and exciting questions. In particular, while this dissertation focused on the effects of the ASR on audiences' reactions, researchers might instead want to understand the conditions under which actors expose these institutionalized assumptions. Indeed, this idea of voicing dissent, speaking up, or pointing to things that are traditionally taken for granted has been a theme across several literatures. For instance, researchers studying employee voice (Burris, 2011; Detert et al., 2013) are interested in understanding when and why individual employees are likely to speak up and question the assumptions underlying their organization. Moreover, institutional theorists studying legitimacy and institutional change (Battilana & D'Aunno, 2009; Bitektine & Haack, 2015; Harmon et al., 2015) are interested in similar questions regarding when and why actors recognize and seek to change the very assumptions that they typically take for granted. Researchers might therefore begin to explore the specific conditions under which the ASR of a community or discursive space changes and actors begin to expose these assumptions directly.

This notion of focusing on the constraints on communication in turn points to a potentially novel avenue of study. In particular, scholars across the social sciences have long recognized the constraints on actors' cognition, which has generated decades of fruitful research on the concept of *bounded rationality* (Kahneman, 2011; Simon, 1982). I contend that the ASR points researchers to a related but entirely distinct concept that I refer to as *bounded communicative rationality*. That is, just as our cognition or thinking is constrained in predictable ways, so too is our communication. I see the concept of bounded communicative rationality to be just as powerful as bounded rationality, with applications at the individual level (e.g., when dissent is voiced to friends or family), organizational level (e.g., when managerial authority is challenged), institutional level (e.g., when change to institutions is initiated), and even the political or societal level (e.g., when citizens speak out against oppressive or authoritarian regimes). Furthermore, given the complicated relationship between our thoughts and words (Schwarz, 1996), I also see exciting research to be done on how bounded rationality and bounded communicative rationality relate and influence one another. In this way, I believe that the ASR is capable of generating entirely new and exciting ways to think about the role of communication in social life.

ASR Automated Tool

Leveraging the ASR in other contexts holds substantial promise. However, an obvious limitation is that coding communication for ASR is resource-intensive. Indeed, while the methodology outlined in Chapter 2 is valid and reproducible, it is admittedly not easy. Obtaining an ASR for your desired communications requires extensive training, reliability coding, and the time and resources to code the entire sample. One way to improve the efficiency of this methodology as well as its potential impact is to automate its coding. I am currently in the

process of finalizing an automated tool for public use. However, I would like to highlight for researchers interested in using the ASR how this tool might work in the near future.

The ASR automated tool is a dictionary approach that works by searching for words associated with the backing in your corpus and providing a ratio of those words to the overall words in each speech act. The researcher first must identify a small number of words (e.g., between 5 and 10) that refer to or are closely associated with the backing in their context. These words are then automatically "trained" against a database containing millions of news articles over the last decade or so. By training, I mean that the ASR automated tool is searching the semantic space surrounding each of these words to create a larger, customized dictionary of semantically similar words related to the backing. This produces a dictionary that is more closely related to the backing that could be done manually. The researcher then uploads the corpus and the ASR automated tool produces a number for each speech act that represents the ratio of backing-related words to overall words. I piloted the use of this tool using my Fed Chairperson speech corpus. By inputting seven backing-related words in the Fed context ["central", "institutional", "policy", "system", "regulation", "risk", "supervisory"], the automated measure correlated with my reliability-tested speeches at 0.80, and reproduced my primary prediction that higher ASR creates more uncertainty ($p < .001$).

Keep in mind however that because the backing or assumptions are context-dependent, complete automation is not possible. As a result, researchers will still be required to identify small number of backing-related words that reflect the core assumptions present in the corpus. What this means is that researchers should still follow Step 1 (Define the discursive space and corpus) and Step 2 (Clarify the two structural levels of communication in your corpus) detailed in Chapter 2 to identify these words. I would also highly recommend researchers perform part of

Step 3 (Code your corpus based on these two structural levels) by coding a small sample of the corpus. This will help validate that the words inputted into the tool are indeed picking up references to the backing. Nevertheless, even though the ASR cannot be fully automated, this tool should enable researchers to code large corpuses without the substantial associated costs. By developing this tool, I thus hope to broaden the impact of the ASR.

EXPANDING THE CONCEPT OF STRUCTURE

This dissertation advanced a novel approach that I referred to as the structure of strategic communication. The type of structure I was of course referring to was argument structure, which turns out to be one promising direction for research. However, because this is just one way to conceptualize structure, this dissertation admittedly represents just a single case of a broader direction I would like to see scholars studying communication take. It is for this reason I intentionally labeled my approach *the structure of strategic communication* so as to highlight and encourage researchers to consider more seriously not just argument structure per se but the structural aspects of communication more generally.

Structural Aspects of Communication

Structural aspects of communication are the latent patterns that underlie how communication is conveyed. It is helpful to understand communication structure by relating it to communication content. While communication content refers to *what* actors say, communication structure refers to *how* what they say fits together to make it intelligible. That is, irrespective of motives, goals, age, gender, topic, audience, location, etc., if a speaker wants to convey an intelligible message to others, he or she will follow specific structural rules for communicating. As a result, unlike communication content, the structural aspects of communication tend to remain more stable across contexts and actors. Because of this stability and invariance across

contexts, I argue that this is why structure may be a generative and fruitful foundation upon which to examine strategic communication in future research.

Structural aspects of communication reside at an implicit third order level within everyday communication. I have already discussed at length the first and second order levels. The *first order* level refers to communication occurs within the rules of the game. The *second order* level refers to the rules of the game itself, and this second order can remain implicit or be discussed directly in communication. With regard to these first two levels, the game referred to is the backing, or the collective assumptions regarding "what it is we are doing here." However, these first two levels always occur within an even deeper set of assumptions that I refer to as the *third order* level that grounds even the discussion about the backing. These deeper assumptions reflect the rules of a very different sort of game—the game of communicating with others. These rules are the structural aspects of communication, forming the grounds upon which human beings can interact intelligibly with one another.

What are the structural aspects of communication? What are the rules of this deeper level game of communicating with others? Argument structure is of course one example. Indeed, whenever a speaker wants to make an argument, it is nearly universally accepted that the speaker will provide some sort or data to support their desired claim. This is the case regardless of the location of the argument, the speaker, the desired claim, or the type of data elicited. Indeed, imagining an argument without a claim (even an implicit one) is nearly impossible. This is because societies have defined collectively what it means to make an argument and, by definition, arguments have to make a claim. Beyond argument structure, there are other systems of rules that ground how humans communicate with one another and may provide other potential bases upon which to study the structure of strategic communication. I discuss in detail one

particularly prominent structural aspect of communication—grammatical structure—followed by several other possibilities for future research.

Grammatical Structure

Grammar refers to the set of structural rules governing the composition of words and phrases in any natural language (Wittgenstein, 1953). Grammar functions as perhaps the most basic structural aspect of communication, since it forms the rudimentary mechanics of how the "atoms" of our symbolic universe (i.e., words) configure together to create meaning. Like argument structure, grammar is incredibly stable across speakers, audiences, and even cultures, and contains standard structural components. Actors typically express a complete unit of thought by including standard grammatical components like subjects and verbs. However, they may also express additional things through the inclusion of additional grammatical components like objects, adjectives, and so on. By exploring these structural components of grammar in different ways, just as I did with the structural elements of arguments, scholars may uncover similarly unique insights.

In particular, one might consider examining the degree to which certain grammatical components are included or excluded in a given speech act. The increased use of adjectives, for example, may reflect more conceptual thinking because adjectives work grammatically to modify in greater detail existing points already conveyed in the sentence. Moreover, the decreased use of verbs may reflect that the speaker is less ready to take immediate action because he or she is avoiding the use of the structural component that signals movement in time or space. Relatedly, one might also consider the sequencing of these grammatical components. Indeed, English speakers typically place the subject first, followed by either the verb or the object. Variation in this sequencing may signal the level of responsibility the speaker is willing to take

for the topic discussed because the sequencing signals an implicit priority with regard to how the speaker relates to that topic.

Another way to examine grammatical structure might be to explore how all of the possible grammatical components configure together in increasingly complex structures. Sentence structure for instance can get more complex through the use of more grammatical components (e.g., including multiple verbs and adjectives) as well as longer grammatical components (e.g., adjectives with eight instead of four letters). While such complexity may be desirable when discussing certain topics, it may also be used strategically to enhance audience confusion or increase uncertainty (60 minutes, 2007). Such considerations may be particularly relevant in public communications between organizations and stakeholders like analysts or investors (Graffin et al., 2011). Taken together, examining grammar as a second structural aspect of strategic communication may yield important insights in future research.

Other Types of Communication Structure

There are also other types of communication structure that may reveal novel insights. Indeed, the rules by which humans communicate in order to remain intelligible to each other extend well beyond argument and grammatical structure. Although the aim of this dissertation is not to outline each of these other structural aspects in great detail, I briefly outline two additional possibilities here so as to potentially spark some interest and future research.

First, just as we following grammatical sequencing rules, we also abide by certain sequencing rules in a number of other situations. For example, scholars have hinted at the fact that narratives or stories tend to follow different structural sequences (Martens et al., 2007; O'Connor, 2004). Scholars might explore how variations in narrative structure lead to different reactions from audiences. As with narratives or stories, there also may be an underlying structure

to arguments. While I did not explore this idea in this dissertation, it is possible that the sequencing by which actors argue within and about the rules of the game could have differential effects. Indeed, a speech beginning and ending with arguments that occur within the rules of the game may produce a different audience reaction than speeches beginning and ending with arguments about the rules of the game. Considering these sequencing possibilities may yield interesting insights.

Second, actors also tend to follow what some have called a conversational structure (Grice, 1968; Schwarz, 1996). Conversational structure refers to how people talk and cooperate with one another in everyday conversation. The overarching rule that Grice argues people follow when conversing is: "Make your contribution such as it is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged" (Grice, 1975). Based on this overarching rule, Grice developed four maxims that referred to the principles of quantity (e.g., where one tries to be as informative as one possibly can, and gives as much information as is needed, and no more), quality (e.g., where one tries to be truthful, and does not give information that is false or that is not supported by evidence), relation (e.g., where one tries to be relevant, and says things that are pertinent to the discussion), and manner (e.g., when one tries to be as clear, as brief, and as orderly as one can in what one says, and where one avoids obscurity and ambiguity). Scholars might examine these structural aspects of conversation to explore how variation across as well as violations of such considerations might influence different audiences.

CONCLUDING THOUGHTS

This dissertation sought to develop a new approach to the study of strategic communication. By leveraging how people naturally structure their arguments, I advanced not

only new theory but also a novel methodology to explore these ideas. In doing so, I believe that this dissertation also makes a broader claim about the dual role language plays in society that I discussed in the introduction. In particular, social theorists in philosophy (Rorty, 1981), linguistics (Habermas, 1984), anthropology (Geertz, 1973), sociology (Berger & Luckmann, 1966), and management (Harmon et al., 2015) all have argued that the words we use can simultaneously maintain as well as bring about change to the social institutions in which we live. However, these theories tend to conceptualize the maintenance and change of institutions as two distinct processes, thereby separating this linguistic duality into analytically separate components. While separating social processes that are inherently recursive can be useful for analytical purposes (Archer, 1982), some have argued that we should instead sacrifice our ability to examine these processes empirically so as to be truer to the circular nature of social life (Giddens, 1984). This dissertation proposes a middle ground. Specifically, the ASR is a singular construct that captures the precise inflection point in our everyday argument structure that produces these diverging effects of maintenance and change. This inflection point—which is the keystone of this dissertation—may be the theoretically and empirically observable location to begin studying more rigorously the circularity of social life.

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