Evaluating Complexity in Political Speech

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Abstract

With the election of straight-talking Donald Trump into the most powerful office of the world, political scientists have turned their attention to (the absence of) complexity in political speeches. A popular explanation for variation in complexity of political language regards personality differences: conservatives are thought to have a preference for less complex language than liberals. These conclusions, however, are based on analyses of speeches predominantly from the United States. In contrast, this paper asks if indeed the relationship between ideology and complexity is a generic, human feature or just a specific feature of American politics. To this end we analyze 2692 speeches from the German Bundestag and twelve prime ministers in six EU member states, extending the range of potential explanations for complexity. In particular, we explore if economic distress, political crises, changes over time, or reasons to do with party competition, affect complexity of political language. We find that, on average, German right-wing parties produce speeches that are more complex than those of their left-wing counterparts, whereas among the prime ministers we find the opposite result. We also find that (German) parties, as well as prime ministers respond to (changes in) the unemployment rate, suggesting that complexity of speech is at least in part responsive in nature.

Keywords: automated text analysis, ideology, complexity, nouns
Introduction

During the 2016 US presidential primary season several newspapers reported that Donald Trump speaks like a fourth-grader.¹,² Since he went on to beat his Republican and Democratic opponents, who also tended to speak in more complex sentences, it seemed that simplicity worked. Arguably, for ordinary people it is easier to connect with politicians keeping it simple and stupid. Indeed, most political consultants advice in favor of using simple language (e.g. Collins 2012). George Orwell (1950) famously pushed the argument for simple language even further: “[B]ut one ought to recognize that the present political chaos is connected with the decay of language, and that one can probably bring about some improvement by starting at the verbal end. If you simplify your English, you are freed from the worst follies of orthodoxy.” These criticisms of complex language must frustrate political consultants of liberal politicians, who are found to use more complex language than conservative politicians (see, e.g., Tetlock 1981, 1983, 1984). According to one prominent explanation these patterns are rooted in personality differences between liberals and conservatives (Tetlock 1981, 1983, 1984), but this line of research is based on speeches predominantly from the United States, and exclusively from the Anglo-Saxon world. This raises the question whether the relationship between ideology and complexity is a generic, human feature or just some specific feature of American politics. After all, several contextual features may also explain complexity of a speech. For example, economic decline, foreign policy crises or simply political strategic considerations may affect complexity as well. This paper evaluates the generality of existing findings by analyzing parliamentary speeches from the German Bundestag and speeches of twelve government leaders in six EU member states, extending the range of potential explanations for complexity.

We will look specifically to integrative complexity in text, which reflects the speaker’s cognitive complexity (Suedfeld 2010). As such, higher levels of complexity denote information processing with a “combination of flexibility, high levels of information search, and tolerance for ambiguity, uncertainty, and lack of closure” (Suedfeld 2010: p.1670). Integrative complexity thus reflects the extent to which different and potentially conflicting viewpoints are taken into account when crafting an argument (Abe 2011; Brundidge et al. 2014; Tausczik and Pennebaker

¹See, for example: http://tinyurl.com/zlbln4b.
²For collecting data for part of this paper, Schoonvelde & Schumacher received funding from the European Union’s Horizon 2020 research and innovation program under grant agreement No 649281, EUENGAGE.
2010; Suedfeld and Leighton 2002). We will measure integrative complexity using Flesch Kincaid reading grades, which stands for the years of schooling that are necessary to understand a given text without difficulty: higher scores on this variable denote higher levels of complexity.

We find that, on average, German right-wing parties produce speeches that are more complex than those of their left-wing counterparts, whereas among the prime ministers we find the opposite result, casting doubt on the generalizability of findings from the US. We also find that (German) parties, as well as prime ministers respond to (changes in) the unemployment rate, suggesting that complexity of speech is at least in part responsive in nature.

Theory

A number of related concepts evaluate complexity of a speech, but these differ in how they are conceptualized and operationalized (for an overview, see Schoonvelde, Schumacher and Bakker (2017)). First, there is complexity evaluated as the number of words per sentence, and the length of the words in the sentences. The Flesch-Kincaid readability score is an example of such a measure of complexity (Kincaid et al. 1975). This measure was initially developed by education researchers to score readability of a text. To our knowledge this measure is used only sparingly in political science research. Second, cognitive complexity measures the degree of multidimensional, differentiated thinking revealed in a text. For example, if a speaker or author gives several perspectives on a given topic, a text becomes conceptually more complex (Hermann 2002; Pennebaker and King 1999). Exclusion words such as ‘but’, ‘without’ and ‘exclude’ signify differentiation between perspectives, as well as conjunctions such as ‘also’, ‘and’ and ‘although’ (Tausczik and Pennebaker 2010). Similarly, Hermann (1980) looks for words such as ‘may’, ‘possibly’, ‘sometimes’ (high complexity), and ‘always’, ‘only’ and ‘without a doubt’ (low complexity). Third, integrative complexity measures, in addition to differentiation, the level of integration between the differentiated elements (Conway et al. 2014). Efforts to automate measurement of integrative complexity (e.g. Abe and Conway and Conway), have met with some criticism (Tetlock et al. 2014). Cognitive complexity, and of course ‘simple’ complexity, are easier to evaluate automatically, and therefore more easily adaptable for researchers. In this paper we will make use of Flesch Kincaid’s grade scores.
Ideological differences in complexity

Research on language use of American and British politicians found that conservative politicians make less complex statements than liberal politicians (Tetlock 1983, 1984). Recent research echoes this finding. Conservative political bloggers use less complex language than their liberal counterparts (Brundidge et al. 2014) and in the general population conservative citizens use language that scores lower on integrative complexity than liberals (Mandel, Axelrod and Lehman 1993). What is the rationale behind this?

The way humans speak gives away part of who they are (Tausczik and Pennebaker 2010). The use of certain words and grammatical structures is associated with specific personality types or characteristics (Lisa A. Fast and David C. Funder 2008; Pennebaker, Mehl and Niederhoffer 2003; Weintraub 1989). A preference for more (or less) complex language use is also grounded in personality, in particular the trait Need for Closure. Need for Closure refers to an individual’s preference for order, structure, and predictability (Webster and Kruglanski 1994). Individuals who score high on Need for Closure seek to avoid or reduce uncertainty and ambiguity (Van Hiel and Mervielde 2003; Jost et al. 2003; Kruglanski, Webster and Klem 1993). Using complex language can evoke ambiguity and uncertainty in the listener, and therefore, people with a high Need for Closure will seek to avoid it. Need for Closure, in turn, is highly predictive of having politically conservative leanings (Jost et al. 2003). This implies that the fact that conservative politicians, bloggers and citizens use less complex language (Tetlock 1983, 1984; Brundidge et al. 2014) is rooted in their Need for Closure.3

Existing studies on language patterns of politicians with varying ideologies rely heavily on a one-dimensional conceptualization of ideology, ranging from conservatism to liberalism (Jost 2009). The terms liberal and conservative, however, do not travel well across the Atlantic, and mean different things in Europe and in the US. What is more, European politics is generally characterized by political competition on two or even three dimensions, rather than just one (Van der Brug and Van Spanje 2009). Generally, researchers identify an economic left-right dimension, and a social-cultural conservative-progressive dimension. The latter dimension typi-

3What is interesting is that these differences even appear if we look at the advice of speech writers. Peggy Noonan, speech writer to the conservative Ronald Reagan, recommends: “Don’t be sophisticated. Be common-sensical. Speeches that consist merely of the stringing together of pretty words and pretty sentiments are not great, and never live” (Noonan 1998: 75). Simon Lancaster (2010), former speech writer to Labourite Alan Johnson, calls it a myth that speeches should consists of simple and short sentences.
cally includes issues like European integration, immigration and environment (Van der Brug and Van Spanje 2009). The Dutch party system, for instance, includes cultural conservative parties with an economically moderate agenda (most prominently Geert Wilders’ Freedom Party), and cultural progressives with a right-wing (D66) or left-wing (Green Left) economic agenda. Germany, in turn, has economically left-wing parties that are anti-EU (the Left) and pro-EU (SPD and the Greens). Similarly, on the right the CDU and FDP are pro-EU and the AfD is anti-EU. This motivates the question of how to translate findings regarding Need for Closure into the European context. Conservative parties appeal to those high in Need for Closure with their cultural views (Kossowska and Hiel 2003; Malka et al. 2014), with an emphasis on maintaining national identity and preserving cultural heritage. Increased European integration and cultural diversification should trouble people who score high on Need for Closure. With Need for Closure correlating with support for culturally conservative parties, we hypothesize that politicians of these parties express themselves in less complex language (H1).

**Cultural Ideology Hypothesis:** The language of culturally conservative politicians has lower levels of integrative complexity than the language of progressive politicians.

In terms of the economy, left-wing parties should appeal to those with high Need for Closure because of their economic views “aimed at providing material security and protection” (Malka et al. 2014: p.1044). Right-wing parties emphasize opening up markets for foreign competition, privatization and a reduction of welfare state arrangements. All these measures reduce economic certainty and should therefore not appeal to people with high Need for Closure. For that reason we expect politicians of left-wing parties to express themselves in less complex ways than politicians from economically right-wing parties.

**Economic Left-Right Hypothesis:** The language of left-wing politicians has lower levels of integrative complexity than the language of right-wing politicians.

Combining H1 and H2 we expect that culturally conservative, but economically left-wing parties (e.g. The Left Party in Germany, the Freedom Party and the Socialist Party in the
Netherlands) should use language that is least complex.

**Over time differences in complexity**

Language changes over time; some words lose or change meaning, new words appear and others disappear; certain grammatical constructions go out of fashion. Political speeches from the 19th century may be difficult to understand for us in the 21st century. Partly, this is because the topics politicians talk about change. But the rhetoric of politicians changes as well. Because of democratization the audience of politicians has changed from the wealthy few to the masses. This is reflected in State of the Union addresses of the American president which have dropped significantly in length in the 1920s, and are directed more towards the public (Teten 2003). Furthermore, mediatization – the increasing influence of mass media in the political arena – and professionalization of political campaigns have arguably changed political rhetoric even further. Interestingly, Lim (2002) described the rhetoric of recent American presidents as more anti-intellectual and more abstract compared to presidents in the past. In terms of their complexity, speeches by American presidents have become a lot simpler over time (Thompson 2014). Together, these considerations lead to the following hypothesis:

**Time Hypothesis:** The language of politicians has become less complex over time.

Rather than a linear time trend, the complexity of speech may vary depending on the economic and social context of the time. Phil Tetlock and co-authors (Tetlock, Hannum and Micheletti 1984) describe how differences in complexity of speech between liberals and conservatives fluctuate over time. For example, Democrats in the US Congress delivered speeches that were less complex when the house was dominated by Republicans (Tetlock, Hannum and Micheletti 1984).\(^4\) A further possibility is that complexity of speeches changes in times of economic or social crisis. As discussed, Need for Closure correlates with the level of complexity of speech. But the Need for Closure and conservatism can – to a certain extent – change over time. For example, economically disadvantaged individuals for whom an economic crisis is most threatening show increases in conservative ideology in times of recession, possibly due to

\(^4\)NB: this may also be ascribed to a mechanic effect that in floor debates speakers respond to other speakers and in doing so copy some of the language of the previous speaker. With more conservatives in Congress, there is simply more to quote for liberals.
stronger feelings of insecurity, which in turn increase a situational Need for Closure (Milojev et al. 2014). This increased Need for Closure among citizens might in turn be expressed in the language of politicians, who are catering to the needs of their voters.

There is indeed some evidence that political actors use simpler language in times of crisis. For example, former chairman of the US Federal Reserve Alan Greenspan revealed lower language complexity in his statements as the economic situation deteriorated (Abe 2011). Similarly, the integrative complexity in statements by Tony Blair and George W. Bush decreased after the 9/11 terrorist attacks (Suedfeld and Leighton 2002). New York mayor Rudolph Giuliani used simpler language during times of crisis (Pennebaker and Lay 2002). Furthermore, integrative complexity of politicians’ speeches is found to decrease in the months prior to the outbreak of a war (Suedfeld 2010; Suedfeld and Leighton 2002).

This evidence suggests that a crisis, which causes insecurity and therefore activates Need for Closure, motivates politicians to use less complex language. There are several possible reasons for such changes in language use during economic crises. On the one hand, politicians may feel more insecure themselves and therefore be more prone to using language that promises stability. On the other hand, they may deliberately or intuitively choose to use less complex language as a rhetorical strategy in order to appeal to voters’ heightened need for stability and closure, portraying themselves as reliable leaders (Abe 2011; Suedfeld 2010). Irrespective of these or other unknown reasons, this evidence leads to the following hypothesis:

**Responsiveness Hypothesis**: The language of politicians becomes less complex in response to social or economic insecurities.

**Party strategies and differences in complexity**

A third consideration explaining the complexity of speeches may lay in the competitive context in which politicians operate. Politicians need to get (re-)elected, regardless of whether they cherish political office for policy ends or rents. Their language may help them to achieve this goal. Populists, for example, are distinct from other political leaders because of their simpler language use, which sets them apart from the more complex language of establishment.
politicians and, arguably, brings them closer to the common citizens (Bos, van der Brug and de Vreese 2013; Bos and Brants 2014). In the words of Zaslove (2008: p.327), “[populist leaders] are proud to speak in an uncomplicated language and in the language of the tavern, the café and the street. This is contrasted to the over-sophisticated and the overly ideological language of the more traditional political leaders.” For that reason we expect populist politicians to employ less complex speeches.

**Populism Hypothesis:** The language of populist politicians is less complex than the language of mainstream politicians.

## Data & Methods

In what follows we present our data with which we set out to evaluate our hypotheses. We use two datasets: one which contains 845 German speeches, and one which contains 1847 English speeches of EU member states heads of government of Czech Republic, Great Britain, Italy, the Netherlands, and Spain. The advantage of the German dataset is that it contains speeches from one political system but with variation between political parties, allowing us to test for the Economic Left-Right Hypothesis; because there is also some over-time variation Responsiveness Hypothesis. The EU speech data, on the other hand, vary in context and time, allowing us evaluate if evidence for the Economic Left-Right Hypothesis is to be found across political systems as well. Furthermore, since these speeches encompass more over-time variation, they allow for a more fine-grained test of our Responsiveness Hypothesis. Table 1 presents for all of our hypotheses which dataset tests them. In the following two sections we describe our speech datasets in more detail.

<table>
<thead>
<tr>
<th>Hypotheses to be Tested with Each Dataset</th>
<th>German Speeches</th>
<th>Heads of Government Speeches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Ideology Hypothesis</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Economic Left-Right Hypothesis</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Time Hypothesis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsiveness Hypothesis</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Populism Hypothesis</td>
<td>★</td>
<td></td>
</tr>
</tbody>
</table>

5The dataset also allows for exploring the Cultural Ideology Hypothesis but we leave that analysis for a later version of this paper.
German parliamentary speeches.

Our German speeches were mostly sampled from the Bundestag, the national parliament. All members of the Bundestag participate in its plenary sessions. They are protocolled verbatim and the protocols are made available online to the public. One session – one parliamentary day – contains approximately 50 to 60 speeches; the speaking time of all parties is proportional to the number of seats that the party has in parliament. The order of the speeches in the protocols follows the order in which they were delivered; usually rotating between politicians from different parties. The speeches in the sample are from 2006, 2010, and 2014; each of which are years following parliamentary elections.

Because of the electoral threshold of five percent, not all parties that are relevant to the German political landscape are present in the Bundestag. The sample also includes speeches from the newly emerged right-wing populist party Alternative für Deutschland (AfD), which is only represented in the parliaments of some federal states (Länder) but not in the Bundestag. We sampled 20 speeches from five randomly selected protocols from the parliament of Saxony and 26 speeches from four randomly selected protocols were sampled from the parliament of Thuringia, in which the AfD has 14 (of 126) and eight (of 91) representatives respectively. Because the party only emerged recently as a relevant political force, AfD speeches are included for the year 2015 alone.

We collected a total of 845 speeches from public online archives of the national and federal parliaments, with 124 speeches coming from Die Linke, 124 from Die Grünen, 200 from the SPD, 180 from the CDU, 66 from the CSU, 105 from the FDP and 46 from the AfD.6

Heads of government speeches

For the analyses of the EP speeches, we use the EUSpeech dataset (Schumacher, Schoonvelde, Dahiya and De Vries 2016; Schumacher, Schoonvelde, Traber, Dahiya and De Vries 2016). EUSpeech consists of all publicly available speeches from elites in the main European institutions.

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6On average, the speeches have 61.64 sentences (SD = 30.06, Min = 7, Max = 254), 891.78 words (SD = 412.14, Min = 100, Max = 3603) and 5281.27 letters (SD = 2367.20, Min = 568, Max = 20896) letters. 249 speeches date from 2015, 357 from 2010, and 240 from 2006.
plus the IMF as well as the speeches of prime ministers— or president in the case of France—of 10 EU member states for the period ranging early 2007 to late 2015. These speeches were scraped from public websites. Where necessary the Wayback Machine was used to scrape speeches from earlier years.

Method and variables

Our unit of analysis is individual speeches. In our empirical models we regress their calculated complexity on variables that vary between parties, as well as variables that vary over time, from quarter to quarter. Our measure of speech complexity—our dependent variable—is the “Flesch-Kincaid Grade Level” equation (Kincaid et al. 1975), which weights average sentence length and average word length in a text. Higher Flesch-Kincaid scores correspond to higher complexity, and this may be due to longer words, longer sentences or both. For the German speeches we used the same measure.

As a measure of left-right ideology for the heads of government data we included in our models a measure of the ideological score of the party of the prime minister as collected by the Comparative Manifestos dataset (Volkens et al. 2016). Furthermore, we use GDP growth and change in unemployment rate at the domestic level (both in the quarter previous to speech date; sources: Eurostat and OECD) to measure the state of the economy.

Results

German Bundestag Speeches

Our Economic Left-Right Hypothesis posits that the language of left-wing politicians is of lower complexity than the language of right-wing politicians. Figure 1 displays the complexity levels of speeches per party, ordered according to their ideological position on the left-right spectrum. It shows that speeches delivered by politicians of Die Linke ($M = 10.60; SD = 1.68$) are of

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7 These countries are Czech Republic, France, Germany, Greece, Netherlands, Italy, Spain, United Kingdom, Poland and Portugal.

8 The equation is: $0.39 \times \left( \frac{\text{total words}}{\text{total sentences}} \right) + 11.8 \times \frac{\text{total syllables}}{\text{total words}} - 15.59$.

9 We realize that heads of government are generally at the helm of a multiparty cabinet but don’t explicitly account for this in the current analysis.

10 Before conducting the statistical analysis, we assessed the properties of our complexity measures. The speeches have an average Flesch-Kincaid score of $M = 10.91 (SD = 1.87)$, ranging from 6.40 to 18.60. The distribution approaches normality (Skew = .73; Kurtosis = .79).
lowest complexity, but they are not significantly less complex than speeches of politicians of Die Grünen ($M = 10.81$, $SD = 1.78$), Die SPD ($M = 10.77$; $SD = 1.82$), and FDP ($M = 10.82$, $SD = 1.85$). Speeches by politicians from the CDU ($M = 11.25$; $SD = 1.98$), CSU ($M = 11.35$; $SD = 2.08$), and AfD ($M = 11.59$; $SD = 2.01$) however are significantly more complex, even though effect sizes are small. This points in the opposite direction of our Economic Left-Right Hypothesis: In Germany, conservative politicians appear to use more complex language than liberal politicians. We further note that the speeches of the AfD, a right-wing populist party are, on average, most complex, which points in the opposite direction from what we posited in our Populism Hypothesis, although we should note that their speeches are not any more complex than those of the CDU and the CSU.

Figure 1: Complexity of Speeches per Party

![Complexity of Speeches per Party](image)

Note: The range of the y-axis was adjusted for better visibility.

Next, we regressed speech complexity on both party dummies (with Die Linke as the reference category) and our time-varying measures of GDP growth and unemployment rate (see Table 2). Model 1 includes the AfD, Model 2 does not. We report both because the AfD speeches are collected during one year (2014) rather than three, and in the context of a Federal state, rather than in the Bundestag. The inclusion of the AfD does not substantially alter results. Our Responsiveness Hypothesis states that the language of politicians becomes less complex as social or economic insecurities worsen. Translated to our current analysis, we expect that as
GDP growth decreases or unemployment is on the rise, average speech complexity is expected to decrease. However, we find no evidence that GDP growth relates to increased average speech complexity: the regression coefficient of lagged GDP growth is not different from zero. Unemployment on the other hand does relate to subsequent average speech complexity. As the unemployment rate in a quarter increases, this is followed by increased—across the political left-right spectrum—average speech complexity. This lends some support for the **Responsive ness Hypothesis**: the average complexity of political speeches may respond to insecurities on the job market.

**Heads of Government Speeches**

The focus in this section is on English speeches from prime ministers in six countries: Czech Republic, Greece, Italy, Netherlands, Spain and Great Britain between 2007 and 2015. The number of speeches we analyze per country varies between 63 in Italy and 787 the United Kingdom, amounting a total of 1847 (see Table 3).\(^{11}\)

\(^{11}\)Because we had very few English speeches for Italian Prime Minister Prodi (3 speeches) and Portuguese Prime Minister Pedro Passos Coelho (6 speeches) we excluded them from this analysis.
Table 3: Overview of speeches per country

<table>
<thead>
<tr>
<th>Country</th>
<th>N Speeches</th>
<th>N Speakers</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>39</td>
<td>1</td>
<td>06/2009 - 11/2015</td>
</tr>
<tr>
<td>Greece</td>
<td>91</td>
<td>4</td>
<td>10/2009 - 11/2015</td>
</tr>
<tr>
<td>Netherlands</td>
<td>129</td>
<td>2</td>
<td>02/2007 - 11/2015</td>
</tr>
<tr>
<td>Italy</td>
<td>54</td>
<td>3</td>
<td>01/2008 - 09/2015</td>
</tr>
<tr>
<td>Spain</td>
<td>758</td>
<td>2</td>
<td>01/2007 - 11/2015</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>776</td>
<td>3</td>
<td>03/2007 - 11/2015</td>
</tr>
</tbody>
</table>

Figure 2 displays complexity scores for individual speeches across countries over time. In Great Britain, Spain and the Netherlands does the range of speeches cover the full time period, whereas in Czech Republic and Italy in particular we only have data for a comparably small number of time points. Most importantly, Figure 2 shows considerable within-country and within-speaker variation, allowing us to test whether 1) variation in complexity is linked to left-right differences among Prime Ministers (Ideological Left-right Hypothesis), and 2) Prime Ministers adjust the complexity of their speeches in response to economic and social insecurities (Responsiveness Hypothesis).

Figure 3 shows average speech complexity for 12 prime ministers, plotted against their party scores on the left-right dimension as measured by the Manifesto Project (Volkens et al. 2016). Left-wing Prime Ministers speak in considerably more complex terms than right-wing Prime Ministers as evidenced by the downward-sloping regression line. On average, the most complex speeches are delivered by José Luis Zapatero, Socialist Prime Minister of Spain between 2004 and 2011. The average complexity score of his 358 speeches is 15.37. In contrast, the average complexity score of Dutch liberal Mark Rutte, the most straightforward talker among these Prime Ministers, is 9.08 (based on 107 speeches). This lends some support for the Ideological Left-Right hypothesis: right-wing politicians are more prone to using simple language than left-wing politicians. However, this relationship may be partly due to first-language differences. Mark Rutte, a Liberal, and Jan-Peter Balkenende, a Christian-Democrat, are not only right-wing politicians and simple speakers, they are also Dutch.

To evaluate the extent to which Prime Ministers adjust complexity in response to societal and economic insecurities, we regressed quarterly aggregated speech complexity on 1) lagged growth in GDP, 2) lagged unemployment rate, and 3) lagged change in unemployment rate, the results of which are presented in Table 4, and controlling for speaker (ideological) characteristics.
The results indicate that Prime Ministers respond to changes in the unemployment rate by changing the averaged complexity of their speeches: the coefficients for lagged change in unemployment rate in Models 3 and 4 are negative and significant ($\beta = -0.45$ and $\beta = -0.46$ respectively), indicating that as the unemployment rate rises in one quarter, Prime Ministers respond by using less complex language the next; when the unemployment rate falls in one quarter, Prime Ministers will use more complex language the next. All else equal, as the change in unemployment rises by one percentage point, complexity decreases by about half a grade. We find no evidence that Prime Minister respond to GDP growth or to the rate of unemployment.

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12 We leave modeling of the time trends for a later version of this paper, when we also include Dutch data, going back to the 1940s.
Figure 3: Mean Complexity PM Speeches and Left-Right dimension

Note: This figure shows how average speech complexity for 12 prime ministers, plotted against their scores on the left-right dimension as measured by the Manifesto Project (Volkens et al. 2016). Left-wing PMs speak in considerably more complex terms than right-wing PMs as evidenced by the downward-sloping regression line, indicating that some economic insecurities are more important than other.

Conclusion

This paper analyzed complexity of speech. Research in the American context has found that personality differences (Tetlock 1981, 1983, 1984), at least in part explain differences in complexity between liberals (high) and conservatives (low). As such, it considers speech complexity as something static, a characteristic of the speaker. Instead we believe that speech complexity varies predictably, either because of, for example, technological changes in how our politics are organized, because of strategic considerations, or because of critical changes in the social or economic environment of the politician.

Using two different datasets (one of German parliamentary speeches, and one of speeches of 12 prime ministers across six EU member states) this paper sought to extend the range of
possible explanations for complexity. Our results are mixed but interesting. We find that, on average, German right-wing parties produce speeches that are more complex than those of their left-wing counterparts, whereas among the prime ministers we find the opposite result. This suggests that the findings on ideology from the US may not translate perfectly to the European context, where political competition takes place on more than one (left-right) dimension. We intend to further our analysis of ideology and complexity in a future iteration of the paper.

We also find that (German) parties, as well as prime ministers respond to (changes in) the unemployment rate, but in different ways. This finding supports the view that complexity of speech is at least in part responsive in nature, and as such it speaks to work in political science on (vagueness of) political responsiveness (e.g., Somer-Topcu 2015).
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