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# Exploring Female Legislators' Policy Agenda Using a Dynamic Topic Model

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**Abstract** Drawing on forty-four years of legislative debate, this paper explores the evolution of women's speech in the Irish parliament. We examine male-female gaps in policy focus as well as changes over time in the topics addressed by male and female members of Parliament, the Teachta Dála (TDs). To unveil these patterns, TD speech content is analyzed using dynamic topic modelling. This method is applied to the full corpus of legislative speeches in Dáil Éireann from March 1973 to November 2017. Substantively, our findings suggest that women representatives' agenda differs from that of men: women speak more about childcare and education than men, while men dominate in the foreign policy and infrastructures topics. These differences in policy focus hold when controlling for political and societal supply factors such as partisanship, leadership roles, committee assignment and professional career. In addition, the study examines the critical mass hypothesis and finds that the male-female gaps in policy focus are - on the main - stable over time. The presence of more women in Parliament, therefore, does not induce female legislators to further distinguish their agenda from that of male legislators. If anything, when gaps in topic attention do vary over time, these changes go against the critical mass hypothesis, with women abandoning traditionally 'feminine' topics and shifting their focus to traditionally 'masculine' topics.

## 1 Introduction

What do women speak about when they take to the floor of democratic assemblies? Do female representatives 'act for' women in legislative debates? While the underrepresentation of women in legislatures, across the world, has been well documented, we still know relatively little about the legislative activity of female politicians and almost nothing about their parliamentary speech patterns.

One of the principal arguments underlining the need to elect more women to public office is the belief that female legislators highlight different issues compared with their male counterparts, in general, and pay more attention to women's policy needs, in particular. Anne Philips (1995) has most forcefully argued that descriptive representation primarily matters because it should lead to greater substantive representation (1995:83). But even Philips herself speculated about whether or not the inflexibility of parliamentary systems, as evidenced, for instance, by party discipline, would prevent this from happening. Empirically we still know far too little about the nature of the link, if any, between descriptive and substantive representation. This paper aims to explore this connection through a longitudinal examination of the topics that male and female legislators, the Teachta Dála (TDs), have spoken about in the Irish parliament (Dáil Éireann) between 1973-2017.

Surprisingly, given the volume of parliamentary time devoted to legislative debate, the question of what issues male and female politicians speak about has received very little attention (for exceptions see Bäck (2014)). In part, this neglect reflects the general inattention, until recently, on the part of legislative scholars to speech activity (Slapin and Proksch 2014). It was only with the widespread digitization of politically relevant texts and the concomitant methodological

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advances in content analysis that this material became more readily available for examination. Using these data and techniques, content analysis has been used reasonably extensively, in the past decade, to study topics such as the political ideology of politicians and their policy agendas (see [Wilkinson and Casas \(2017\)](#)). But, with some exceptions, demographics (other than partisan affiliation) have been largely ignored. In this paper we draw on these methodological advances and this treasury of data to examine whether or not female legislators talk about different issues than their male counterparts and, more broadly, whether they are best placed to represent the issues of female citizens. Moreover, we exploit our extensive longitudinal data to test whether the link between descriptive and substantive representation is stronger as more women enter parliament, as postulated by the critical mass hypothesis.

## 2 Literature Review

Research on women in politics can be categorized into two broad camps, focusing on descriptive and substantive representation respectively ([Wängnerud 2009](#)). The first strand of research, which is by far the more developed, examines why women are underrepresented in legislative bodies across the world. Research in this tradition has firmly established the impact of political institutions, such as electoral systems and quotas ([Krook 2010](#), [Paxton 2006](#), [Rule 1987](#), [Tremblay 2012](#)), party recruitment practices ([Caul 1999](#), [Maland and Studlar 1996](#)) and resources ([Burns et al. 2001](#), [Burrell 2010](#), [Darcy et al. 1994](#)). Other work in this tradition examines women's reluctance to run for office ([Kanthak and Woon 2015](#), [Lawless and Fox 2010](#)) and voters' willingness to elect women ([Darcy et al. 1994](#), [McElroy and Marsh 2010](#)). Cross-national work in this tradition has also explored the importance of cultural, religious and socio-economic factors ([Iversen and Rosenbluth 2008](#), [Norris and Inglehart 2011](#), [Wide 2006](#)).

The second strand of research on women in elective office centres on the substantive representation of women's interests in parliament, and is far less mature. In part, the lack of attention to substantive representation stems from the relative dearth, until recently, of women elected to public office, but it also reflects the difficulty in measuring the underlying concept. Descriptive representation has an easily quantifiable, cross nationally comparable dependent variable, typically the percentage of women elected to a given parliament. Substantive representation is a much more contested concept. What precisely are women's interests and how should we measure the activity that represents them? Women are clearly not a monolithic group and even when

we allow that they may have particular interests in areas such as childcare and social welfare, should we focus our attention on parliamentarians' preferences, behaviour or policy outcomes?

The largest body of work on substantive representation draws on surveys of parliamentarians to demonstrate that male and female politicians have different preferences, on social issues in particular. For instance, [Lovenduski and Norris \(2003\)](#) find that women in Westminster have significantly different attitudes to men on issues relating to equal opportunities and affirmative action. Similarly, in Australia gender differences have been found on issues relating to the advancement of women, though, interestingly, this work does not find gendered differences in other policy areas ([McAllister and Studlar 1992](#)). Other interview and survey research has found that women have a different view of their constituents, constituency work and their role as representatives ([Franceschet and Piscopo 2008](#), [Smooth 2011](#)). Overall, work in this vein finds that women in parliaments tend to be more to the left of men and more supportive of new policies, regardless of political affiliation ([Wängnerud 2009](#)). The underlying assumption of this work is that women's presence in parliament matters, but it cannot demonstrate that these differences in attitudes are manifested in legislative behaviour and/or policy-related activities.

A more recent body of work, largely based on studies of the US Congress, examines the legislative activity of women and has established that women are more hardworking than their male counterparts and more effective ([Anzia and Berry 2011](#)). They are more likely to sponsor bills than men and are far more likely to sponsor female friendly legislation ([Box-Steffensmeier et al. 2004](#), [Salmond 2006](#), [Swers 2002](#), [Wängnerud 2009](#)). Using a legislative effectiveness measure that captures bill introduction, passage and substantive impact, [Volden et al. \(2010\)](#) find black legislators to be less effective but women more so. [Volden et al. \(2013\)](#) again find that women are more likely than men to sponsor legislation and, in part, due to their less confrontational style of policy making are more effective in getting their bills into law when they are in the minority, but that majority party women are less likely to get their sponsored bills passed into law, despite introducing more sponsored bills than their male counterparts. Outside the US, [Akirav \(2016\)](#) finds that women and non-Jewish members of the Knesset are more productive, where productivity is measured in terms of bill introduction, speeches and parliamentary questions.

Work on parliamentary speech patterns of male and female MPs - closer to the focus of this paper - focuses mostly on speech frequency analysis. Work on male vs. female speech *contents* is in its infancy. The findings to date on speech participation are rather mixed. Work on Swedish

members of parliament has found that women speak far less than their male counterparts (Bäck 2014) and a similar pattern is found for the US Senate (Osborn and Mendez 2010). However, the opposite pattern is found for the US House of Representatives (Pearson and Dancey 2011) where women give far more one minute speeches than congressmen. Elsewhere, no gendered differences were found in the number of speeches delivered in the Ugandan parliament (Wang 2013). Research, both quantitative and qualitative, on speech contents does consistently find that female parliamentarians focus more on women's issues, such as women's health (Clayton et al. 2017, Piscopo 2011, Tamerius 2010), though the attention to these issues may be quite marginal overall or championed by only a small group of female politicians (Celis 2006, Tremblay 1998). Issues such as energy or defense policy (Fraune 2016, Osborn and Mendez 2010) have been found to have no gendered speech patterns in the case of the US but Bäck (2014) do find differences in 'hard' and 'soft' policy focus in Sweden. This body of research, however, has relied heavily on speech counts and keyword usage and has yet to exploit recent advances in automated text analysis and topic modelling. In this paper we move away from a legislative behaviour scholarship focused on activity frequency and build on the recent work on gendered speech contents by offering a new country of analysis, a longer time period of study and a relatively new approach for identifying the substantive topics that men and women talk about.

### 3 Theory

Legislative activity encompasses a wide variety of activities and outputs; voting, committee work, bill sponsorship, constituency work, and even lobbying fall under this umbrella. In this paper we focus on parliamentary speech as an incontestable forum in which representatives speak or 'act for' their constituents. It is the "most public battleground in the policy making process" (Swers 2002) and may be less constrained by party discipline and procedural rules than other activities, such as voting and bill sponsorship. Legislative speech may also be the key point at which women can effectively reframe a policy debate so that it is gendered or 're-gendered in line with women's interests' (Childs and Lovenduski 2013). Legislative speech has the added advantage that it is also an activity which almost all elected officials partake in, as it provides them with an opportunity for position taking, credit claiming and/or self promotion Bächtiger (2014). If we are to find a link between descriptive and substantive representation this is one of the more compelling places to start the search. Though some authors have argued forcefully that gender may be irrelevant in deliberation processes, dwarfed by the institutional and partisan con-

straints of the legislature (Childs et al. 2004). In the Republic of Ireland, however, delivering speeches in the chamber is not heavily regulated by parliamentary rules, especially in comparison with other European assemblies (Proksch and Slapin 2012). Speakers are relatively unconstrained in expressing their personal opinions (Herzog and Benoit 2015) and a member may make a statement on any matter [Standing Order (SO) 45] and any member desiring to speak simply rises in his or her seat (SO47). As such, we should expect to see these gender differences in speechmaking on issues that directly related to women's life experiences.

It should be noted on the other hand that women's issues have not been historically politicized in Ireland, a country where the number of women running in elections has, historically, been very low (McElroy and Marsh 2010) and as such these patterns may not readily manifest themselves in the data. Additionally, if legislatures are gendered institutions (Duerst-Lahti 2005), we might not expect any differences, as they are constructed and structured to advance the careers and legislative styles of male representatives.

Arguably almost all policy issues have a gendered aspect, as they impact either explicitly or, more often, implicitly, on the unequal relations between male and female citizens. However, scholarship to date has typically focused on examining whether women speak more on stereotypically female issues, when compared with male legislators. This of course raises the old chestnut of what constitutes a 'woman's issue'. There is a large literature on this topic but in this paper we follow Beckwith (2011)'s advice that we do not have to labour over 'an essentialist understanding of women as a group' to address this question, but rather simply recognize that there are contexts in which most women operate that affect and define their life chances and opportunities. As such, and following Krook et al. (2012) we expect gendered patterns of speech making to be most obvious in the following policy domains: social welfare, childcare, education, and healthcare.

*Hypothesis 1: Women are more likely to speak on topics that directly relate to women's life experiences compared with their male counterparts*

Secondly, the paper aims to test whether the link between descriptive and substantive representation is stronger when more women enter Parliament. In the scholarship on women's representation, 'critical mass theory' has gained much ground. The general thrust of the argument is that women are very unlikely to have an impact on political outcomes in heavily male dominated institutions (Grey et al. 2002, Saint-Germain 1989, Thomas 1994). The arguments are variously that women can only effectively work together above a certain critical mass - typically between 10-40 per

cent (Childs and Krook 2008). Alternatively, however, a critical mass might trigger a backlash against female representatives, as they become more empowered as a group (Crowley 2004), which could trigger a counter-reaction in female representatives and even greater divergence over time between men and women representatives when it comes to focus on and coverage of gendered policy issues. When women operate in contexts where they are a significant minority, the theory predicts instead that they would feel pressured to conform to the dominant majority models, and that they would be mere tokens and subject to extra scrutiny.

*Hypothesis 2: As more women are elected to parliament, the differences between male and female focus on women's issues will increase*

It is interesting to note that whether the number of women in parliament affects men's focus on women's issues is not contemplated by critical mass theory. Arguably, with women forming a key and increasingly distinct, self-aware (and large) constituency, male representatives may feel the need to address women's policy concerns and, as such, we should expect gender differences in coverage of women's issues to decrease.

The empirical evidence to substantiate critical mass theory is mixed, at best (Bratton 2005, Childs and Krook 2008). We exploit a new country of analysis, and extensive longitudinal legislative speech data to put this theory to the test. One of the great advantages of studying legislative debate is that we can examine changes in gendered speech over a long period of time and see if there are shifts in gendered speech with increases/decreases in the levels of women's representation. The absence, to date, of such longitudinal analyses of women's substantive representation is one of the key weaknesses in the field of gender and politics (Beckwith 2007, Wängnerud 2009). This gap is what we try to address here. We exploit variation in the number of women sitting in the Irish parliament to determine whether critical mass theory can be supported and to examine female but also male changes in topic attention over time. The number of women running in Irish elections has, traditionally, been rather low. Until the late 1960s the absolute number of women competing at election time never exceeded five per cent. There was, however, an increase in the number of women running for election in the 1970s and 1980s, with a significant jump in the early 1990s when just under 15 per cent of all candidates were female. While the number of women elected never exceeded 15 per cent (until the introduction of gender quotas in 2016) this compares favourably with the low single digit figures of the early 1970s. We might, thus, expect to see a distinct rise in the representation of women's issues over the past fifty years in Dáil Éireann.

## 4 Data and Methodology

### 4.1 A corpus of parliamentary speeches from Dáil Éireann

To study how women elected representatives discuss policy issues in parliament, we draw on almost 45 years of Dáil speeches and explore the dynamics of the latent thematic structure of this corpus. In November 2017 we retrieved all available parliamentary transcripts from the Oireachtas website (<http://debates.oireachtas.ie>). After parsing these documents, we were left with 2,451,652 TD utterances which span the period March 1973 to November 2017.

### 4.2 Measuring the thematic structure of Dáil speeches via Dynamic Latent Dirichlet Allocation

An initial, descriptive step of the study is to provide a picture of the communication landscape found in the Irish parliament. What subjects are discussed in the Dáil, and how have these themes evolved over time? A systematic content analysis of all parliamentary speech would be able to answer this question. Two problems arise when planning to undertake such a study. First, the cost in terms of time and resources to manually code over 2 million TD utterances in our corpus easily exceeds prohibitive levels. Second, while we have some general understanding of the likely themes which would be featured in parliamentary debate, we have no solid *a priori* knowledge of an exhaustive list of topics found in the corpus of transcripts. In light of these obstacles, we rely on an *unsupervised* machine learning approach to resolve this classification problem by identifying substantive clusters of terms that appear across the span of parliamentary speeches (see Grimmer and Stewart 2013). In recent years, a number of valuable computational models which help achieve this goal have become widely available. In particular, Latent Dirichlet Allocation (LDA) (Blei et al. 2003a) and the Structural Topic Model (STM) (Roberts et al. 2014) are increasingly popular models for unsupervised learning of thematic structure in corpora of political texts (see Wilkerson and Casas 2017 for an excellent review of the computational political science literature).

Given that our corpus covers a long time period—over forty years—we employ a specific class of models known as *dynamic* topic models to determine the latent themes that run through the collection of parliamentary transcripts. We do so for a few reasons: (1) since the texts in our corpus cover many decades, terminology related to a given theme can change over time; and (2) certain themes, such as the



inter-communal conflict in Northern Ireland, will be more prevalent during certain periods but less so in others. Such ephemeral themes might not be detected by standard topic models because, in part, they assume that *all* documents in a corpus are exchangeable—i.e., that the order of documents in a corpus does not matter. In contrast to standard topic modeling approaches such as LDA or STM, dynamic topic models explicitly model the sequence of documents.

To better estimate topics whose terms are expected to evolve over time, in this paper we use the dynamic topic modeling approach provided by Blei and Lafferty (2006) which is an extension of the static LDA model (Blei et al. 2003b). In this model, the corpus is divided into sequential temporal periods (i.e. “time slices” of years). The model assumes that each document within these slices is exchangeable and further it allows the topic distributions to evolve temporally forward by time slice. Approximate posterior inference of the model is achieved using variational inference (Blei and Lafferty 2006 p. 3-5)

#### 4.3 Dynamic topic model estimation

Before running the Dynamic LDA, we carried out a number of text processing steps to help reduce the dimensionality of the document-term matrix which will be used as input in the topic model, as well as to help increase interpretability of the model output (see Grimmer and Stewart 2013). These steps included converting the text to lowercase, machine translating all non-English utterances into English, automatically detecting common bigrams and trigrams, and removing common English “stop words” that do not convey substantive information (e.g. “and”, “of”, “it”, etc.)<sup>1</sup> We then collapsed all processed utterances to the TD-daily level. To further increase computational efficiency, the corpus vocabulary was trimmed to include terms that were spoken in at least 50 TD-days. This procedure resulted in a corpus of 244,291 “documents” (collapsed utterances at the TD-day level) and a vocabulary of 52,933 unique terms.

Following the procedure described in Section 4.2, we separate this set of collapsed utterances into yearly groups, which yielded 45 time slices. With these ordered texts in hand, we estimate the model using the `gensim` Python wrapper for the Dynamic LDA.<sup>2</sup> Running on a machine with a

Intel Core i5-4590 3.3Ghz processor, posterior inference of the  $k = 40$  dynamic topic model took about 72 hours.<sup>3</sup>

#### 4.4 Topic model interpretation

Of the 40 topics estimated from the Dynamic LDA, 31 turned out to be substantive topics, ranging from defence, to trade, farming, education and taxation. Nine “Junk” topics (AISumait et al. 2009) which included procedural and constituency work topics were not considered since these contents, albeit quite prominent, are beyond the scope of the current paper.

Table 1 below provides the top 10 keywords associated with each topic for three of the 45 time slices (1975, 1985, and 2015). The first step in interpreting the model results was to review these highly probable terms for each topic over time. The thematic substance for many topics is immediately apparent at this stage, which increased our confidence that the model results are coherent.

[Table 1 about here]

To assign the topic label, the qualitative analysis of the top 20 words associated with a topic was complemented with the interpretation of a sample of documents with high topic probabilities—and thus highly representative of the topic in question. For example, a sample utterance below from Jan O’Sullivan TD on December 12th, 2003 is exemplary of the education topic, with the model assigning it a probability of 0.684 for topic 8 (*Education/Third Level & Vocational*):

*“Yesterday, many students from the Dublin Institute of Technology protested outside Leinster House because they are working in totally inadequate conditions. When will the Grangegorman Bill be introduced?”*

Other substantive topics that feature prominently in the sample are *Farming & Agricultural Trade* and *Foreign Affairs & Human Rights*. The following was mentioned on May 11th, 1983 by Ned O’Keeffe TD from a speech which was assigned a probability of 0.965 for the *Farming & Agricultural Trade* topic (topic 6):

<sup>1</sup> We should note that the number of exclusively non-English utterances was very low (1.4%). Of this set, 58% was in Irish and the remainder was in various European languages.

<sup>2</sup> The code for the Dynamic LDA which is used by the wrapper can be found at <https://github.com/blei-lab/dtm>

<sup>3</sup> One common problem that arises when running any topic model is that the number of topics is set by the researcher. But, what is the correct number of topics? Given that we have little to no theoretical prior information on this value, we experimented with a number of different values for  $k$  topics. Based on our qualitative evaluation of topic coherence and exclusivity, we settled with  $k = 40$ .

*"Is Deputy Farrelly in favour of importing potatoes from Holland? Is Deputy Farrelly in favour of importing potatoes? Is he in favour of importing Dutch potatoes?"*

Likewise, an exemplary sample utterance which is highly related to the *Foreign Affairs & Human Rights* topic ( $prob = 0.986$ ) is the following, by Brian Lenihan Sr. TD (April 26th, 1988):

*"While there have been exchanges between Nicaragua and Honduras about deployment of a multinational force to guarantee the stability of the border between the two countries, there is no formal request before the United Nations for a UN force for this purpose. In the absence of such a request from the countries directly concerned, Ireland has no function in the matter, which would be for consideration in the first instance by the organs of the United Nations."*

After a qualitative examination of the highly probable topic keywords and 'top documents', topics were assigned a descriptive label which are listed in Table 1. To further focus our analysis, we combine a number of substantive topics into ten higher order "macro categories" that are based largely on classifications from the Comparative Agendas Project (John et al. 2013). Table 2 displays these meta-topics and the underlying topic combinations of which they are comprised. Of the eleven macro topic categories we constructed, ten (*Social Welfare, Childcare, Economy, Health, Foreign Policy & Defense, Infrastructure, Justice & Civil Rights, Agriculture, Education, and Environment*) are selected for analysis of gender patterns (we exclude *Procedural/Admin*). Studies on gendered legislative behaviour have detected differential participation patterns of men and women in different policy areas as well as in filling ministerial posts (Blumenau 2016, Krook and O'Brien 2012, Childs 2004, Bird 2005). In this literature, women are usually found to be overly active in childcare, education, employment and welfare policy areas while under-represented in foreign, defence, agriculture, and finance policy. These policy areas, classifiable as "feminine" and "masculine", will be therefore adopted here as key dependent variables. *Justice & Civil Rights* - found to be "gender neutral" in the cabinet gender power analysis by Krook and O'Brien (2012), is also included in this analysis, being a very salient ministerial portfolio in the Republic of Ireland (Druckman and Warwick 2005).

#### 4.5 Topic model validation

In Section 4.4, we provided an initial interpretation of the themes generated by the Dynamic LDA model. Here we proceed with the critical task of validating the model. A major advantage of an automated approach to text classification is

a very high level of reliability (Laver and Benoit 2002); however, high model validity cannot be assumed outright. As Grimmer and Stewart (2013 p. 5) state, it is always necessary to "validate, validate, validate" the output of a computer-assisted text analysis. Below we provide the results of two validation procedures. In particular, we (1) demonstrate the *semantic validity* of the model by observing how the topics relate to each other based on the similarity of term usage; and (2) we investigate the *predictive validity* of the model by observing how closely the salience of a given topic corresponds to relevant external events. Unreported is a running analysis of concurrent validation where we compare human codings of aggregate topics to the topic model output.

##### 4.5.1 Semantic validity

Aside from the qualitative interpretation of highly probable words and documents associated with each topic described above, the semantic validity of the topics is also assessed based on how the topics themselves cluster based on term similarity. To refresh, the topics generated by the Dynamic LDA model are represented as probability distributions over terms in the fixed corpus vocabulary. We therefore expect that, if the labels given by the researchers to the topics is correct, the distribution of topic probabilities for theoretically proximate themes will have a more similar shape and vice versa. At the very least, we should expect to see procedural and other "junk" topics to be semantically distant to more policy-substantive themes. To illustrate the semantic similarity of the Dynamic LDA model output, we compute the pairwise Jensen-Shannon distances (Endres and Schindelin 2003, Österreicher and Vajda 2003) for all 40 topics generated by the model and project these distances onto a two-dimensional space using classical multidimensional scaling (MDS) (Borg and Groenen 2003).

[Figure 1 about here]

The results of this procedure are displayed in Figure 1. In this plot, topics from the 2015 time slice are represented by circles and are labelled with the researcher-generated labels described in Section 4.4 and listed in Table 1. The sizes of the circles are proportional to the topic prevalence, which is roughly equivalent to the share of words in the corpus vocabulary that are assigned to a particular topic. Given that the Jensen-Shannon distances are calculated based on topic probability distributions, the distances between the topics in the plot signify how similar or dissimilar the topics are with each other with respect to term usage similarity. As mentioned above, a large number of estimated topics are either "junk" or procedural in nature. These topics are displayed

as hollow circles in the plot and are labelled with their topic identifiers. The 29 substantive topics are illustrated as dark solid circles and are labelled.<sup>4</sup>

Reviewing these results, we find that the clustering of topics in relation to their common term usage generally conforms with our theoretical expectations. First, we see that there is a relatively clear separation between procedural and “junk” topics and topics we have determined to be substantive. Second, we find that a number of substantively important topics are proximate to each other in expected ways. For instance, “Healthcare” and “Healthcare Management” are close to each other as well as other public services on the left side of the plot. Topic 22, which has assigned high probabilities to Irish language terms and which we have labelled as “junk”, is justifiably very far from all other topics on the bottom of the plot. Based on this analysis, our confidence in our labelling of the generated topics is further strengthened.

#### 4.5.2 Predictive validity

An alternative procedure to determine the performance of the model classification, as well as the ability of the researchers to interpret the output, is to demonstrate the predictive validity of the model output. That is, we wish to observe how well the estimated topics correlate with relevant external events (Quinn et al. 2010). If the model is classifying the content well, we would expect the salience of a given topic to increase during periods when events which are relevant to the topic occur.

[Figure 2 about here]

Figure 2 displays the average monthly topic probabilities for four substantive macro topic categories: (*Economy*, *Foreign Affairs & Defence*, *Agriculture*, and *Social Welfare*) over the period March 1973 through November 2017. Starting with the *Economy* topic graph, we see a peak of discussion from 2008 and on which corresponds neatly with the Eurozone economic crisis and subsequent structural reform policies. Moving on to the *Social Welfare* plot, we see a marked rise in discussion throughout the 1980s when unemployment was extremely high in Ireland and the Irish economy was objectively in a dismal shape. Discussion surrounding *Agriculture* is on a downward trajectory following Ireland's entrance into the Economic Community in 1972 and the subsequent removal of national agricultural protectionist policies. Lastly, viewing the *Foreign Affairs & Defence* topic plot, we observe very large spikes in discussion

<sup>4</sup> Note that the values on the axes of the two-dimensional MDS plot are not theoretically meaningful on their own. The output should be interpreted only in terms of distances between points.

during predictable periods where foreign policy was at the top of the political agenda: for instance, the announcement of complete cessation of hostilities by the Provisional Irish Republican Army in 1994, as well as the two referendums on the Treaty of Nice in 2001 and 2002. Generally speaking, based on the evidence displayed in Figure 2 and our reading of documents with high probability assignments for other topics, we are increasingly confident that the temporal variation of the Dynamic LDA model output follows theoretically predictable patterns. We therefore argue that the model exhibits good levels of predictive validity.

#### 4.5.3 Concurrent validity

[CONCURRENT VALIDITY ANALYSIS/DISCUSSION TO BE INCLUDED HERE]

## 5 Analysis

### 5.0.1 Male-Female Gaps in Policy Focus

We use the topic probabilities of a number of policy macro categories based on TD speeches from Dála 20 to 32 (1973 to 2017) to estimate gender differences in speech contents (Hypothesis 1). Before this period the number of female TDs is negligible and data on TD covariates is harder to come by. We thus focus on parliamentary sessions with a reasonable presence of women and data availability on TD demographics. Topic probabilities of the 10 dependent variables outlined in Section 4.4 above will be regressed on TD gender and other relevant control variables. The unit of analysis is TD-day and the dependent variables are average daily macro category probabilities. Probabilities are fractional data, they are non-negative and only defined in the [0,1] interval: they therefore require a non-linear conditional expectation function. The generalised linear model or GLM, introduced by McCullough and Nelder (1989), is a maximum likelihood estimator of non-linear least squares, appropriate when the distribution of the dependent variable does not fit OLS assumptions. Papke and Wooldridge (1996) proposed the use of GLM with the binomial family specification and a logit link function to model fractional dependent variables. To take into account the panel structure of our data, we add month fixed effects and standard errors clustered by TD (Papke and Wooldridge 2008).

We test for gender differences in speech topic controlling for other potential explanations of topic attention that

could be correlated to the gender of a legislator. In particular we control for partisanship (party affiliation), committee assignment (a 0/1 variable capturing whether or not the TD is sitting on the relevant policy committee during the associated legislative term), professional expertise (whether the TD's professional career is relevant to the specific policy), incumbency (whether the TD served in the previous parliament), urban-rural constituency, and seniority (number of legislative terms in office). We also control for government-opposition dynamics, propensity to speak, and leadership effects (whether the TD is a serving minister in the relevant Dáil). Time-varying factors that could impact topic attention are kept constant via monthly dummies. Results are reported in Tables 3 and 4.<sup>5</sup>

[Tables 3 and 4 about here]

The results demonstrate that male-female gaps in topic attention are statistically significant in 4 out of 10 topics analysed : i.e. in the Childcare, Education, Foreign & Defence Policy, and Infrastructures (Transport, Energy and Telecommunications) topics. These male-female gaps are in the expected direction: women TDs devote more space in their legislative speeches to the traditionally 'female' topics of Childcare (60% higher topic probabilities than male TDs) and Education (86% higher topic probabilities than male TDs), while they speak less about Foreign & Defence issues (45% lower topic probabilities than men), and Infrastructures (32% lower topic probability than males), traditionally 'male' topics. There are no male-female differences in topic attention in the case of the Economy or Agriculture (traditionally 'male' topics (Krook and O'Brien 2012)). Perhaps more surprisingly, nor are there any significant differences in the Social Welfare or Healthcare topics (traditionally 'female' topics (Krook and O'Brien 2012)). Thus the Irish case only confirms Krook and O'Brien's (2012) gendered classification in the case of Education, Foreign/Defence Policy, Infrastructure and Childcare. It also confirms the neutrality of the Environment and Justice & Civil Rights (JCR) topics. In summary, we find that policies such as Social Welfare, Healthcare, Economics, Agriculture, JCR and Environment are gender-neutral in the Irish case. Childcare and Education are 'feminine topics' while Foreign/Defence and Infrastructures are 'male' topics. Figure 3 below summarises these patterns graphically.

[Figure 3 about here]

As for the party controls, we find that Fine Gael TDs are more likely to talk about JCR and less likely to talk about

Social Welfare, when compared with Fianna Fáil TDs (the reference category for the party controls). For all other policies, they display similar levels of attention as Fianna Fáil TDs. TDs from the Labour party, strikingly, devote less attention than Fianna Fáil TDs to Social Welfare, Childcare and Education, while they talk more about Healthcare. They also talk less on Agriculture, if compared to Fianna Fáil TDs. The Green Party devotes the same level of attention to most issues as Fianna Fáil TDs, except for a significant lower attention on Childcare and Education, higher attention on Foreign Affairs and - unsurprisingly - a statistically significantly higher amount of attention to the Environment. Sinn Féin talks more about the Economy and JCR issues than the baseline party. This is unsurprising, given their closeness to the communist ideology, and given their ties to the IRA and their history of rebellion. Similarly to Sinn Féin all other extreme-left parties talk significantly more about the Economy than Fianna Fáil TDs.

Overall, the results from the party controls further confirm the validity of the topic model results, as is the case for the remaining control variables: relevant committee membership and professional careers of TDs predict higher topic attention for all the associated topics (except in the case of Childcare). Furthermore, Dublin TDs talk less about the Agriculture and Infrastructure topics. These topics in particular appear to be prerogative of TDs in rural constituencies instead. This makes sense, since rural constituencies have an economy primarily reliant on agriculture and with lower investments in infrastructures (telecommunications and roads, for example) than the Dublin region. Dublin TDs also talk less about the social welfare topic, which might be due to the fact that this macro category contains the regional development topics (topics 12 and 19); and they talk more on childcare issues, which might be due to higher proportions of households with both parents in work in Dublin, or to the higher risks to child welfare resulting from living in a city. TDs from Dublin also have higher topic proportions for the JCR topic, which makes sense given higher rates of crime in urban areas. TDs from governing parties talk more about 'ordinary administration' topics such as Social Welfare and Infrastructure, while TDs from the opposition talk more about general, and highly salient, complex topics such as the Economy, Foreign & Defence and Healthcare, where the likelihood of successful government shaming may be higher. Incumbents speak less about Healthcare, Economy and JCR policies while ministers speak more about Foreign/Defence, Education and the Environment, while, similarly to incumbents, they speak less on Healthcare and JCR. Seniority does not seem to predict topic attention, except for the fact that seniors tend to devote less attention to the topic of infrastructures.

<sup>5</sup> A robustness regression analysis was carried out for all text that had more than 20 tokens. Inferences are unchanged, see Tables A1 and A2 in the Appendix



This first analysis highlights that irrespective of political and societal 'supply' factors, such as incumbency, party leadership, committee assignment or professional career, women legislators prioritize specific sets of topics that would receive significantly less attention without women in the legislature. We therefore find a link between descriptive and substantive representation.

Is this link between descriptive and substantive representation of women issues enhanced when more women enter parliament, and is this male-female gap stable over-time? In the analyses below we test the critical mass hypothesis which argues that the descriptive-substantive representation link should be stronger when more women enter parliament.

### 5.0.2 Critical Mass: Dynamic Topic Attention by Gender

Hypothesis 2 is borrowed from the literature on the effects of a critical mass of women, which postulates that more women in the legislature should embolden women to further emphasize female issues and agendas. We test this hypothesis in two ways. First, we run a pre-post analysis using the critical thresholds represented by the 1992 and the 2016 elections. Secondly, we extend the over-time analysis of gender effects through the more granular interaction of month with TD gender. In this second analysis, we examine male and female trends separately, to determine whether dynamic changes in topic attention are due to female or to male TDs.

The pre-post analyses exploit the 1992 and the 2016 elections as key thresholds. The 1992 election represents the first time in Irish history where the percentage of women sitting in Parliament reaches double-digits (12%, a 4 percentage point jump over the previous Dail). The 2016 election was similarly crucial in that it saw the introduction of gender quotas, and resulted in a historical record 22.2% of seats being filled by women, a 7 percentage point increase from the previous Dail<sup>6</sup>. We retain all controls mentioned in the previous analysis and we add dummy variables (post-1992 and post-2016, respectively) taking the value of 1 if the legislative speech was delivered after the threshold and 0 if it was delivered before the threshold. Our key estimator of interest is the interaction between the gender of the legislator and the relevant legislative period. If the critical mass hypothesis is correct, we would expect the interaction term to be positive and significant for 'feminine' topics, such as Social Welfare, Childcare/Family Affairs, Education and Healthcare. A positive interaction term would mean that after each critical mass threshold female TDs were even more likely

than men to discuss feminine topics than they were before the threshold.

The results from the two pre-post analyses are presented by way of coefficient plots (see Figures 4, 5, 6, and 7 below). The relevant regression tables are available in the Appendix: Tables A3, A4, A5 and A6.

[Figures 4, 5, 6, and 7 about here]

Figures 4 and 6 capture the male-female gap separately for the before and after periods (pre-post 1992 and pre-post 2016). Figures 5 and 7, instead, report the interaction effects, which show whether the differences between pre- and post- gender gaps are statistically significant. The results from both pre-post analyses contradict the critical mass hypothesis. Figure 4 shows that female legislators are less likely than they were pre-1992 to outshine male legislators on 'feminine' topics such as Childcare, Healthcare and Education. In traditionally male topics - and especially on the Economy and Agriculture topics - post-1992 women are more likely to parallel men in topic attention than pre-1992, where the gender gaps favoured males. All interaction effects are however insignificant at the 0.05 level (see figure 5), meaning that all these pre-post differences in the gender attention gap are not distinguishable from zero.

The pre-post analysis using 2016 as a threshold shows broadly similar patterns. The split sample analysis appears to confirm the critical mass theory in the case of Childcare/Family Affairs. Post-2016 the gender gap in attention favours female legislators more than pre-2016, indicating that in the period where more women than ever entered parliament female, legislators became even more likely to give attention to Childcare/Family Affairs than male legislators. However, the interaction effect is not statistically significant, meaning that this difference is not different from zero. Figure 6 shows broadly similar patterns to the previous analysis in the other topics. The dominance of female legislators over male legislators appears to reduce for feminine topics in the post-2016 period, while the dominance of men is reduced for male topics (see, for example the case of foreign policy). While in the previous analysis all interaction effects were non-significant, this analysis demonstrates that some of these differences are significant. The interaction of gender and post-2016 is significant for the Education and JCR topics but it goes against the expected direction from critical mass theory. Female legislators, for example, are statistically significantly *less* likely to devote more attention than men to education policy - a 'feminine' topic - post-2016, when more women than ever sit in the Irish Dail. Female TDs spoke more than males on Education in the periods where the female 'mass' was smaller.

<sup>6</sup> See [http://archive.ipu.org/parline-e/reports/2153\\_arc.htm](http://archive.ipu.org/parline-e/reports/2153_arc.htm)

Overall, the findings appear to dispute the theory that, as more women enter parliament, female legislators become even more likely to prioritize women's issues. There appears to be no over-time difference in topic prioritization by men and women, notwithstanding the changes in parliamentary composition. Moreover, when differences are present, they appear to go in the opposite direction than that expected from critical mass theory: as more women enter parliament, women appear to avoid dominating on traditionally feminine topics and to turn their attention to traditionally male topics. These patterns could be driven by either the women themselves, who, recognizing the diversity of the female experience as more women TD enter Parliament, decrease their attention to stereotypically feminine topics, or to the male legislators instead, who, as more women enter parliament, start talking more about topics that they would have ignored before. Whether these patterns are due to male or female legislators will be determined by the more granular dynamic analysis below.

To explore the mechanism behind the dynamic changes in topic attention gaps among male and female legislators, and to further test the critical mass hypothesis, we run a model with a more granular interaction term between gender and month. Exploiting the longer time period offered by our data, we can further explore whether the male-female gaps in topic attention do change over time. Again, critical mass theory would predict that, for 'feminine' issues, the interaction should be positive: as more women enter parliament, women legislators should increasingly devote attention to such topics and further increase the gap with male legislators. The interaction plots (figures 8 to 17 below), moreover, can also reveal whether changes in male-female gaps are driven by either female or male TDs. The full regression results are available in the Appendix: Tables A7, and A8.

[Figures 8 to 17 about here]

The interaction terms confirm the inferences drawn from the pre-post analyses. All interaction effects of TD gender with time are not statistically significant, barring for the Economy topic, with women being *more likely* to focus on economic policy over-time. The progressive increase in the number of women sitting in the Irish Dáil has not made any difference on the agenda of male and female TDs, except in the case of economic topics, which women are increasingly placing in their agenda. The finding of no change goes against the critical mass hypothesis, and so does the positive finding on the 'masculine' topic of economic policy.

Despite the non-significance of the interaction terms, we can still visually inspect the interaction plots to explore

the trends in each topic. Over time, female TDs appear to have *reduced* their attention to most traditionally 'feminine' topics (Social Welfare, Education and Healthcare) and thus started converging with male TDs on those topics. Female TDs do appear to increase their attention to the Child-care/Family Affairs topic over-time and the gap with male TDs is still large, but male TDs are catching up with female TDs as their attention to the topic is rising faster than that of female TDs: this might indicate the possibility of future male-female convergence on this topic as well. In the case of the Economy topic, a traditionally male topic - and the only topic where gender-time interaction is significant - the narrowing of the attention gap is due to female TDs increasing their topic involvement faster than men. Women's attention to Agricultural and Foreign/Defense topics is also slightly on the rise over-time, but Foreign/Defense appears still solidly a male topic as male TDs' interest over-time rises faster than women's. Female TDs' attention to JHA, Environment and Infrastructures topics also appears to be decreasing over-time.

In sum, using various inference strategies, we do not find evidence that the composition of the Parliament - i.e. the 'mass' of women in the legislature - matters for female legislators' agendas. Feminine topics are not more likely to be further monopolized by women as more women enter Parliament. We are starting to see, in contrast, some marginal evidence of women de-selecting from traditionally 'feminine' topics (such as Education) to self-select into traditionally 'masculine' topics, such as the Economy.

## 6 Discussion

In perhaps no other profession is the ability to 'speak out' so valued as in politics. Debate is central to parliamentary life; it occupies a large portion of the agenda and gets more coverage than almost any other activity undertaken by a politician. Acting and governing for women, by definition, must include an analysis of their speech behavior.

In this paper we examined over forty years of parliamentary debate in the Republic of Ireland and found gender gaps in the area of childcare, education, foreign/defense policy and infrastructures (energy, transport, telecommunications), with female TDs giving more attention to childcare and education than male TDs, and male TDs dominating foreign/defense policy and the infrastructures topic. Irrespective of political and societal 'supply' factors, such as incumbency, party leadership, committee assignment or professional career, women legislators prioritize specific sets of topics that would receive significantly less attention with-

out women in the legislature. We therefore find a link between descriptive and substantive representation. There is however no gap in attention to social welfare or healthcare topics among males and females, despite these being often classified as 'feminine' topics.

Furthermore, the paper tests the critical mass hypothesis first by means of pre-post analyses, exploiting the watershed 1992 and 2016 elections, and second with the interaction of TD gender and month-year across the full sample of speeches. We do not find support for the hypothesis that as the number of women in legislatures grows, the incentive for women to act on women's issues grows as well. We find no statistically significant changes in male-female attention gaps over-time and the only statistically significant changes go in the opposite direction: our results show that in periods with larger 'masses' of female legislators, women's dominance on education policy decreases while their dominance on traditionally masculine topics (e.g. the Economy) increases. These changes appear to be driven by male legislators compensating for their previous lack of attention in the case of 'feminine' topics and by female legislators in the case of 'masculine' topics. Both mechanisms are therefore at play: critical masses seem to influence the *majority* group to gain more sensitivity on minority issues, while they appear to incentivize the minority group to mimic the majority.

Our results cast into doubt the notion that the descriptive-substantive representation link is necessarily enhanced when more women gain a foothold in parliament. If anything, the more women have entered the Irish Parliament, the lower the gender gaps in topic attention. As the number of women politicians increases, it may be the case that they become more diverse as a group. Gender is clearly but one political identity, and it interacts with others such as class and age (Schneider and Bos 2019). Women's social roles have also changed with time and social role theory would predict that the male-female gaps in attention should be strongest in earlier periods instead, when women were relegated to more marginal, traditional functions. As Mansbridge (1999) claims, descriptive representation is only fruitful when the minority in question has faced discrimination and social exclusion. Once these societal ills are eradicated, descriptive representation is not expected to have a significant impact. We are starting to see signals that this is what is happening, at least in Irish politics: women appear to be de-selecting from traditionally 'feminine' topics and to shift their attention to 'masculine' ones, thus reducing the representation gap between male and female legislators.

## References

- Akirav, O., 2016. What do representatives produce? work profiles of representatives. *Party Politics* 22 (3), 289–299.
- AlSumait, L., Barbara, D., Gentle, J., Domeniconi, C., 2009. Topic significance ranking of lda generative models. In: ECML.
- Anzia, S. F., Berry, C. R., 2011. The jackie (and jill) robinson effect: why do congresswomen outperform congressmen? *American Journal of Political Science* 55 (3), 478–493.
- Bächtiger, A., 2014. Debate and deliberation in legislatures. In: *The Oxford Handbook of Legislative Studies*. Oxford University Press, pp. 145–166.
- Bäck, H., D. M. . M. J., 2014. Who takes the parliamentary floor? the role of gender in speech-making in the swedish riksdag. *Political Research Quarterly* 67 (3), 504–518.
- Beckwith, K., 2007. Numbers and newness: The descriptive and substantive representation of women. *Canadian Journal of Political Science/Revue canadienne de science politique* 40 (1), 27–49.
- Beckwith, K., 2011. Interests, issues, and preferences: Women's interests and epiphenomena of activism. *Politics and Gender* 7 (3), 424–429.
- Bird, K., 2005. Gendering parliamentary questions. *The British Journal of Politics and International Relations* 7 (3), 353–370.
- Blei, D. M., Lafferty, J. D., 2006. Dynamic topic models. In: *Proceedings of the 23rd international conference on Machine learning*. ACM, pp. 113–120.
- Blei, D. M., Ng, A. Y., Jordan, M. I., 2003a. Latent dirichlet allocation. *Journal of Machine Learning Research* 3, 993–1022.
- Blei, D. M., Ng, A. Y., Jordan, M. I., 2003b. Latent dirichlet allocation. *Journal of machine Learning research* 3 (Jan), 993–1022.
- Blumenau, J., 2016. Legislative role models: Female ministers, participation, and influence in the uk house of commons." Tech. rep., Working Paper. London, UK: Department of Government, London School of Economics and Political Science.
- Borg, I., Groenen, P., 2003. Modern multidimensional scaling: Theory and applications. *Journal of Educational Measurement* 40 (3), 277–280.
- Box-Steffensmeier, J. M., De Boef, S., Lin, T.-M., 2004. The dynamics of the partisan gender gap. *American Political Science Review* 98 (3), 515–528.
- Bratton, K. A., 2005. Critical mass theory revisited: The behavior and success of token women in state legislatures. *Politics & Gender* 1 (1), 97–125.
- Burns, N., Schlozman, K. L., Verba, S., 2001. *The private roots of public action*. Harvard University Press.

- Burrell, B. C., 2010. *A Woman's Place is in the House: Campaigning for Congress in the Feminist Era*. University of Michigan Press.
- Caul, M., 1999. Women's representation in parliament: the role of political parties. *Party politics* 5 (1), 79–98.
- Celis, K., 2006. Substantive representation of women and the impact of descriptive representation. case: The belgian lower house 1900–1979. *Journal of Women, Politics and Policy* 28 (2), 85–114.
- Childs, S., 2004. A feminised style of politics? women mps in the house of commons. *The British Journal of Politics & International Relations* 6 (1), 3–19.
- Childs, S., Krook, M. L., 2008. Critical mass theory and women's political representation. *Political studies* 56 (3), 725–736.
- Childs, S., Lovenduski, J., 2013. Political representation. In: *The Oxford handbook of gender and politics*. Oxford University Press, pp. 489–513.
- Childs, S., et al., 2004. *New Labour's Women MPs: Women Representing Women*. Routledge.
- Clayton, A., Josefsson, C., Wang, V., 2017. Quotas and women's substantive representation: Evidence from a content analysis of ugandan plenary debates. *Politics & Gender* 13 (2), 276–304.
- Crowley, J. E., 2004. When tokens matter. *Legislative Studies Quarterly* 29 (1), 109–136.
- Darcy, R., Welsh, S., Clark, J., 1994. *Women, elections, & representation*. Vol. 1. U of Nebraska Press.
- Druckman, J., Warwick, P., 2005. The missing piece: Measuring portfolio salience in western european parliamentary democracies. *European Journal of Political Research* 44 (1), 17–42.
- Duerst-Lahti, G., 2005. Institutional gendering: Theoretical insights into the environment of women officeholders. In: *Women and Elective Office: Past, Present, and Future*. Oxford University Press, pp. 230–43.
- Endres, D. M., Schindelin, J. E., 2003. A new metric for probability distributions. *IEEE Transactions on Information theory* 49 (7), 1858–1860.
- Franceschet, S., Piscopo, J. M., 2008. Gender quotas and women's substantive representation: Lessons from argentina. *Politics & Gender* 4 (3), 393–425.
- Fraune, C., 2016. The politics of speeches, votes, and deliberations: Gendered legislating and energy policy-making in germany and the united states. *Energy Research & Social Science* 19, 134–141.
- Grey, S., et al., 2002. Does size matter? critical mass and new zealand's women mp.
- Grimmer, J., Stewart, B. M., 2013. Text as data: The promise and pitfalls of automatic content analysis methods for political texts. *Political analysis* 21 (3), 267–297.
- Herzog, A., Benoit, K., 2015. The most unkindest cuts: speaker selection and expressed government dissent during economic crisis. *The Journal of Politics* 77 (4), 1157–1175.
- Iversen, T., Rosenbluth, F., 2008. Work and power: The connection between female labor force participation and female political representation. *Annu. Rev. Polit. Sci.* 11, 479–495.
- John, P., Bertelli, A., Jennings, W., Bevan, S., 2013. *Policy agendas in British politics*. Springer.
- Kanthak, K., Woon, J., 2015. Women don't run? election aversion and candidate entry. *American Journal of Political Science* 59 (3), 595–612.
- Krook, M., 2010. *Quotas for women in politics: Gender and candidate selection reform worldwide*. Oxford University Press.
- Krook, M. L., O'Brien, D. Z., 2012. All the president's men? the appointment of female cabinet ministers worldwide. *The Journal of Politics* 74 (3), 840–855.
- Laver, M., Benoit, K., 2002. Locating tds in policy spaces: the computational text analysis of dáil speeches. *Irish Political Studies* 17 (1), 59–73.
- Lawless, J. L., Fox, R. L., 2010. *It still takes a candidate: Why women don't run for office*. Cambridge University Press.
- Lovenduski, J., Norris, P., 2003. Westminster women: the politics of presence. *Political studies* 51 (1), 84–102.
- Mansbridge, J., 1999. Should blacks represent blacks and women represent women? a contingent" yes". *The Journal of politics* 61 (3), 628–657.
- Matland, R. E., Studlar, D. T., 1996. The contagion of women candidates in single-member district and proportional representation electoral systems: Canada and norway. *The journal of politics* 58 (3), 707–733.
- McAllister, I., Studlar, D. T., 1992. Gender and representation among legislative candidates in australia. *Comparative Political Studies* 25 (3), 388–411.
- McCullough, P., Nelder, J., 1989. *Generalized linear models (monographs on statistics and applied probability 37)*.
- McElroy, G., Marsh, M., 2010. Candidate gender and voter choice: Analysis from a multimember preferential voting system. *Political Research Quarterly* 63 (4), 822–833.
- Norris, P., Inglehart, R., 2011. *Sacred and secular: Religion and politics worldwide*. Cambridge University Press.
- Osborn, T., Mendez, J. M., 2010. Speaking as women: Women and floor speeches in the senate. *Journal of Women, Politics & Policy* 31 (1), 1–21.
- Österreicher, F., Vajda, I., 2003. A new class of metric divergences on probability spaces and its applicability in statistics. *Annals of the Institute of Statistical Mathematics* 55 (3), 639–653.
- Papke, L. E., Wooldridge, J. M., 1996. Econometric methods for fractional response variables with an application to 401 (k) plan participation rates. *Journal of applied econometrics* 11 (6), 619–632.



- Papke, L. E., Wooldridge, J. M., 2008. Panel data methods for fractional response variables with an application to test pass rates. *Journal of Econometrics* 145 (1-2), 121–133.
- Paxton, P., H. M. M. . G. J. L., 2006. The international women's movement and women's political representation, 1893–2003. *American Sociological Review* 71 (6), 898–920.
- Pearson, K., Dancey, L., 2011. Speaking for the underrepresented in the house of representatives: Voicing women's interests in a partisan era. *Politics & Gender* 7 (4), 493–519.
- Philips, A., 1995. *The Politics of Presence*. Clarendon Press.
- Piscopo, J. M., 2011. Rethinking descriptive representation: Rendering women in legislative debates. *Parliamentary Affairs* 64 (3), 448–472.
- Proksch, O., Slapin, J., 2012. Institutional foundations of legislative speech. *American Journal of Political Science* 56 (3), 520–537.
- Quinn, K. M., Monroe, B. L., Colaresi, M., Crespin, M. H., Radev, D. R., 2010. How to analyze political attention with minimal assumptions and costs. *American Journal of Political Science* 54 (1), 209–228.
- Roberts, M. E., Stewart, B. M., Tingley, D., Lucas, C., Leder-Luis, J., Gadarian, S. K., Albertson, B., Rand, D. G., 2014. Structural topic models for open-ended survey responses. *American Journal of Political Science* 58 (4), 1064–1082.
- Rule, W., 1987. Electoral systems, contextual factors and women's opportunity for election to parliament in twenty-three democracies. *Western Political Quarterly* 40 (3), 477–498.
- Saint-Germain, M. A., 1989. Does their difference make a difference? the impact of women on public policy in arizona legislature.
- Salmond, R., 2006. Proportional representation and female parliamentarians. *Legislative Studies Quarterly* 31 (2), 175–204.
- Schneider, M. C., Bos, A. L., 2019. The application of social role theory to the study of gender in politics. *Political Psychology* 40, 173–213.
- Slapin, J., Proksch, O., 2014. Words as data: Content analysis in legislative studies. In: *The Oxford Handbook of Legislative Studies*. Oxford University Press, pp. 126–144.
- Smooth, W., 2011. Standing for women? which women? the substantive representation of women's interests and the research imperative of intersectionality. *Politics & Gender* 7 (3), 436–441.
- Swers, M., 2002. *The difference women make: The policy impact of women in Congress*. University of Chicago Press.
- Tamerius, K. L., 2010. Sex, gender, and leadership in the representation of women. *Women, gender, and politics: A reader*, 243–50.
- Thomas, S., 1994. *How women legislate*. Oxford University Press on Demand.
- Tremblay, M., 1998. Do female mps substantively represent women? a study of legislative behaviour in canada's 35th parliament. *Canadian Journal of Political Science/Revue canadienne de science politique* 31 (3), 435–465.
- Tremblay, M., 2012. Introduction. In: *Women and legislative representation: Electoral systems, political parties, and sex quotas*. Palgrave MacMillan, pp. 1–22.
- Volden, C., Wiseman, A. E., Wittmer, D. E., 2010. The legislative effectiveness of women in congress. Manuscript, The Ohio State University.
- Volden, C., Wiseman, A. E., Wittmer, D. E., 2013. When are women more effective lawmakers than men? *American Journal of Political Science* 57 (2), 326–341.
- Wang, V., 2013. Women changing policy outcomes: Learning from pro-women legislation in the ugandan parliament. In: *Women's Studies International Forum*. Vol. 41. Elsevier, pp. 113–121.
- Wängnerud, L., 2009. Women in parliaments; descriptive and substantive representation. *Annual Review of Political Science* 12, 51–69.
- Wide, J., 2006. Kvinnors politiska representation i ett jämförande perspektiv-nationell och lokal nivå. Ph.D. thesis, Statsvetenskap.
- Wilkerson, J., Casas, A., 2017. Large-scale computerized text analysis in political science: Opportunities and challenges. *Annual Review of Political Science* 20, 529–544.

Topic ID	Topic Label	Prevalence	Time Slice	Top 10 Terms
1	Policy Review & Government Programmes	0.073	1975 1985 2015	department government state policy number development staff body public programme fund department government state programme development number agency body public_service staff policy government new programme also work support service department need ensure year
2	Tax Administration	0.022	1975 1985 2015	tax income.tax revenue_commissioners year rate relief capital.gains pay taxation income finance tax year revenue.commissioners finance taxpayer amount income.tax respect income cost vat tax ireland revenue finance rate credit.unions central_bank fund credit.union irish revenue.commissioners
3	Banking / Financial Crisis	0.017	1975 1985 2015	company loan bank money state building_societies investment society share interest finance company bank state investment loan money fund interest account corporation irish bank irish_water government water nama mortgage debt people central_bank loan water_charges
4	Defense	0.009	1975 1985 2015	army defence defence.forces officer vessel service force men personnel member duty limerick west defence army defence_forces irish_shipping service number force aer.lingus airport defence_forces defence aer.lingus personnel member force shannon.airport mission shannon airport military
5	Procedural / Points of Order	0.022	1975 1985 2015	deputy question chair matter order must house amendment minister time bill deputy question chair order matter house minister time amendment debate would deputy time question agreed bill please house ask proposal need member
6	Farming & Agricultural Trade	0.016	1975 1985 2015	price irish industry country farmer increase market export import industry_and_commerce eec industry price irish market trade agriculture product country commerce_and_tourism export import farmer industry market sector agriculture price farm ireland beef food irish
7	Healthcare	0.021	1975 1985 2015	board hospital health health_boards service health_board patient person number medical available board hospital health service health_boards patient number area available nurse patient hospital health treatment doctor service medical group consultant clinical national
8	Education – Third Level & Vocational	0.009	1975  1985 2015	parliamentary_secretary dublin central parliamentary_secretarys university education student council course college institution education dún.laoghaire student college teacher course third.level fee educational examination council education teacher student school college education_and_skills system parent third.level course minister
9	European Union & British-Irish Relations	0.024	1975 1985 2015	community eec country ireland agreement council irish policy meeting european british community ireland ec agreement irish country european northern ireland meeting europe would ireland eu agreement european.union government country northern ireland europe european irish people
10	Foreign Affairs & Human Rights	0.022	1975  1985 2015	government foreign_affairs country irish convention ireland british_government united_nations matter visit conference government foreign_affairs country ireland irish matter visit united_states state united_nations convention ireland government eu human_rights irish country also people state international issue
11	Social Welfare Benefits	0.013	1975 1985 2015	claim payment appeal decision made paid person_concerned due benefit case unemployment_assistance person_concerned mean claim unemployment_assistance case benefit made payment payable entitlement paid appeal department social_protection social_welfare application review jobbridge person_concerned decision case scheme
12	Rural Development	0.01	1975  1985 2015	asked_the_minister number make_a_statement person posts_and_telegraphs name_supplied aware finance county_cork industry_and_commerce paid asked_the_minister supplied person_details social_welfare paid environment reason make_a_statement matter grant unemployment_assistance county dublin wexford kerry county_kerry county_donegal county_laois waterford county_louth county_clare killarney
13	Procedural / Ministerial Oversight	0.051	1975 1985 2015	minister would question could aware matter agree ask say made take minister would asked_the_minister question agree department aware matter state could ask minister state would department question ask know said could given issue
14	Education – Primary, Special & Secondary	0.033	1975 1985 2015	school education teacher pupil department national_school new student child grant committee school education my_department national_school teacher new provision question project extension pupil school child need year parent support department pupil deputy new teacher
15	Procedural / Legislative Program	0.025	1975 1985 2015	bill taoiseach house government matter time debate would motion question business taoiseach limerick_east house matter government would question ask raise time statement taoiseach government tánaiste question issue bill house would said legislation answer
16	Social Justice & Civil Rights	0.032	1975 1985 2015	problem people must many need area situation country hope like important problem many people must need area welcome like opportunity debate important people family woman state many child must need issue right also
17	Environment & Marine Conservation	0.012	1975 1985 2015	licence rte programme authority fishery area fisherman boat fish fishing board rte communication fishery licence fisherman harbour development board area port fish climate.change ireland company environment energy harbour development also state area land
18	Healthcare Management	0.009	1975 1985 2015	health card medical_cards holder medical_card eligibility charge service home welfare subvention health charge medical_card medical_cards home holder card service care regulation subvention service health mental_health hse disability card medical_card medical_cards care primary_care deputy
19	Rural Development	0.009	1975 1985 2015	gaeltacht gaeltarra irish Éireann grant donegal county_donegal gaeltachta mdash industry people gaeltacht county_donegal authority money Údarás na_gaeltachta department irish donegal available mdash community local area rural service development funding rural ireland gaeltacht rural_areas project
20	Junk	0.08	1975 1985 2015	people would one get know could minister like time bill money people would one minister get time bill like know many could people one would need get many time must issue know could
21	Procedure – Points of Order	0.027	1975 1985 2015	committee member report order dáil take proposed appointed business election appointment committee member report dáil shall proposed business agreement commission Éireann house report committee government minister commission issue bill house member work matter
22	Junk	0.002	1975 1985 2015	agus ar na rdquo ldquo sa go sin ba_mhaith sé tá agus ar na ba_mhaith go carlowkilkenny ag seo rdquo sin leis.an agus ar na seo ag tá sin go le leis.an go.bhfuil
23	Hospitals & Healthcare Capacity	0.017	1975 1985 2015	service area provide county provided dublin facility centre cork aware staff service cork area raise dublin provide adjournment provided centre wish staff hospital service health hse people care patient need staff home bed
24	Social Welfare – Pensions	0.023	1975 1985 2015	social_welfare scheme pension allowance benefit person contribution payment case increase old_age social_welfare scheme allowance payment benefit pension person payrelated_benefit number year income scheme payment people pension social_welfare work employment social_protection department benefit allowance

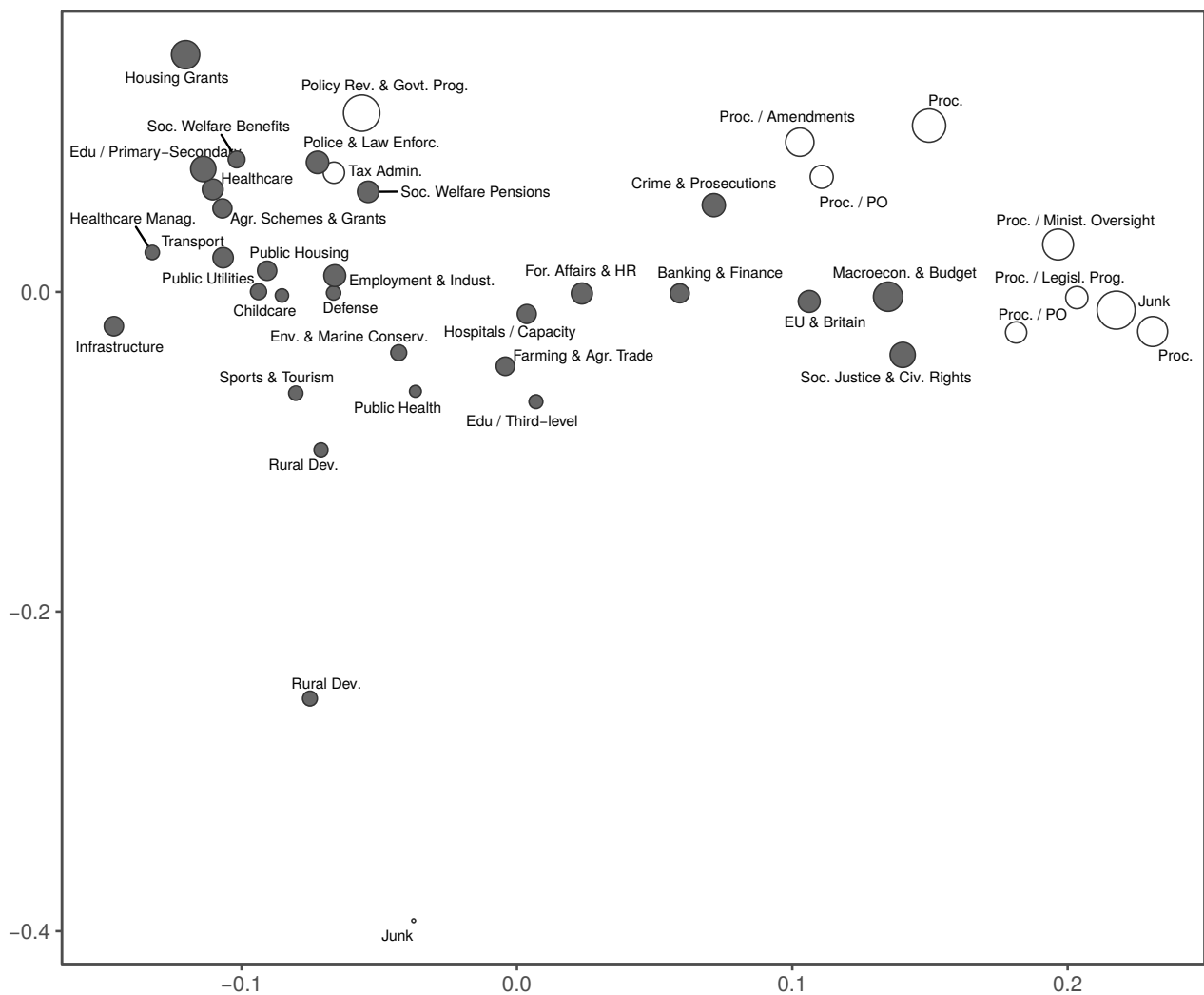
25	Public Housing	0.018	1975 1985 2015	land house land_commission housing local_authority property local_authorities rate estate tenant price local_authorities local_authority house housing environment area land scheme building tenant dublin.corporation housing local_authorities rent local_authority house social_housing property council tenant local_government landlord
26	Police & Law Enforcement	0.025	1975 1985 2015	justice garda number prison garda_síochána gardaí prisoner area security force duty garda justice number area garda_síochána prison crime gardaí matter person member garda_síochána garda gardaí garda_commissioner crime commissioner policing justice_and_equality authority deputy case
27	Procedural	0.06	1975 1985 2015	deputy would question matter made information think one aware may time deputy would question matter made information time aware one available regard deputy issue would made matter point case question way want regard
28	Agriculture Payment Schemes & Grants	0.018	1975 1985 2015	farmer scheme agriculture_and_fisheries land agriculture grant farm eec area year department scheme farmer agriculture land farm grant paid payment land_commission number area scheme farmer payment animal application glas my_department issue year land eu
29	Childcare Support – Children & Family Affairs	0.008	1975 1985 2015	child family parent hour young_people age youth adoption home mother father child family parent age young_people care youth adoption father mother home child parent child_care family service care support agency young_people tusla adoption
30	Public Utilities – Energy & Communications	0.012	1975 1985 2015	esb oil board energy supply cost gas bord_na electricity móna fuel energy esb gas supply bord_na natural_gas board móna oil cost company network post_office post service housing broadband energy ireland post_offices government market
31	Macroeconomics & Budget	0.046	1975 1985 2015	increase government year budget per_cent figure finance would increased economy cent government per_cent increase budget figure year would cent level finance economy government people budget pay would cut year tax increase one country
32	Sports & Tourism	0.009	1975 1985 2015	estimate payment move come vote office course supplementary_estimate granted sum hotel tourism vote fund office sum money move estimate payment come granted ireland sport tourism art irish event funding also national club year
33	Procedural – Amendments	0.042	1975 1985 2015	would amendment section bill one minister person case could may think amendment would section bill minister point one could may person provision bill amendment legislation would provision act section committee_stage may move_amendment provides
34	Housing Grants	0.042	1975 1985 2015	year my_department number grant application scheme following available information made statement grant application my_department paid scheme house possible payment case work as_soon my_department board information application public act deputy matter body scheme department
35	Public Health	0.006	1975 1985 2015	doctor council advertisement advertising drug public drink medical insurance register fee insurance compensation claim cost damage insurance_companies drug premium public cover liability insurance health drug health_insurance cost universal_health ireland private dementia people public
36	Procedural	0.048	1975 1985 2015	government deputy fianna Fáil said house minister one party would opposition say government house party deputy fianna Fáil would minister said time say one government people party would fianna Fáil member one dail public minister sinn Féin
37	Crime & Prosecutions	0.027	1975 1985 2015	bill legislation court person law would case act right judge may bill court case legislation law act person would justice right offence bill court legislation case law right person issue would act legal
38	Infrastructure & Natural Disasters	0.018	1975 1985 2015	scheme local_government cavan county_council work proposal area house new building council scheme work road county_council proposal public_works area matter available council finance project site area council scheme work plan planning town water building
39	Employment / Industrial Policy	0.024	1975 1985 2015	employment industry worker ida labour job employer employee work firm industrial employment labour ida worker job scheme number project industry industrial employee company business job worker employment ireland employer employee enterprise work investment
40	Transport	0.02	1975 1985 2015	road cie local_authorities local_authority local_government regulation dublin transport vehicle matter car cie transport dublin road regulation environment vehicle authority matter public control road transport bus public_transport vehicle route service Éireann driver sport transport_tourism

**Table 1:** *List of estimated topics.* The table provides each topic's numerical identifier, descriptive label, prevalence and each topic's top 10 most probable terms for three time slices (1975, 1985, and 2015). Substantive topics are in bold.

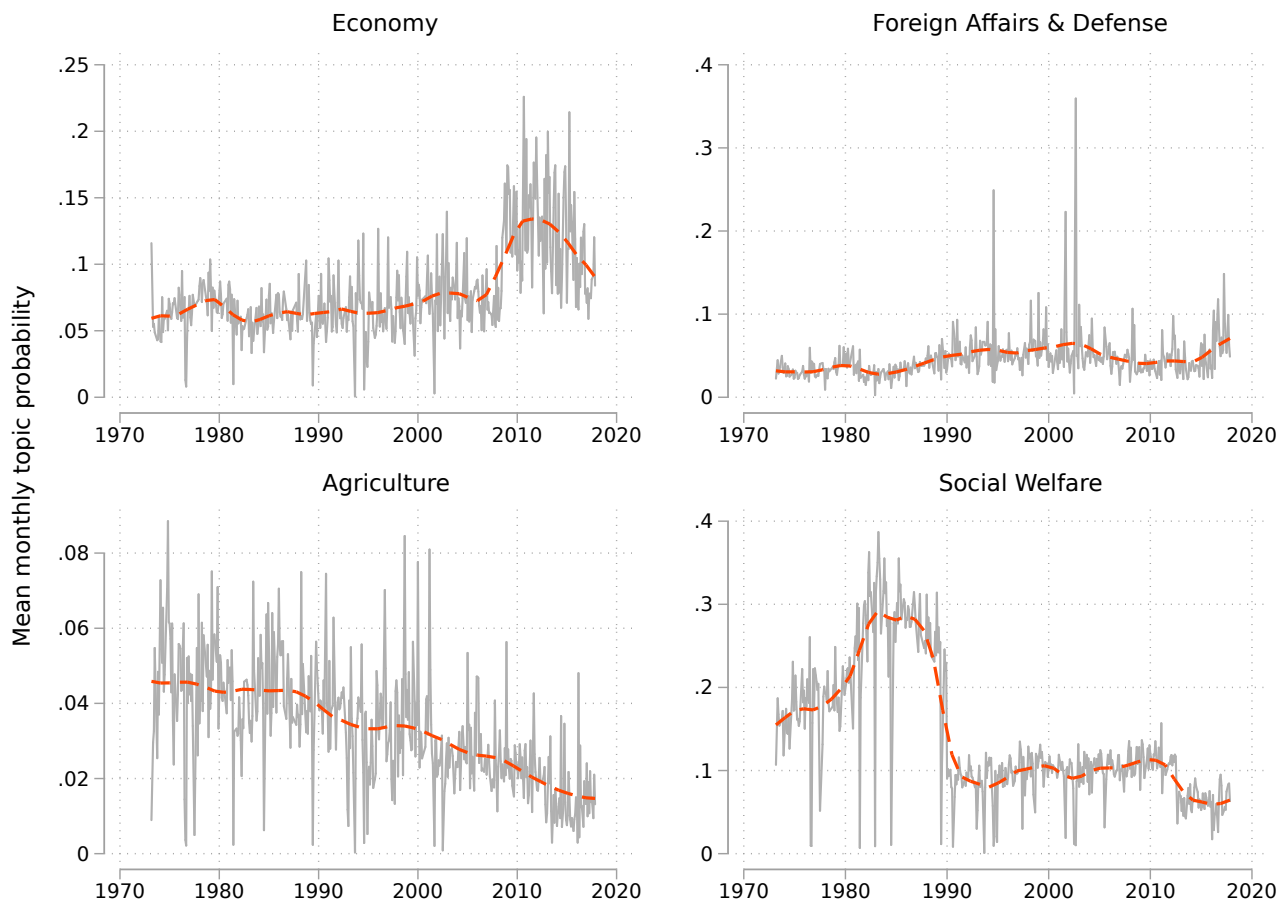
Topic No.	Macro Category Label
11, 12, 19, 24, 25 34	Social Welfare
29	Childcare
3, 31, 32, 39	Economy
7, 18, 23, 35	Health
4, 9, 10	Foreign Policy & Defense
30, 38, 40	Infrastructure
16, 26, 37	Justice & Civil Rights
6, 28	Agriculture
8, 14	Education
17	Environment
1, 2, 5, 13, 15 20, 21, 22, 27, 33 36	Procedural/Admin

**Table 2:** *List of Macro Category Topics.* This table provides a list of the macro category topic labels and numerical identifiers of their underlying topics.





**Fig. 1:** *Topic similarities for the 2015 time slice.* This figure illustrates topic similarity by displaying Jensen-Shannon distances which are projected onto a 2D space with the use of classical multidimensional scaling (MDS). Topics are represented by circles, whose size corresponds to the prevalence of the topic throughout the corpus. Topics that use similar words are closer together and vice-versa. Solid circles represent substantive topics. Hollow circles represent topics that are either “junk” or procedural in nature.



**Fig. 2:** *Predictive validity of a selection of topics based on external events.* This figure displays the average monthly topic probabilities over the sample period (March 1973 - November 2017) for four substantive macro topic categories: *Economy*, *Foreign Affairs & Defence*, *Agriculture*, and *Social Welfare*. A local polynomial curve is also included to assist with interpretation. Note that the graphs are on different scales.

	(1) Social Welfare	(2) Childcare	(3) Healthcare	(4) Education	(5) Economy
Female TD	1.189 (0.128)	1.602 (0.279)**	1.018 (0.0401)	1.859 (0.441)**	0.970 (0.0718)
FG	0.693 (0.0731)***	0.890 (0.155)	1.069 (0.0376)	0.817 (0.122)	0.970 (0.0627)
Lab	0.777 (0.0847)*	0.572 (0.121)**	1.131 (0.0503)**	0.608 (0.141)*	1.066 (0.0836)
SF	0.919 (0.175)	0.385 (0.124)**	0.887 (0.0704)	0.553 (0.186)	1.454 (0.153)***
GP	0.767 (0.318)	0.223 (0.0916)***	0.928 (0.0853)	0.240 (0.0964)***	0.857 (0.134)
Independents/Other	0.860 (0.151)	0.519 (0.135)*	0.999 (0.0774)	0.532 (0.146)*	1.135 (0.115)
PD	0.946 (0.279)	0.307 (0.0859)***	0.805 (0.0824)*	0.239 (0.0995)***	1.368 (0.458)
Workers' Pty	0.594 (0.126)*	0.412 (0.142)**	1.186 (0.0871)*	0.621 (0.201)	1.443 (0.246)*
AAA-PBP	0.922 (0.199)	0.267 (0.134)**	0.836 (0.157)	0.466 (0.202)	2.548 (0.336)***
Ceann Comhairle	0.309 (0.0589)***	0.237 (0.0795)***	0.900 (0.0503)	0.532 (0.140)*	0.195 (0.109)**
SocDems	0.963 (0.248)	0.486 (0.167)*	0.881 (0.0593)	0.303 (0.118)**	1.561 (0.215)**
Othr Extreme Left	1.075 (0.353)	0.294 (0.119)**	0.991 (0.102)	0.310 (0.140)**	1.707 (0.354)**
Dublin	0.791 (0.0803)*	1.967 (0.403)***	1.029 (0.0299)	1.019 (0.190)	1.014 (0.0629)
Government TD	1.560 (0.142)***	0.915 (0.182)	0.853 (0.0217)***	0.914 (0.116)	0.797 (0.0441)***
Incumbent	1.042 (0.0747)	0.714 (0.187)	0.942 (0.0265)*	0.982 (0.108)	0.910 (0.0389)*
Minister	1.186 (0.168)	1.063 (0.388)	0.797 (0.0565)**	2.005 (0.534)**	1.091 (0.128)
Seniority	1.036 (0.0189)	0.921 (0.0482)	0.995 (0.00887)	0.935 (0.0349)	1.006 (0.0116)
Speech Number	1.057 (0.0137)***	1.028 (0.0311)	0.979 (0.00424)***	1.015 (0.0211)	0.941 (0.00628)***
ln(tokens)	0.879 (0.0120)***	1.046 (0.0242)	1.017 (0.00683)*	1.113 (0.0434)**	1.135 (0.0104)***
Social Welfare Cttees	0.985 (0.128)				
Social Policy Careers	1.009 (0.182)				
Regional Development Careers	3.297 (0.981)***				
Family and Children Affairs Cttees		1.276 (0.268)			
Family/Children Affairs Careers		2.269 (0.962)			
Health Cttees			1.259 (0.0524)***		
Healthcare Careers			7046.9 (821.3)***		
Education Cttees				1.718 (0.414)*	
Education Careers				1.789 (0.287)***	
Economic Policy Cttees					1.380 (0.0710)***
Economics Careers					1.311 (0.0922)***
Monthly FE	Y	Y	Y	Y	Y
Observations	209688	209688	209688	209688	209688
AIC	133339.3	15474.5	37899.9	48133.2	92826.0
BIC	138291.7	20416.7	42842.0	53075.3	97768.1
ll	-66186.7	-7255.3	-18467.9	-23584.6	-45931.0

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ **Table 3: GLM regression results, Models 1-5** The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.

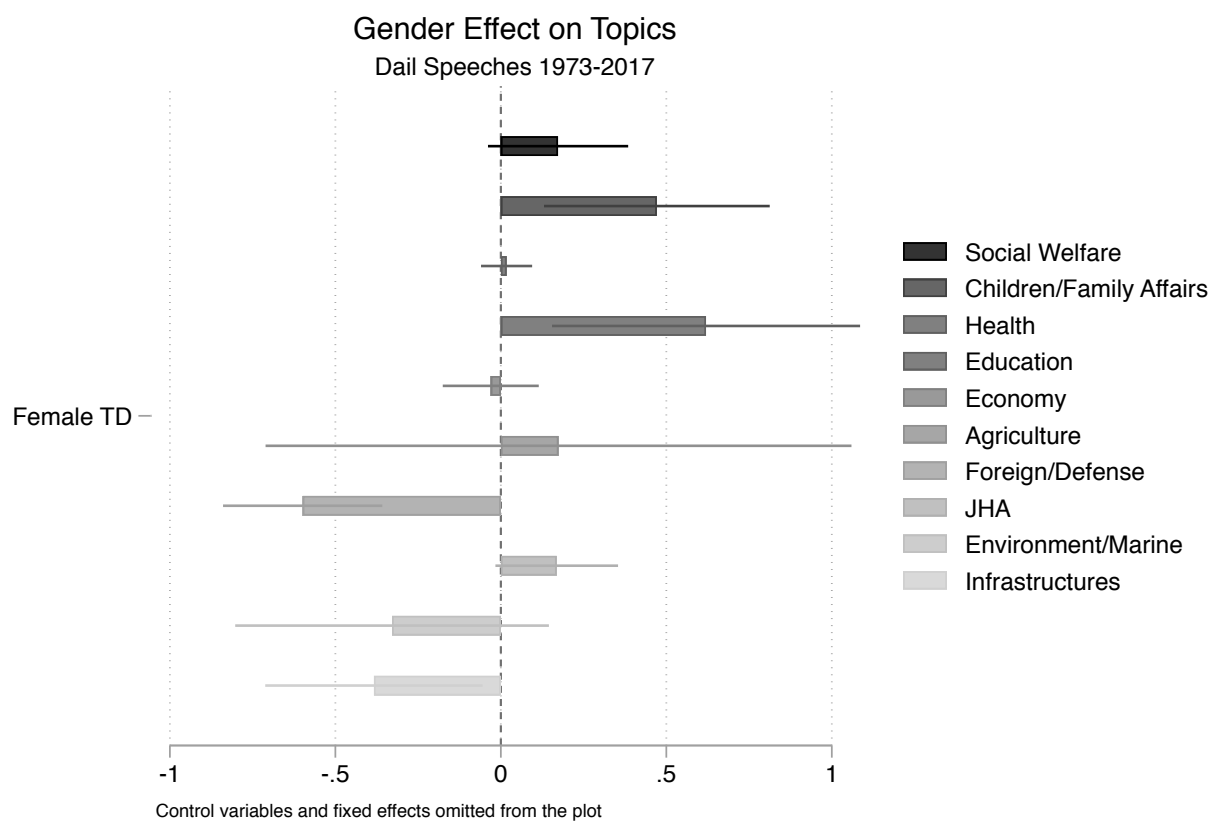
	(6)	(7)	(8)	(9)	(10)
	Agriculture	Foreign Policy & Defense	Justice & Civil Rights	Environment & Marine Protection	Infrastructures
Female TD	1.190 (0.538)	0.549 (0.0675)***	1.184 (0.112)	0.720 (0.174)	0.681 (0.114)*
FG	0.800 (0.143)	0.950 (0.115)	1.190 (0.103)*	1.096 (0.148)	0.954 (0.0914)
Lab	0.583 (0.112)**	1.088 (0.213)	1.075 (0.0899)	0.843 (0.162)	0.953 (0.128)
SF	0.830 (0.420)	1.347 (0.262)	1.616 (0.229)***	0.748 (0.197)	0.782 (0.171)
GP	1.409 (0.561)	1.532 (0.330)*	1.088 (0.211)	2.264 (0.496)***	2.246 (0.973)
Independents/Other	0.670 (0.129)*	1.018 (0.182)	1.655 (0.229)***	1.118 (0.196)	0.947 (0.143)
PD	0.664 (0.213)	1.106 (0.212)	1.450 (0.406)	0.754 (0.194)	1.902 (0.760)
Workers' Pty	1.231 (0.382)	1.118 (0.193)	1.196 (0.206)	0.968 (0.274)	0.949 (0.170)
AAA-PBP	0.583 (0.254)	1.484 (0.320)	2.254 (0.556)***	1.812 (0.941)	0.827 (0.256)
Ceann Comhairle	0.515 (0.303)	0.369 (0.119)**	0.415 (0.121)**	0.526 (0.0997)***	0.435 (0.0775)***
SocDems	0.600 (0.251)	2.117 (0.628)*	1.518 (0.463)	0.922 (0.435)	1.016 (0.369)
Othr Extreme Left	0.476 (0.135)**	1.051 (0.383)	1.276 (0.183)	0.896 (0.427)	0.830 (0.214)
Dublin	0.374 (0.0652)***	1.137 (0.127)	1.302 (0.0824)***	0.811 (0.118)	0.705 (0.0789)**
Government TD	0.956 (0.117)	0.811 (0.0625)**	1.065 (0.0891)	0.824 (0.0828)	1.365 (0.165)*
Incumbent	1.145 (0.101)	0.983 (0.0715)	0.725 (0.0334)***	0.806 (0.121)	1.128 (0.109)
Minister	1.533 (0.475)	2.092 (0.350)***	0.708 (0.113)*	2.088 (0.377)***	1.152 (0.251)
Seniority	0.965 (0.0256)	1.025 (0.0202)	0.987 (0.0141)	1.005 (0.0244)	0.961 (0.0170)*
Speech Number	1.004 (0.0250)	0.954 (0.00967)***	0.940 (0.00904)***	0.979 (0.0148)	1.016 (0.0144)
ln(tokens)	1.101 (0.0300)***	1.082 (0.0122)***	1.169 (0.0151)***	1.000 (0.0139)	0.988 (0.0126)
Agriculture Cttees	1.481 (0.317)				
Agriculture Careers	2.907 (0.856)***				
Foreign/Defense Cttees		1.622 (0.127)***			
Foreign/Defense Careers		1.600 (0.0745)***			
JHA Cttees			1.713 (0.141)***		
Legal Careers			1.795 (0.201)***		
Environment Cttees				1.837 (0.233)***	
Environment/Marine Careers				6.825 (1.542)***	
Infrastructures Cttees					1.404 (0.201)*
Transport Careers					1.874 (0.634)
Technology Careers					1.214 (0.152)
Monthly FE	Y	Y	Y	Y	Y
Observations	209688	209688	209688	209688	209688
AIC	50326.8	62612.0	85948.1	24164.1	73260.9
BIC	55268.9	67533.6	90880.0	29106.2	78213.3
ll	-24681.4	-30826.0	-42493.1	-11600.0	-36147.5

Exponentiated coefficients; Standard errors in parentheses

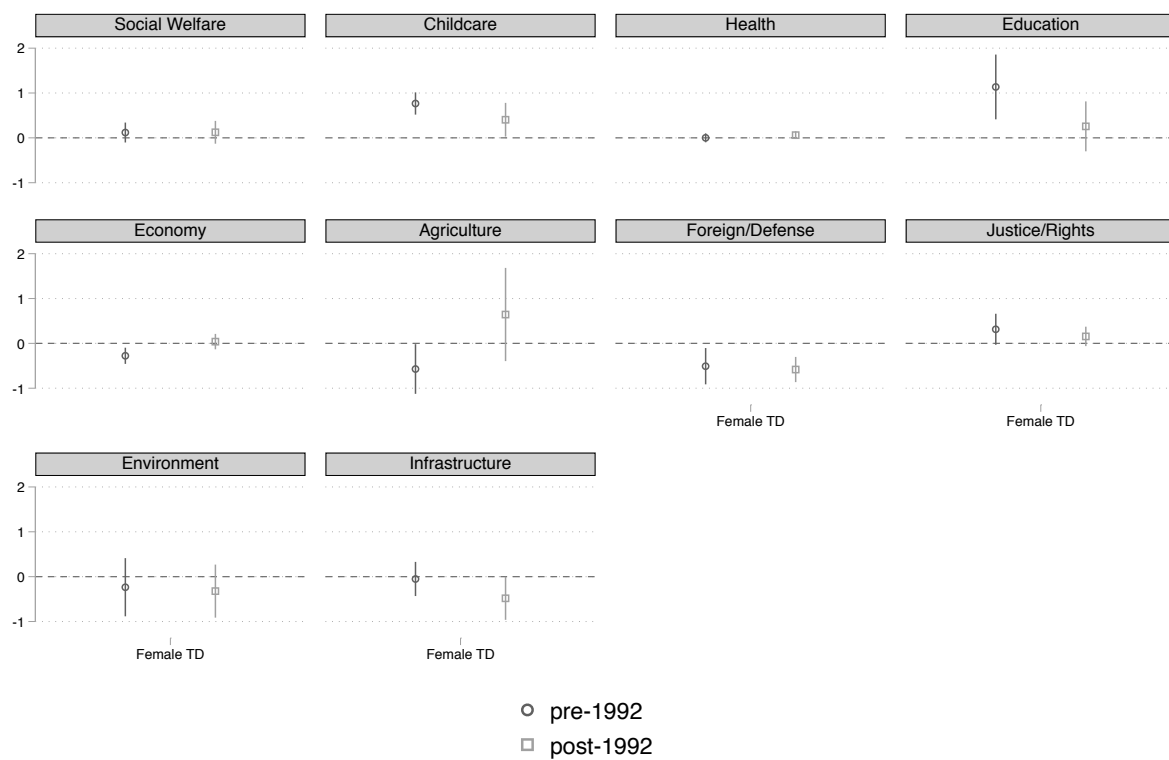
\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table 4:** GLM regression results, Models 6-10 The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.

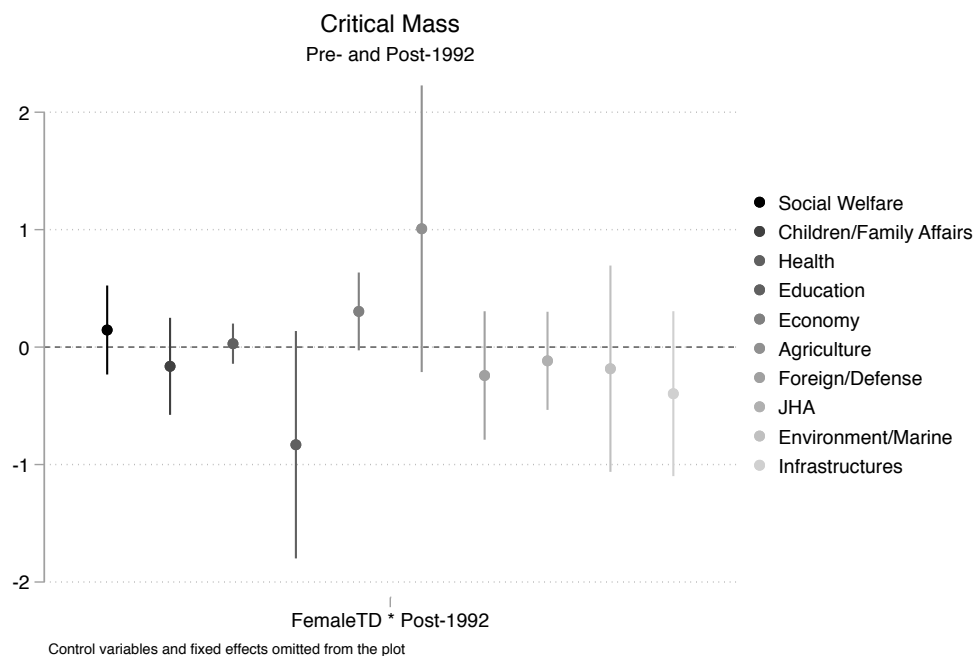




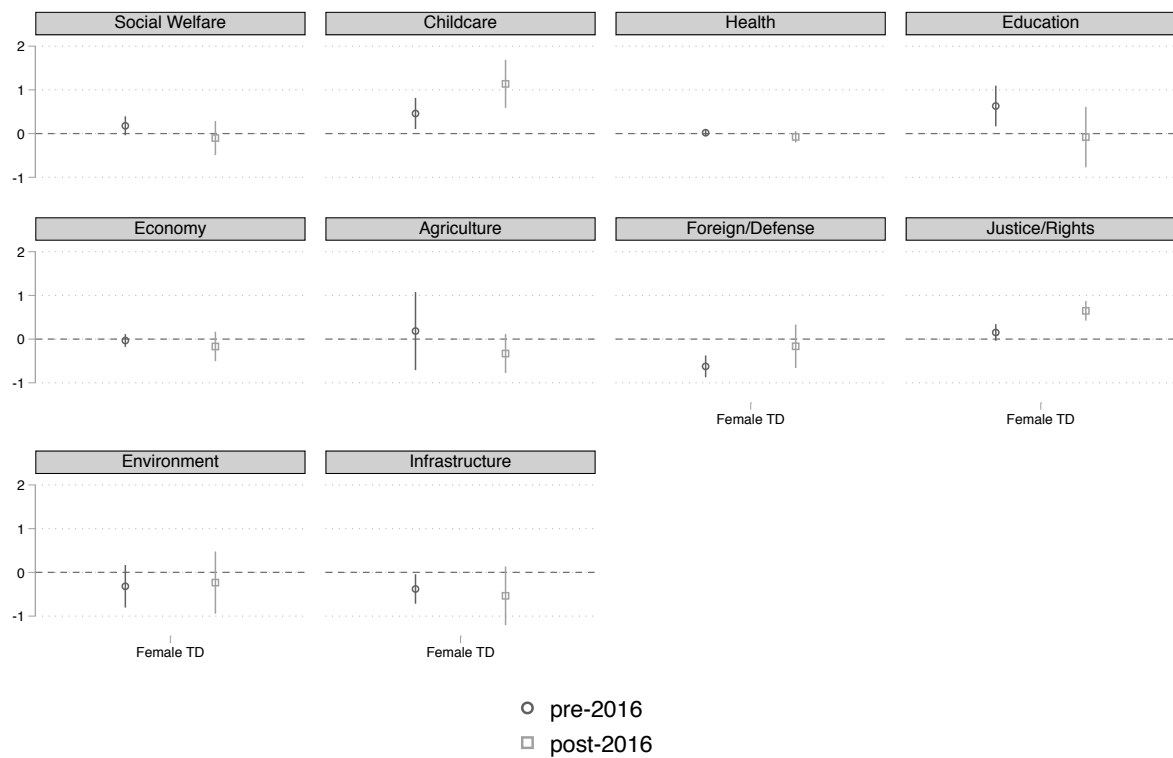
**Fig. 3:** Coefficient Plots: Gender Results from Fractional Regression with month fixed effects (all controls omitted from the graph) and id-clustered standard errors.



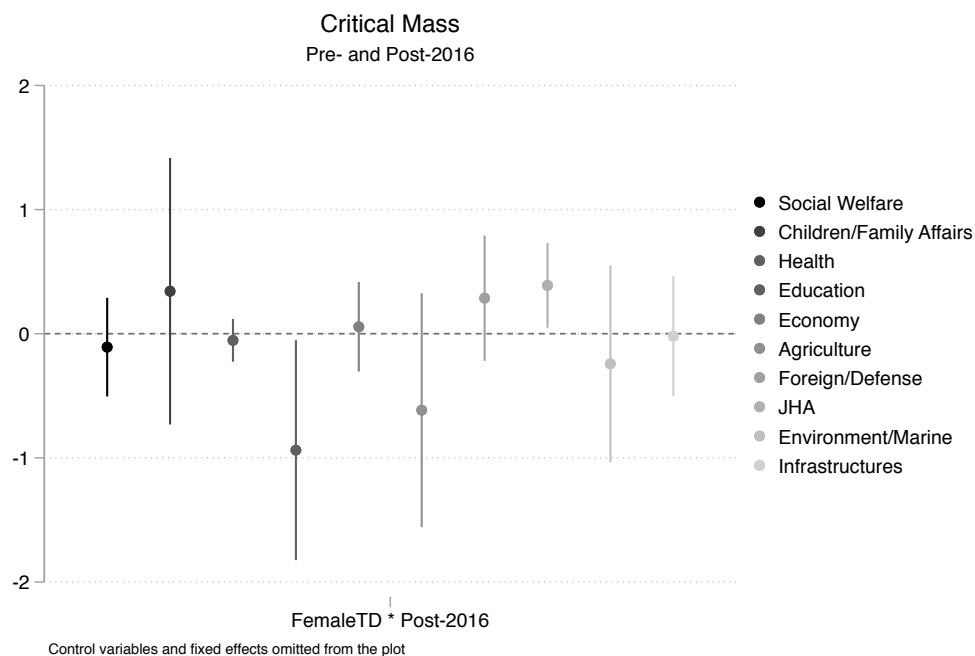
**Fig. 4:** *Split Sample Analysis:* Results from a glm fractional regression with month fixed effects (omitted) and id-clustered standard errors for pre-1992 Dàla and post-1992 Dàla.



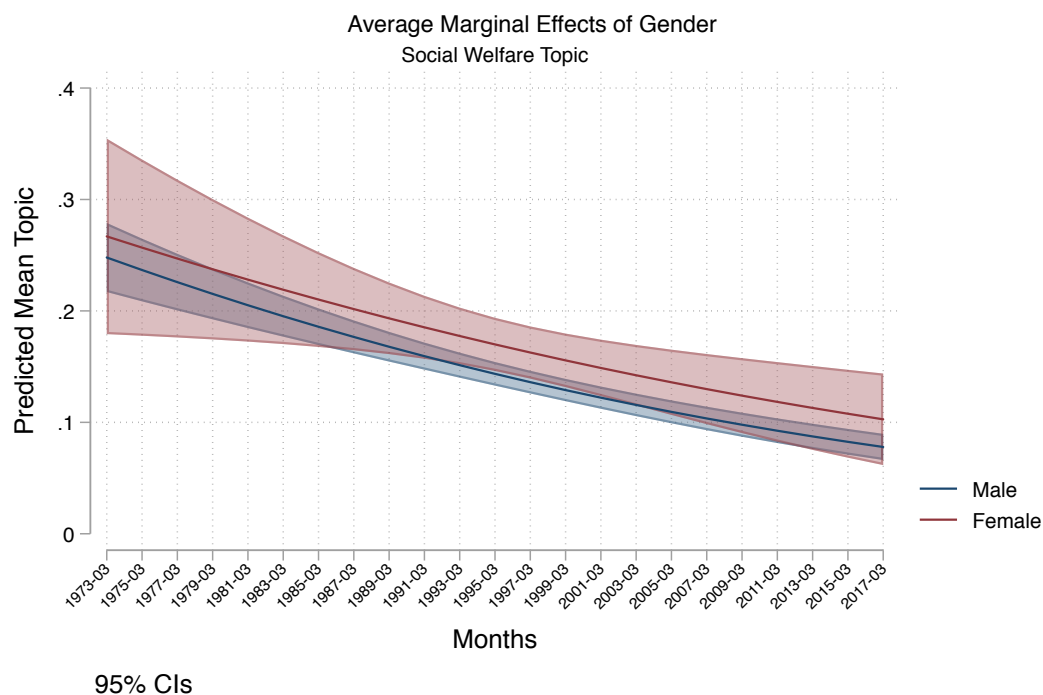
**Fig. 5:** *Interaction Coefficients Plot:* Results from the interaction of gender and pre- post- period. Gln fractional regression with month fixed effects (omitted) and id-clustered standard errors



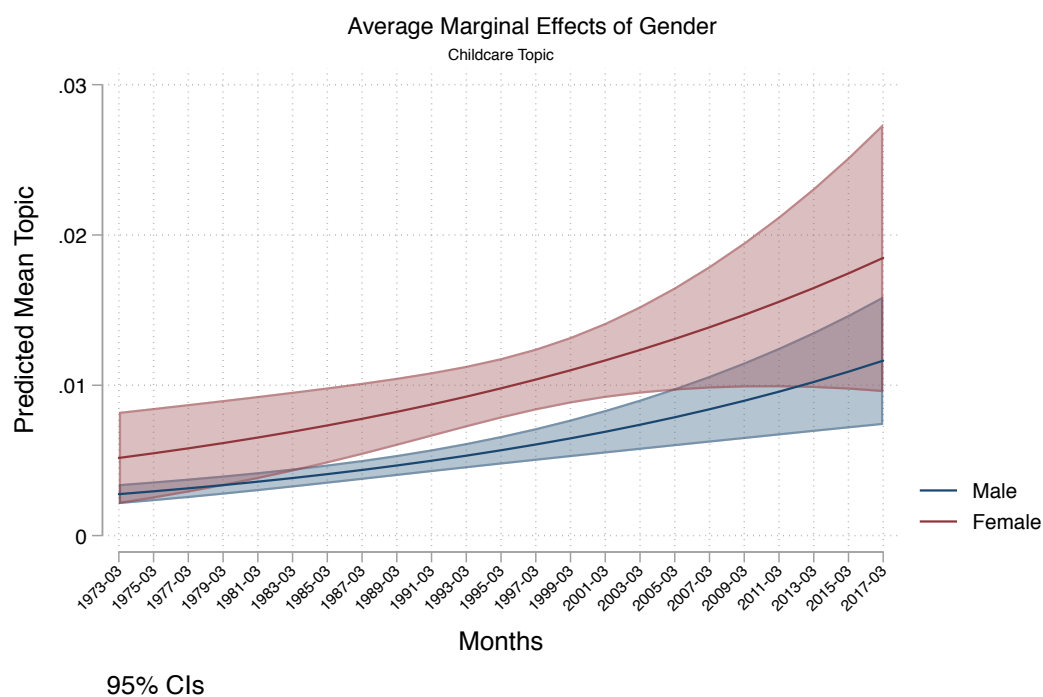
**Fig. 6:** *Split Sample Analysis:* Results from a glm fractional regression with month fixed effects (omitted) and id-clustered standard errors for pre-2016 Dàla and Dail 32 (post 2016)



**Fig. 7:** *Interaction Coefficients Plot:* Results from the interaction of gender and pre- post- period. Gln fractional regression with month fixed effects (omitted) and id-clustered standard errors

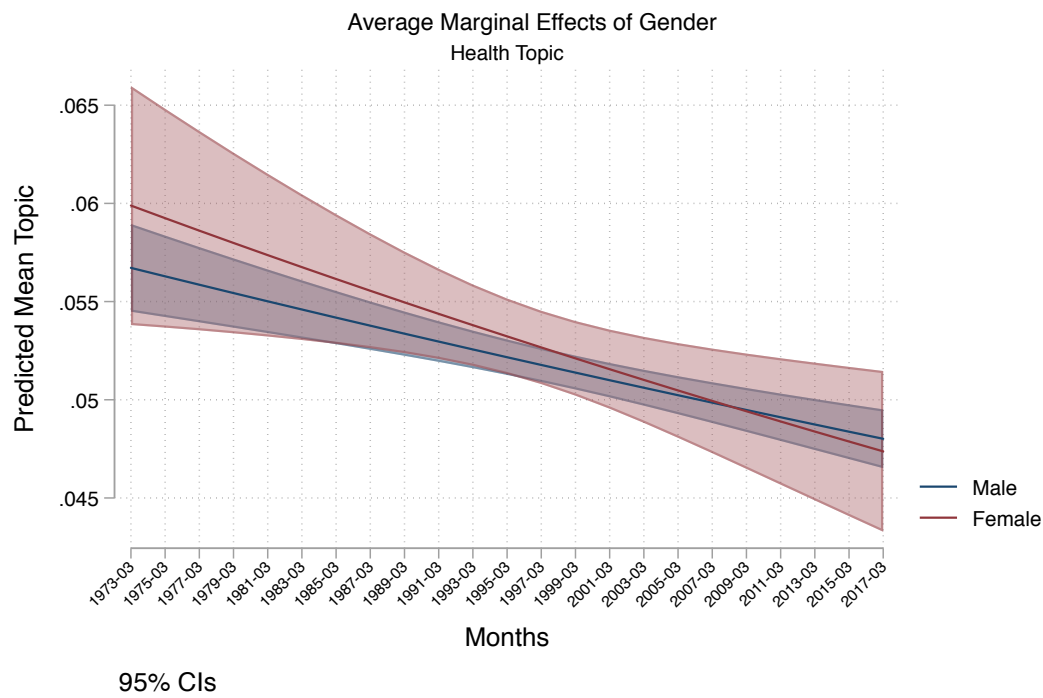


**Fig. 8:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.

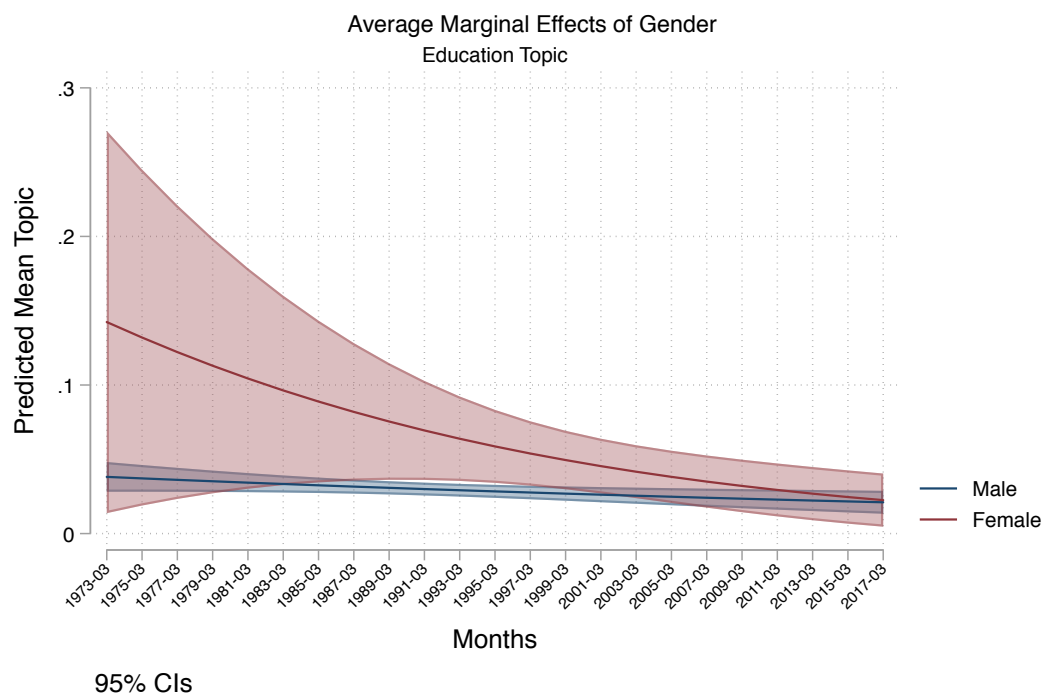


**Fig. 9:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.

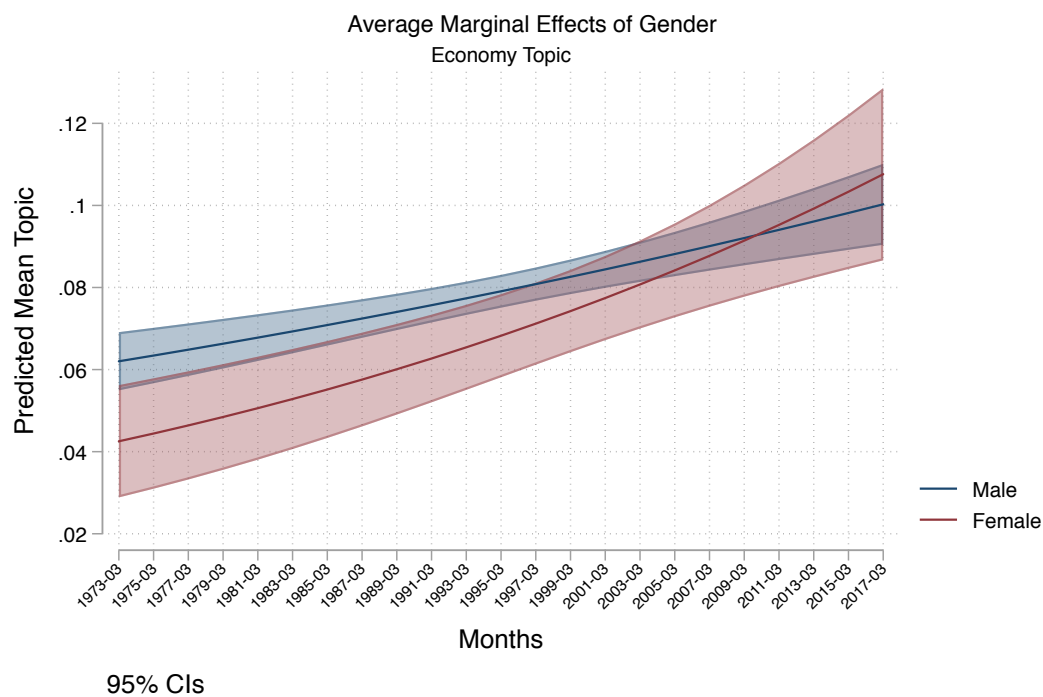




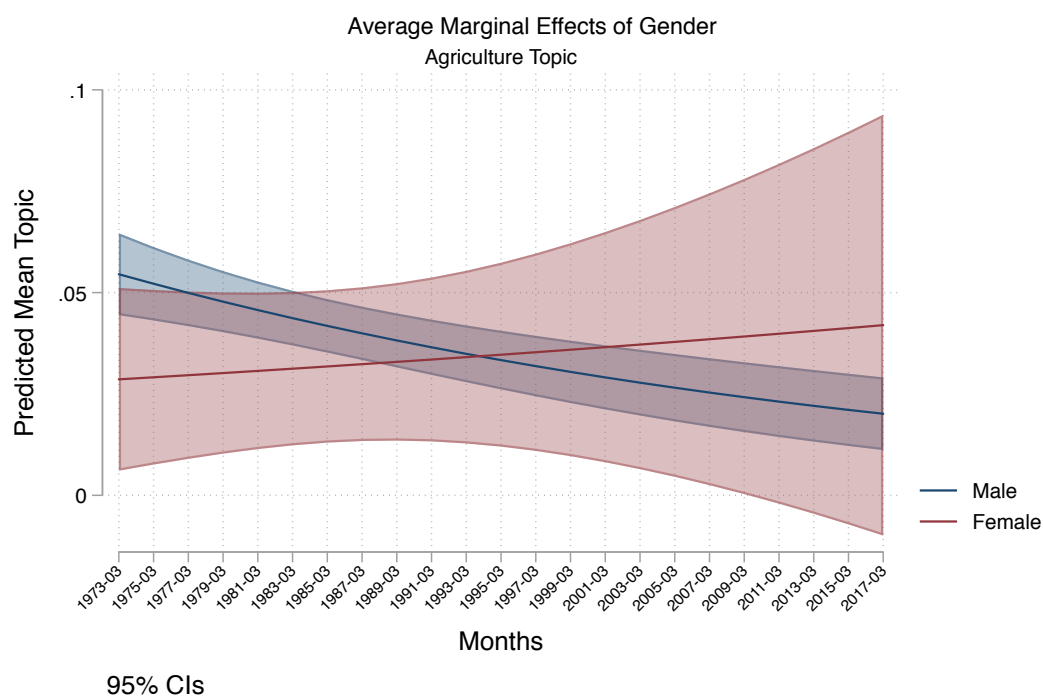
**Fig. 10:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.



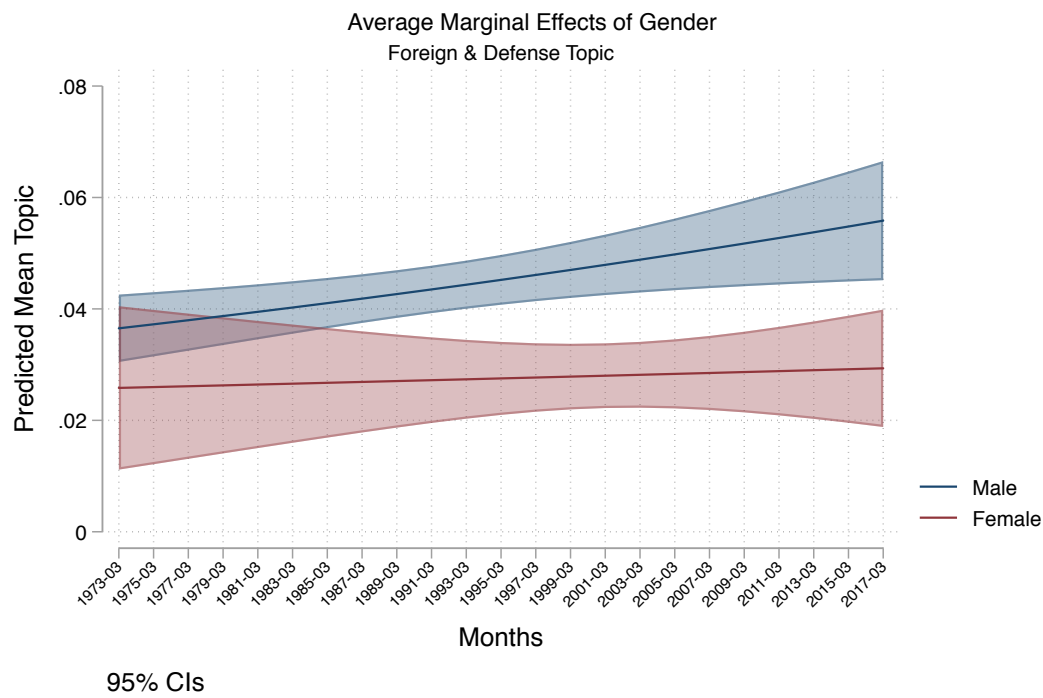
**Fig. 11:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.



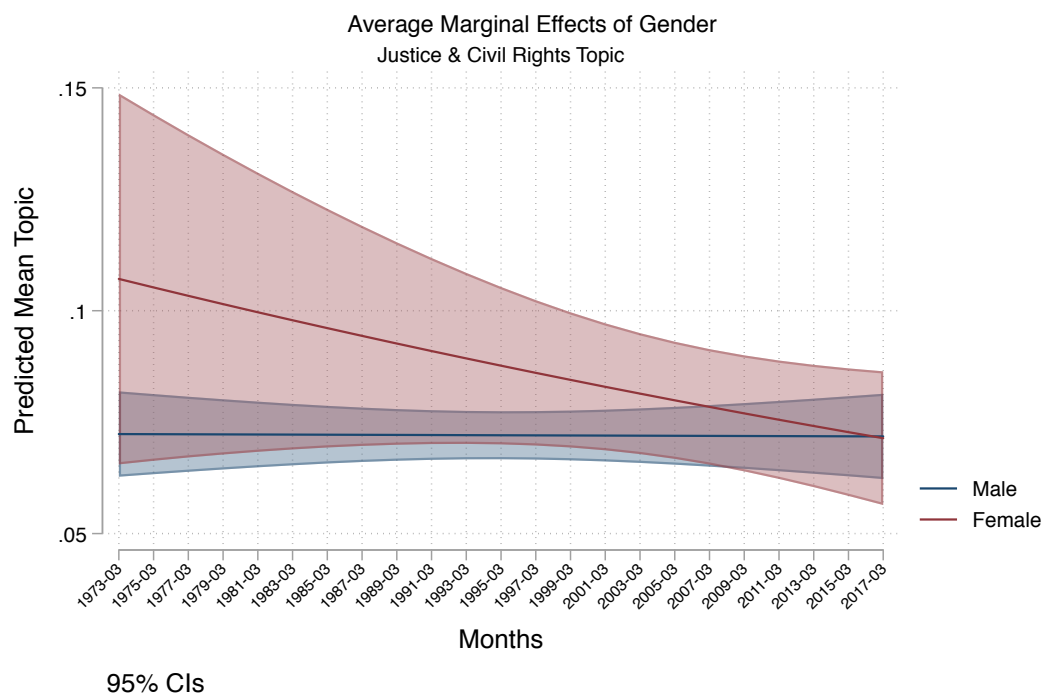
**Fig. 12:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.



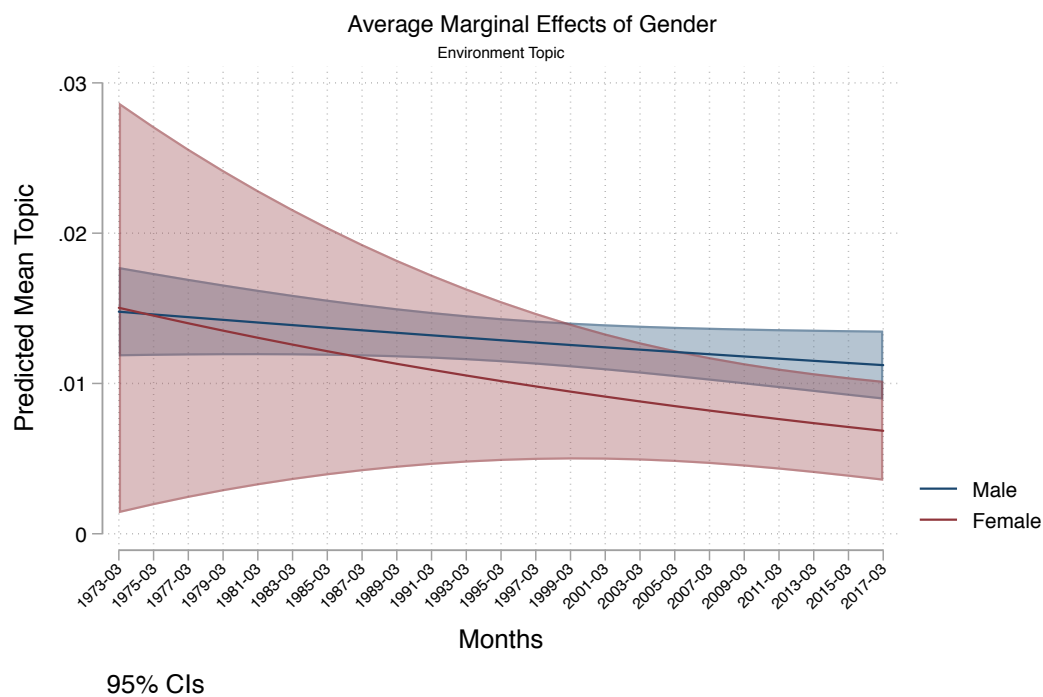
**Fig. 13:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.



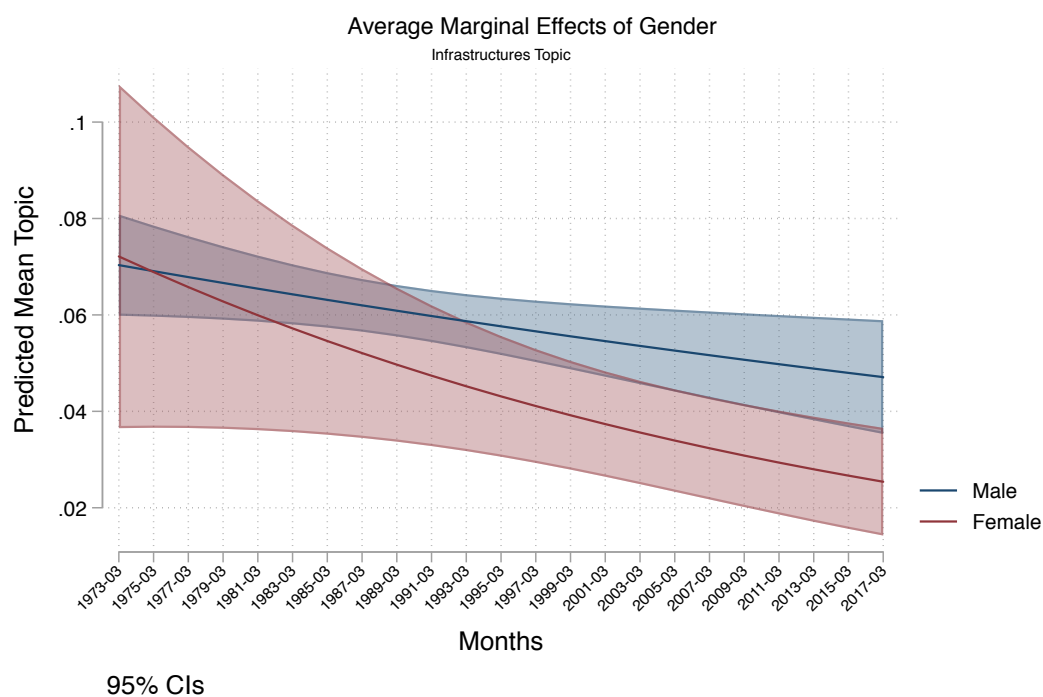
**Fig. 14:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.



**Fig. 15:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.



**Fig. 16:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.



**Fig. 17:** Interaction Plots: Gender\*Time Interaction Effects from Fractional Regression with month fixed effects (omitted) and id-clustered standard errors.

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## **7 Appendix**

	(1) Social Welfare	(2) Childcare	(3) Healthcare	(4) Education	(5) Economy
Female TD	1.155 (0.131)	1.603 (0.287)**	1.030 (0.0433)	1.898 (0.471)**	0.977 (0.0751)
FG	0.692 (0.0781)**	0.853 (0.163)	1.075 (0.0436)	0.823 (0.134)	0.967 (0.0675)
Lab	0.838 (0.0975)	0.534 (0.123)**	1.145 (0.0570)**	0.597 (0.155)*	1.050 (0.0878)
SF	0.914 (0.170)	0.349 (0.120)**	0.878 (0.0773)	0.542 (0.199)	1.453 (0.162)***
GP	0.723 (0.318)	0.197 (0.0856)***	0.924 (0.0979)	0.231 (0.0954)***	0.853 (0.141)
Independents/Other	0.823 (0.145)	0.471 (0.133)**	0.994 (0.0795)	0.512 (0.149)*	1.135 (0.121)
PD	0.949 (0.310)	0.282 (0.0829)***	0.799 (0.0853)*	0.205 (0.0959)***	1.397 (0.503)
Workers' Pty	0.628 (0.142)*	0.399 (0.146)*	1.161 (0.0974)	0.625 (0.230)	1.440 (0.261)*
AAA-PBP	0.849 (0.189)	0.232 (0.123)**	0.841 (0.166)	0.428 (0.204)	2.604 (0.360)***
Ceann Comhairle	0.252 (0.0642)***	0.212 (0.0806)***	0.886 (0.0560)	0.498 (0.144)*	0.186 (0.106)**
SocDems	0.952 (0.244)	0.469 (0.171)*	0.871 (0.0629)	0.324 (0.136)**	1.541 (0.225)**
Othr Extreme Left	1.031 (0.345)	0.255 (0.115)**	0.984 (0.105)	0.293 (0.143)*	1.731 (0.360)**
Dublin	0.838 (0.0935)	2.128 (0.471)***	1.029 (0.0342)	1.027 (0.208)	1.008 (0.0664)
Government TD	1.706 (0.176)***	0.927 (0.199)	0.845 (0.0248)***	0.956 (0.136)	0.813 (0.0489)***
Incumbent	1.083 (0.0860)	0.697 (0.202)	0.942 (0.0304)	0.989 (0.120)	0.924 (0.0429)
Minister	1.201 (0.182)	1.061 (0.416)	0.789 (0.0593)**	2.040 (0.590)*	1.062 (0.133)
Seniority	1.041 (0.0214)	0.919 (0.0534)	0.993 (0.0104)	0.928 (0.0393)	1.006 (0.0129)
Speech Number	1.073 (0.0146)***	1.032 (0.0336)	0.978 (0.00464)***	1.024 (0.0230)	0.935 (0.00673)***
ln(tokens)	0.786 (0.0187)***	0.997 (0.0390)	0.997 (0.0113)	1.118 (0.0758)	1.125 (0.0187)***
Social Welfare Cttees	1.079 (0.148)				
Social Policy Careers	1.034 (0.198)				
Regional Development Careers	3.257 (0.881)***				
Family/Children Affairs Cttees		1.327 (0.290)			
Family/Children Affairs Careers		2.339 (0.977)*			
Health Cttees			1.260 (0.0534)***		
Healthcare Careers			7387.4 (995.5)***		
Education Cttees				1.777 (0.462)*	
Education Careers				1.903 (0.333)***	
Economic Policy Cttees					1.408 (0.0774)***
Economics Careers					1.323 (0.0981)***
Monthly FE	Y	Y	Y	Y	Y
Observations	175112	175112	175112	175112	175112
AIC	106395.5	13503.2	32230.9	41203.5	80259.7
BIC	111260.9	18358.5	37076.1	46058.8	85115.0
ll	-52714.8	-6269.6	-15634.5	-20119.8	-39647.9

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ **Table A1:** GLM regression results - Models 1-5, documents with tokens  $j$  20 removed The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.



	(6)	(7)	(8)	(9)	(10)
	Agriculture	Foreign Policy & Defense	Justice & Civil Rights	Environment & Marine Protection	Infrastructures
Female TD	1.243 (0.629)	0.537 (0.0699)***	1.192 (0.121)	0.709 (0.187)	0.638 (0.116)*
FG	0.793 (0.160)	0.932 (0.124)	1.197 (0.112)	1.103 (0.164)	0.992 (0.105)
Lab	0.555 (0.117)**	1.086 (0.233)	1.083 (0.0956)	0.836 (0.176)	1.002 (0.144)
SF	0.856 (0.472)	1.330 (0.283)	1.672 (0.246)***	0.720 (0.197)	0.798 (0.183)
GP	1.593 (0.664)	1.462 (0.328)	1.092 (0.219)	2.360 (0.576)***	2.289 (1.028)
Independents/Other	0.660 (0.139)*	0.996 (0.195)	1.683 (0.247)***	1.141 (0.219)	0.960 (0.162)
PD	0.641 (0.231)	1.011 (0.194)	1.471 (0.455)	0.708 (0.200)	2.012 (0.787)
Workers' Pty	1.356 (0.465)	1.152 (0.220)	1.224 (0.218)	1.057 (0.336)	1.043 (0.215)
AAA-PBP	0.632 (0.310)	1.505 (0.350)	2.403 (0.604)***	1.999 (1.051)	0.748 (0.214)
Ceann Comhairle	0.525 (0.302)	0.288 (0.0952)***	0.420 (0.125)**	0.503 (0.101)***	0.378 (0.0766)***
SocDems	0.604 (0.271)	2.110 (0.661)*	1.584 (0.487)	0.947 (0.463)	1.086 (0.400)
Othr Extreme Left	0.461 (0.152)*	1.055 (0.390)	1.294 (0.199)	0.959 (0.461)	0.810 (0.220)
Dublin	0.341 (0.0667)***	1.150 (0.139)	1.316 (0.0884)***	0.793 (0.129)	0.705 (0.0843)**
Government TD	0.995 (0.138)	0.822 (0.0721)*	1.091 (0.100)	0.847 (0.0968)	1.540 (0.204)**
Incumbent	1.228 (0.119)*	0.993 (0.0799)	0.721 (0.0360)***	0.802 (0.134)	1.158 (0.121)
Minister	1.597 (0.527)	2.154 (0.382)***	0.716 (0.118)*	2.266 (0.437)***	1.176 (0.273)
Seniority	0.960 (0.0292)	1.032 (0.0223)	0.987 (0.0152)	1.005 (0.0271)	0.960 (0.0186)*
Speech Number	1.003 (0.0271)	0.952 (0.0106)***	0.937 (0.00970)***	0.975 (0.0164)	1.024 (0.0148)
ln(tokens)	1.062 (0.0451)	1.027 (0.0186)	1.108 (0.0257)***	0.934 (0.0220)**	0.872 (0.0191)***
Agriculture Cttees	1.555 (0.350)*				
Agriculture Careers	3.201 (1.034)***				
Foreign/Defense Cttees		1.675 (0.145)***			
Foreign/Defense Careers		1.615 (0.0721)***			
JHA Cttees			1.789 (0.159)***		
Legal Careers			1.844 (0.218)***		
Environment Cttees				1.888 (0.253)***	
Environment/Marine Careers				7.260 (1.716)***	
Infrastructures Cttees					1.466 (0.211)**
Transport Careers					1.955 (0.661)*
Technology Careers					1.278 (0.159)*
Monthly FE	Y	Y	Y	Y	Y
Observations	175112	175112	175112	175112	175112
AIC	42725.2	54494.9	75545.3	20655.2	61310.0
BIC	47570.4	59340.1	80390.5	25510.4	66175.3
ll	-20881.6	-26766.4	-37291.6	-9845.6	-30172.0

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ **Table A2:** GLM regression results - Models 6-10, documents with tokens  $j$  20 removed The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.

	(1) Social Welfare	(2) Childcare	(3) Healthcare	(4) Education	(5) Economy
Female TD	1.084 (0.155)	1.851 (0.286)***	0.994 (0.0552)	3.168 (1.123)**	0.747 (0.0876)*
Post-1992	0.786 (0.340)	1.907 (1.451)	1.140 (0.0801)	1.540 (0.446)	0.574 (0.0656)***
Female × Post-1992	1.157 (0.224)	0.849 (0.179)	1.030 (0.0899)	0.435 (0.215)	1.355 (0.229)
FG	0.695 (0.0733)***	0.886 (0.155)	1.069 (0.0378)	0.789 (0.112)	0.973 (0.0630)
Lab	0.774 (0.0844)*	0.573 (0.121)**	1.130 (0.0503)**	0.634 (0.150)	1.059 (0.0829)
SF	0.920 (0.175)	0.384 (0.124)**	0.887 (0.0704)	0.527 (0.173)	1.452 (0.152)***
GP	0.768 (0.320)	0.222 (0.0917)***	0.928 (0.0855)	0.226 (0.0905)***	0.857 (0.134)
Independents/Other	0.854 (0.150)	0.520 (0.135)*	0.998 (0.0767)	0.561 (0.151)*	1.128 (0.115)
PD	0.943 (0.279)	0.304 (0.0851)***	0.803 (0.0814)*	0.246 (0.101)***	1.378 (0.465)
Workers' Pty	0.588 (0.126)*	0.423 (0.143)*	1.184 (0.0864)*	0.673 (0.216)	1.413 (0.238)*
AAA-PBP	0.915 (0.199)	0.266 (0.134)**	0.835 (0.157)	0.479 (0.215)	2.532 (0.341)***
Ceann Comhairle	0.309 (0.0585)***	0.236 (0.0797)***	0.901 (0.0504)	0.522 (0.131)**	0.197 (0.109)**
SocDems	0.936 (0.234)	0.490 (0.168)*	0.879 (0.0578)*	0.339 (0.139)**	1.534 (0.226)**
Othr Extreme Left	1.070 (0.341)	0.293 (0.120)**	0.990 (0.100)	0.310 (0.140)**	1.703 (0.360)*
Dublin	0.790 (0.0800)*	1.971 (0.405)***	1.029 (0.0299)	1.051 (0.192)	1.013 (0.0633)
Government TD	1.562 (0.142)***	0.914 (0.181)	0.853 (0.0217)***	0.909 (0.118)	0.798 (0.0445)***
Incumbent	1.041 (0.0748)	0.714 (0.187)	0.943 (0.0266)*	0.974 (0.111)	0.911 (0.0391)*
Minister	1.185 (0.168)	1.064 (0.389)	0.796 (0.0563)**	2.005 (0.534)**	1.090 (0.127)
Seniority	1.036 (0.0188)	0.921 (0.0480)	0.995 (0.00880)	0.941 (0.0349)	1.005 (0.0116)
Speech Number	1.057 (0.0137)***	1.028 (0.0311)	0.979 (0.00423)***	1.015 (0.0214)	0.941 (0.00629)***
ln(tokens)	0.879 (0.0120)***	1.046 (0.0242)	1.017 (0.00683)*	1.113 (0.0441)**	1.135 (0.0104)***
Social Welfare Cttees	0.980 (0.128)				
Social Policy Careers	1.003 (0.180)				
Regional Development Careers	3.316 (0.991)***				
Family/Children Affairs Cttees		1.280 (0.270)			
Family/Children Affairs Careers		2.286 (0.973)			
Health Cttees			1.257 (0.0511)***		
Healthcare Careers			7045.3 (820.1)***		
Education Cttees				1.829 (0.463)*	
Education Careers				1.735 (0.281)***	
Economic Policy Cttees					1.384 (0.0714)***
Economics Careers					1.302 (0.0923)***
Monthly FE	Y	Y	Y	Y	Y
Observations	209688	209688	209688	209688	209688
AIC	133332.5	15477.4	37903.7	47998.2	92811.0
BIC	138305.4	20440.1	42866.3	52960.8	97773.7
ll	-66181.3	-7254.7	-18467.8	-23515.1	-45921.5

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A3:** Pre- Post- 1992 Regression Analysis - Models 1-5 The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.

	(6)	(7)	(8)	(9)	(10)
	Agriculture	Foreign/Defense	Justice & Civil Rights	Environment & Marine Protection	Infrastructures
Female TD	0.571 (0.221)	0.672 (0.164)	1.301 (0.233)	0.825 (0.292)	0.908 (0.214)
Post-1992	1.167 (0.540)	0.339 (0.103)***	0.829 (0.355)	1.467 (0.341)	0.871 (0.210)
Female × Post-1992	2.739 (1.705)	0.785 (0.219)	0.890 (0.190)	0.832 (0.373)	0.673 (0.241)
FG	0.812 (0.144)	0.950 (0.115)	1.188 (0.102)*	1.092 (0.147)	0.948 (0.0915)
Lab	0.566 (0.112)**	1.091 (0.214)	1.078 (0.0907)	0.846 (0.163)	0.960 (0.128)
SF	0.829 (0.420)	1.343 (0.261)	1.615 (0.229)***	0.747 (0.198)	0.778 (0.171)
GP	1.434 (0.570)	1.528 (0.331)	1.085 (0.211)	2.260 (0.496)***	2.233 (0.967)
Independents/Other	0.658 (0.129)*	1.022 (0.182)	1.660 (0.229)***	1.124 (0.197)	0.952 (0.144)
PD	0.638 (0.208)	1.113 (0.214)	1.451 (0.406)	0.756 (0.195)	1.919 (0.766)
Workers' Pty	1.184 (0.368)	1.122 (0.194)	1.204 (0.206)	0.980 (0.277)	0.966 (0.170)
AAA-PBP	0.559 (0.284)	1.498 (0.323)	2.258 (0.570)**	1.823 (0.932)	0.835 (0.272)
Ceann Comhairle	0.521 (0.311)	0.369 (0.119)**	0.414 (0.121)**	0.526 (0.101)***	0.433 (0.0777)***
SocDems	0.523 (0.256)	2.153 (0.618)**	1.531 (0.479)	0.941 (0.463)	1.072 (0.426)
Othr Extreme Left	0.443 (0.139)**	1.053 (0.382)	1.277 (0.186)	0.899 (0.427)	0.839 (0.226)
Dublin	0.370 (0.0649)***	1.137 (0.127)	1.302 (0.0825)***	0.813 (0.119)	0.706 (0.0788)**
Government TD	0.957 (0.115)	0.809 (0.0624)**	1.064 (0.0891)	0.823 (0.0829)	1.361 (0.164)*
Incumbent	1.155 (0.104)	0.979 (0.0713)	0.725 (0.0335)***	0.805 (0.121)	1.127 (0.109)
Minister	1.556 (0.470)	2.097 (0.351)***	0.709 (0.112)*	2.089 (0.377)***	1.153 (0.251)
Seniority	0.962 (0.0251)	1.025 (0.0202)	0.988 (0.0141)	1.005 (0.0243)	0.962 (0.0168)*
Speech Number	1.006 (0.0250)	0.954 (0.00969)***	0.940 (0.00903)***	0.979 (0.0148)	1.016 (0.0143)
ln(tokens)	1.101 (0.0301)***	1.082 (0.0122)***	1.169 (0.0152)***	1.000 (0.0140)	0.988 (0.0127)
Agriculture Cttees	1.572 (0.329)*				
Agriculture Careers	2.899 (0.859)***				
Foreign/Defence Committees		1.627 (0.128)***			
Foreign		1.579 (0.0744)***			
JHA Cttees			1.708 (0.140)***		
Legal Careers			1.798 (0.203)***		
Environment Cttees				1.838 (0.233)***	
Environment/Marine Careers				6.824 (1.554)***	
Infrastructures Cttees					1.401 (0.199)*
Transport Careers					1.879 (0.630)
Technology Careers					1.221 (0.154)
Monthly FE	Y	Y	Y	Y	Y
Observations	209688	209688	209688	209688	209688
AIC	50244.0	62605.3	85948.0	24166.5	73240.7
BIC	55206.6	67547.5	90900.3	29129.1	78213.6
ll	-24638.0	-30820.7	-42491.0	-11599.2	-36135.4

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ **Table A4:** Pre- Post- 1992 Regression Analysis - Models 6-10. The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.

	(1) Social Welfare	(2) Childcare	(3) Healthcare	(4) Education	(5) Economy
Female TD	1.191 (0.131)	1.583 (0.293)*	1.020 (0.0414)	1.890 (0.450)**	0.968 (0.0721)
Post-2016	1.229 (0.415)	2.028 (0.829)	1.101 (0.0769)	1.375 (0.428)	0.514 (0.0488)***
Female × Post-2016	0.898 (0.182)	1.408 (0.771)	0.948 (0.0831)	0.391 (0.177)*	1.057 (0.195)
FG	0.693 (0.0731)***	0.891 (0.154)	1.069 (0.0377)	0.813 (0.121)	0.971 (0.0629)
Lab	0.777 (0.0847)*	0.572 (0.121)**	1.131 (0.0503)**	0.609 (0.141)*	1.066 (0.0836)
SF	0.919 (0.175)	0.386 (0.125)**	0.887 (0.0704)	0.551 (0.185)	1.454 (0.153)***
GP	0.766 (0.319)	0.224 (0.0922)***	0.927 (0.0856)	0.239 (0.0954)***	0.857 (0.134)
Independents/Other	0.860 (0.151)	0.520 (0.136)*	0.999 (0.0773)	0.528 (0.145)*	1.136 (0.115)
PD	0.945 (0.279)	0.307 (0.0849)***	0.804 (0.0822)*	0.238 (0.1000)***	1.372 (0.460)
Workers' Pty	0.594 (0.126)*	0.415 (0.143)*	1.187 (0.0873)*	0.620 (0.201)	1.438 (0.245)*
AAA-PBP	0.935 (0.196)	0.271 (0.127)**	0.835 (0.150)	0.471 (0.223)	2.547 (0.345)***
Ceann Comhairle	0.309 (0.0590)***	0.237 (0.0797)***	0.900 (0.0504)	0.532 (0.140)*	0.196 (0.109)**
SocDems	1.014 (0.283)	0.445 (0.203)	0.893 (0.0719)	0.400 (0.162)*	1.533 (0.252)**
Othr Extreme Left	1.075 (0.353)	0.294 (0.120)**	0.991 (0.101)	0.309 (0.140)**	1.706 (0.353)**
Dublin	0.791 (0.0804)*	1.967 (0.404)***	1.029 (0.0299)	1.023 (0.190)	1.013 (0.0627)
Government TD	1.560 (0.142)***	0.917 (0.182)	0.853 (0.0217)***	0.908 (0.115)	0.797 (0.0441)***
Incumbent	1.042 (0.0748)	0.713 (0.187)	0.943 (0.0265)*	0.985 (0.108)	0.910 (0.0390)*
Minister	1.186 (0.168)	1.061 (0.387)	0.797 (0.0564)**	2.015 (0.538)**	1.092 (0.128)
Seniority	1.036 (0.0189)	0.921 (0.0483)	0.995 (0.00887)	0.935 (0.0348)	1.006 (0.0116)
Speech Number	1.057 (0.0137)***	1.028 (0.0311)	0.979 (0.00424)***	1.015 (0.0211)	0.941 (0.00628)***
ln(tokens)	0.879 (0.0120)***	1.046 (0.0242)	1.017 (0.00683)*	1.112 (0.0434)**	1.135 (0.0104)***
Social Welfare Cttees	0.986 (0.128)				
Social Policy Careers	1.009 (0.182)				
Regional Development Careers	3.295 (0.982)***				
Family/Children Affairs Cttees		1.279 (0.269)			
Family/Children Affairs Careers		2.254 (0.970)			
Health Cttees			1.258 (0.0522)***		
Healthcare Careers			7048.4 (821.6)***		
Education Cttees				1.741 (0.427)*	
Education Careers				1.787 (0.286)***	
Economic Policy Cttees					1.383 (0.0711)***
Economics Careers					1.310 (0.0921)***
Monthly FE	Y	Y	Y	Y	Y
Observations	209688	209688	209688	209688	209688
AIC	133342.1	15476.4	37903.7	48123.0	92824.4
BIC	138315.0	20439.0	42866.4	53085.7	97787.1
ll	-66186.1	-7254.2	-18467.9	-23577.5	-45928.2

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A5:** Pre- Post- 2016 Regression Analysis - Models 1-5 The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.

	(6)	(7)	(8)	(9)	(10)
	Agriculture	Foreign/Defense	Justice & Civil Rights	Environment & Marine Protection	Infrastructures
Female TD	1.203 (0.548)	0.538 (0.0684)***	1.164 (0.113)	0.727 (0.180)	0.682 (0.117)*
Post-2016	1.448 (0.342)	0.337 (0.0592)***	0.698 (0.152)	1.207 (0.216)	1.022 (0.242)
Female × Post-2016	0.540 (0.260)	1.332 (0.343)	1.476 (0.257)*	0.785 (0.318)	0.980 (0.241)
FG	0.799 (0.143)	0.954 (0.115)	1.192 (0.103)*	1.095 (0.149)	0.954 (0.0915)
Lab	0.583 (0.112)**	1.088 (0.213)	1.076 (0.0900)	0.843 (0.162)	0.953 (0.128)
SF	0.830 (0.420)	1.347 (0.262)	1.616 (0.229)***	0.748 (0.197)	0.782 (0.171)
GP	1.408 (0.561)	1.537 (0.330)*	1.092 (0.210)	2.260 (0.494)***	2.246 (0.973)
Independents/Other	0.668 (0.129)*	1.021 (0.182)	1.654 (0.229)***	1.117 (0.196)	0.947 (0.143)
PD	0.664 (0.213)	1.117 (0.214)	1.458 (0.406)	0.752 (0.195)	1.902 (0.761)
Workers' Pty	1.234 (0.384)	1.114 (0.192)	1.194 (0.206)	0.970 (0.274)	0.949 (0.170)
AAA-PBP	0.639 (0.199)	1.429 (0.338)	2.208 (0.374)***	1.852 (0.888)	0.829 (0.252)
Ceann Comhairle	0.516 (0.304)	0.369 (0.120)**	0.414 (0.121)**	0.527 (0.100)***	0.435 (0.0775)***
SocDems	0.803 (0.182)	1.931 (0.728)	1.323 (0.293)	1.004 (0.536)	1.025 (0.349)
Othr Extreme Left	0.475 (0.135)**	1.055 (0.384)	1.279 (0.185)	0.894 (0.427)	0.830 (0.214)
Dublin	0.375 (0.0652)***	1.133 (0.127)	1.299 (0.0822)***	0.812 (0.119)	0.705 (0.0790)**
Government TD	0.956 (0.116)	0.811 (0.0627)**	1.065 (0.0890)	0.824 (0.0828)	1.365 (0.165)*
Incumbent	1.147 (0.101)	0.980 (0.0715)	0.724 (0.0335)***	0.807 (0.121)	1.128 (0.109)
Minister	1.534 (0.474)	2.093 (0.349)***	0.708 (0.112)*	2.089 (0.377)***	1.152 (0.251)
Seniority	0.965 (0.0256)	1.025 (0.0202)	0.987 (0.0141)	1.005 (0.0244)	0.961 (0.0170)*
Speech Number	1.004 (0.0250)	0.954 (0.00966)***	0.940 (0.00903)***	0.979 (0.0148)	1.016 (0.0144)
ln(tokens)	1.101 (0.0300)***	1.082 (0.0122)***	1.169 (0.0151)***	1.000 (0.0139)	0.988 (0.0126)
Agriculture Cttees	1.483 (0.318)				
Agriculture Careers	2.911 (0.858)***				
Foreign/Defence Committees		1.627 (0.127)***			
Foreign		1.762 (0.245)***			
JHA Cttees			1.711 (0.141)***		
Legal Careers			1.795 (0.201)***		
Environment Cttees				1.836 (0.233)***	
Environment/Marine Careers				6.833 (1.544)***	
Infrastructures Cttees					1.404 (0.201)*
Transport Careers					1.874 (0.634)
Technology Careers					1.214 (0.152)
Monthly FE	Y	Y	Y	Y	Y
Observations	209688	209688	209688	209688	209688
AIC	50327.2	62604.7	85942.5	24167.6	73264.9
BIC	55289.9	67546.8	90905.1	29130.2	78237.8
ll	-24679.6	-30820.4	-42487.2	-11599.8	-36147.5

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A6:** Pre- Post- 2016 Regression Analysis - Models 6-10. The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.

	(1) Social Welfare	(2) Childcare	(3) Healthcare	(4) Education	(5) Economy
Female TD	1.053 (0.399)	2.018 (1.004)	1.153 (0.163)	6.595 (5.498)*	0.582 (0.142)*
Month	0.997 (0.000280)***	1.003 (0.000524)***	0.999 (0.000112)***	0.999 (0.000558)*	1.001 (0.000199)***
Female TD × Month	1.000 (0.000855)	1.000 (0.00110)	1.000 (0.000313)	0.997 (0.00175)	1.001 (0.000459)*
FG	0.745 (0.0814)**	0.833 (0.173)	1.087 (0.0390)*	0.766 (0.119)	0.987 (0.0659)
Lab	0.767 (0.0853)*	0.535 (0.130)*	1.141 (0.0522)**	0.603 (0.158)	1.074 (0.0875)
SF	0.986 (0.195)	0.336 (0.118)**	0.933 (0.0718)	0.475 (0.161)*	1.465 (0.162)***
GP	0.753 (0.304)	0.223 (0.0928)***	0.898 (0.0762)	0.242 (0.0950)***	0.725 (0.0959)*
Independents/Other	0.930 (0.166)	0.450 (0.140)*	1.060 (0.0801)	0.502 (0.144)*	1.063 (0.110)
PD	0.881 (0.250)	0.299 (0.0833)***	0.800 (0.0767)*	0.233 (0.0909)***	1.179 (0.395)
Workers' Pty	0.619 (0.107)**	0.377 (0.132)**	1.187 (0.0712)**	0.664 (0.192)	1.122 (0.191)
AAA-PBP	1.045 (0.213)	0.199 (0.117)**	1.030 (0.187)	0.334 (0.154)*	1.552 (0.204)***
Ceann Comhairle	0.246 (0.0557)***	0.205 (0.0831)***	0.928 (0.0414)	0.405 (0.106)***	0.205 (0.109)**
SocDems	0.908 (0.232)	0.366 (0.116)**	1.102 (0.0674)	0.262 (0.111)**	0.980 (0.152)
Othr Extreme Left	0.815 (0.234)	0.301 (0.132)**	0.969 (0.0821)	0.251 (0.105)***	1.568 (0.336)*
Dublin	0.804 (0.0798)*	1.993 (0.431)**	1.025 (0.0302)	1.063 (0.199)	0.991 (0.0620)
govtd	1.498 (0.132)***	0.888 (0.140)	0.876 (0.0226)***	0.876 (0.124)	0.794 (0.0419)***
Incumbent	1.034 (0.0833)	0.702 (0.192)	0.941 (0.0267)*	0.983 (0.125)	0.891 (0.0394)**
Minister	1.191 (0.160)	1.064 (0.385)	0.769 (0.0575)***	1.965 (0.585)*	1.104 (0.131)
Seniority	1.046 (0.0183)*	0.929 (0.0446)	0.993 (0.00877)	0.942 (0.0311)	0.986 (0.0112)
Speech Number	1.050 (0.00862)***	1.024 (0.0240)	0.985 (0.00313)***	1.023 (0.0150)	0.962 (0.00480)***
ln(tokens)	0.880 (0.0131)***	1.050 (0.0242)*	1.017 (0.00738)*	1.117 (0.0482)*	1.129 (0.0110)***
Social Welfare Cttees	0.718 (0.0950)*				
Social Policy Career	1.012 (0.183)				
Regional Development Career	3.218 (0.996)***				
Family/Children Affairs Cttees		1.339 (0.266)			
Family/Children Affairs Careers		2.270 (1.007)			
Health Cttees			1.263 (0.0505)***		
Healthcare Careers			6928.2 (837.9)***		
Education Cttees				1.794 (0.469)*	
Education Careers				1.748 (0.284)***	
Economic Policy Cttees					1.350 (0.0692)***
Economics Careers					1.321 (0.0948)***
Observations	209688	209688	209688	209688	209688
AIC	137142.6	14884.5	37095.6	47808.1	93680.1
BIC	137398.9	15130.6	37341.7	48054.2	93926.2
ll	-68546.3	-7418.3	-18523.8	-23880.0	-46816.0

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A7: Interaction Effects Models - Models 1-5.** The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.



	(1)	(2)	(3)	(4)	(5)
	Agriculture	Foreign Policy & Defense	Justice & Civil Rights	Environment/Marine Protection	Infrastructures
Female TD	0.325 (0.206)	0.762 (0.327)	1.764 (0.560)	1.171 (0.742)	1.275 (0.508)
Month	0.998 (0.000518)***	1.001 (0.000306)**	1.000 (0.000233)	0.999 (0.000330)	0.999 (0.000366)*
Female TD × Month	1.003 (0.00171)	0.999 (0.000848)	0.999 (0.000549)	0.999 (0.00104)	0.999 (0.000814)
FG	0.796 (0.155)	0.948 (0.116)	1.185 (0.111)	1.088 (0.151)	0.896 (0.0957)
Lab	0.558 (0.118)**	1.105 (0.225)	1.080 (0.0947)	0.838 (0.167)	0.908 (0.134)
SF	0.728 (0.368)	1.267 (0.242)	1.442 (0.199)**	0.721 (0.181)	0.662 (0.148)
GP	1.541 (0.597)	1.745 (0.353)**	1.041 (0.233)	2.349 (0.460)***	2.393 (0.975)*
Independents/Other	0.593 (0.125)*	1.033 (0.181)	1.521 (0.191)***	1.074 (0.188)	0.843 (0.138)
PD	0.774 (0.209)	1.266 (0.240)	1.829 (0.630)	0.859 (0.225)	1.873 (0.777)
Workers' Pty	1.374 (0.335)	1.215 (0.176)	1.302 (0.345)	1.055 (0.292)	0.863 (0.136)
AAA-PBP	0.345 (0.219)	2.153 (0.403)***	1.907 (0.542)*	1.956 (0.931)	0.697 (0.233)
Ceann Comhairle	0.503 (0.276)	0.349 (0.110)***	0.386 (0.124)**	0.489 (0.108)**	0.339 (0.0680)***
SocDems	0.292 (0.204)	3.228 (0.919)***	1.419 (0.468)	1.064 (0.496)	0.929 (0.353)
Othr Extreme Left	0.509 (0.142)*	1.160 (0.382)	1.362 (0.192)*	0.991 (0.474)	0.784 (0.186)
Dublin	0.370 (0.0633)***	1.128 (0.126)	1.329 (0.102)***	0.813 (0.121)	0.711 (0.0792)**
Government TD	0.959 (0.109)	0.836 (0.0660)*	1.119 (0.0835)	0.831 (0.0790)	1.318 (0.156)*
Incumbent	1.157 (0.104)	0.970 (0.0701)	0.702 (0.0372)***	0.790 (0.121)	1.132 (0.112)
Minister	1.517 (0.505)	1.971 (0.316)***	0.678 (0.115)*	1.989 (0.364)***	1.155 (0.251)
Seniority	0.977 (0.0275)	1.043 (0.0191)*	1.001 (0.0146)	1.018 (0.0252)	0.963 (0.0167)*
Speech Number	1.008 (0.0176)	0.963 (0.00702)***	0.954 (0.00790)***	0.990 (0.0103)	1.021 (0.0107)*
ln(tokens)	1.096 (0.0333)**	1.072 (0.0127)***	1.167 (0.0191)***	0.997 (0.0153)	0.995 (0.0133)
Agriculture Cttees	1.662 (0.293)**				
Agriculture Career	2.892 (0.884)***				
Foreign/Defense Cttees		1.580 (0.126)***			
Foreign/Defense Career		1.565 (0.104)***			
JHA Cttees			1.893 (0.149)***		
Environment Cttees				1.769 (0.221)***	
Environment/Marine Careers				6.481 (1.351)***	
Infrastructures Cttees					1.458 (0.212)**
Transport Careers					1.925 (0.693)
Technology Careers					1.249 (0.161)
Observations	209688	209688	209688	209688	209688
AIC	49995.1	62900.4	86931.6	23638.1	73177.2
BIC	50241.2	63136.2	87167.4	23884.1	73433.6
ll	-24973.6	-31427.2	-43442.8	-11795.0	-36563.6

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ **Table A8: Interaction Effects Models - Models 6-10.** The table reports exponentiated coefficients, while standard errors are displayed in parentheses. Standard errors are clustered at legislator level.