

Legislating or Rubber-Stamping? (Gava, Jaquet, Sciarini)

Online Appendix

1 Literature review

Table A1: Measuring Parliament’s influence on law-making (non-exhaustive list)

Unit of analysis	Operationalisation	Key contributions and empirical focus
Bill	Quantitative <ul style="list-style-type: none"> • Introduction of bills by government/parliament origin • Passage rate of bills of government/parliament origin • Share of modified bills of government/parliament origin 	<ul style="list-style-type: none"> • Blondel (1970): UK, IE, SE, FR, IN • Damgaard and Jensen (2006): DK • Pettai and Madise (2006): LT, LV, EE • Newell (2006): IT • Kerrouche (2006): FR • Bach (2008): AU • Maurer (1999): ES • Capano and Giuliani (2001): IT
	Qualitative <ul style="list-style-type: none"> • Assessment of the degree of change in bills through manual content analysis 	<ul style="list-style-type: none"> • Barrett (2005): US • Barrett and Eshbaugh-Soha (2007): US • Jegher (1999): CH
Amendment	Quantitative <ul style="list-style-type: none"> • Number of adopted amendments 	<ul style="list-style-type: none"> • Blondel (1970): UK, IE, SE, FR, IN • Griffith (1974): UK • Kerrouche (2006): FR • Kreppel (1999): EU • Tsebelis and Kalandrakis (1999): EU • Bach (2008): AU
	Qualitative <ul style="list-style-type: none"> • Assessment of the importance of amendments through manual content analysis 	<ul style="list-style-type: none"> • Kreppel (1999): EU • Tsebelis and Kalandrakis (1999): EU
Article	Quantitative <ul style="list-style-type: none"> • Number of modified articles • Number of modified clauses (i.e., “sub-articles”) 	<ul style="list-style-type: none"> • Martin and Vanberg (2005): DE, NL • Martin and Vanberg (2014): DE, NL, DK
Text (n-gram)	Quantitative <ul style="list-style-type: none"> • Number of words modified between input and output texts • Edit distance between input and output texts 	<ul style="list-style-type: none"> • Pedrazzani and Zucchini (2013): IT • Cross and Hermansson (2017): EU • Peterson (2017): US

2 Pre-processing example

Table A2: Pre-processing example (20030460-1): *before* pre-processing

Input text	Output text
<p>Loi sur l'Assemblée fédérale Modification du L'Assemblée fédérale de la Confédération suisse, vu le rapport de la Commission de gestion du Conseil des Etats du 21 novembre 2003, vu l'avis du Conseil fédéral du 31 mars 2004, arrête: I La loi du 13 décembre 2002 sur le Parlement est modifiée comme suit: Art. 154bis Effets des enquêtes de la délégation des Commissions de gestion sur d'autres procédures ou investigations 1 Une enquête disciplinaire ou administrative de la Confédération ne peut être engagée qu'avec l'autorisation de la délégation des Commissions de gestion, si elle concerne des affaires ou des personnes qui sont visées par une enquête de cette même délégation. Les procédures en cours doivent être interrompues jusqu'à ce que la délégation des Commissions de gestion autorise leur reprise. 2 Une enquête de la délégation des Commissions de gestion n'empêche pas l'engagement ou la poursuite d'une procédure judiciaire civile ou administrative, d'une enquête pénale préliminaire ou d'une procédure pénale. 3 S'il y a désaccord sur la nécessité d'obtenir une autorisation, la délégation des Commissions de gestion tranche à l'unanimité. II 1 La présente loi est sujette au référendum. 2 La Conférence de coordination fixe la date de l'entrée en vigueur.</p>	<p>Loi sur l'Assemblée fédérale (Loi sur le Parlement, LParl) Modification du 17 décembre 2004 L'Assemblée fédérale de la Confédération suisse, vu le rapport de la Commission de gestion du Conseil des Etats du 21 novembre 2003, vu l'avis du Conseil fédéral du 31 mars 2004, arrête: I La loi du 13 décembre 2002 sur le Parlement est modifiée comme suit: Remplacement d'une expression Ne concerne que le texte allemand Art. 154a Effets des enquêtes de la délégation des Commissions de gestion sur d'autres procédures ou investigations 1 Une enquête disciplinaire ou administrative de la Confédération ne peut être engagée ou poursuivie qu'avec l'autorisation de la délégation des Commissions de gestion, si elle concerne des affaires ou des personnes qui sont visées par une enquête de cette même délégation. 2 La délégation des Commissions de gestion statue sur l'autorisation après audition du Conseil fédéral. 3 S'il y a désaccord sur la nécessité d'obtenir une autorisation, la délégation des Commissions de gestion tranche à la majorité des deux tiers de ses membres. 4 Une enquête de la délégation des Commissions de gestion n'empêche pas l'engagement ou la poursuite d'une procédure judiciaire civile ou administrative, d'une enquête pénale préliminaire ou d'une procédure pénale. II 1 La présente loi est sujette au référendum. 2 La Conférence de coordination fixe la date de l'entrée en vigueur. Conseil des Etats, 17 décembre 2004 Conseil national, 17 décembre 2004 Le président: Bruno Frick Le secrétaire: Christoph Lanz Le président: Jean-Philippe Maitre Le secrétaire: Christophe Thomann Date de publication: 28 décembre 20044 Délai référendaire: 7 avril 2005</p>

Matches between the input and the output bill are highlighted in red.

Table A3: Pre-processing example (20030460-1): *after* pre-processing

Input n-grams	Output n-grams
<p>autres procédures investigations enquête disciplinaire administrative confédération peut être engagée autorisation délégation commissions gestion concerne affaires personnes visées enquête délégation procédures cours doivent être interrompues jusqu'à délégation commissions gestion autorise reprise enquête délégation commissions gestion empêche engagement poursuite procédure judiciaire civile administrative enquête pénale préliminaire procédure pénale désaccord nécessité obtenir autorisation délégation commissions gestion tranche unanimité présente loi sujette référendum conférence coordination fixe date entrée en vigueur</p>	<p>autres procédures investigations enquête disciplinaire administrative confédération peut être engagée poursuivie autorisation délégation commissions gestion concerne affaires personnes visées enquête délégation délégation commissions gestion statue autorisation après audition conseil fédéral désaccord nécessité obtenir autorisation délégation commissions gestion tranche majorité deux tiers membres enquête délégation commissions gestion empêche engagement poursuite procédure judiciaire civile administrative enquête pénale préliminaire procédure pénale présente loi sujette référendum conférence coordination fixe date entrée en vigueur</p>

Matches between the input and the output bill are highlighted in red.

Input in Output (bi-grams): 

Output in Input (bi-grams): 

3 Pre-processing evaluation

We evaluated our pre-processing choices using the procedure developed by Denny and Spirling (2018). This allows to assess how pre-processing choices affect the results. Six pre-processing procedures were applied to our corpus. First, since we aim at comparing policy relevant texts, we removed boilerplate including headers, footers, appendices and references to other legislation. Second, we transformed all text to lowercase (Denny and Spirling, 2018: 170). Third, punctuation was removed. Fourth, we removed numbers. The vast majority of numbers present in Swiss bills are articles numbers or references to the Federal Gazette. Fifth, we removed stop words that usually do not convey much information such as “the”, “and” or “it” (Denny and Spirling, 2018: 171). Sixth, we removed some additional words that are very common in Swiss bills. This list include, for instance, words such as “article”, latin words used for enumeration (e.g., “quinqües”, “sexies”), or “paragraph”. Finally, we also evaluated stemming, which refers to the process of reducing a word to its root form. For example, the words “party” and “partying” share the common stem “party” (Denny and Spirling, 2018: 171). Note that we did not use stem words in our final corpus but only evaluate what impact this choice might have had on our results.

Combining these different choices, there is a total 128 different preprocessing specifications that were evaluated (2^7). We describe the evaluation procedure briefly below (for a detailed explanation of this procedure, see Denny and Spirling 2018: 180-183). Because of computational constraints, we begin with a random sample of 100 bills. For each of the 128 specifications, we calculate the dissimilarity index. Then, we compute the pairwise difference of dissimilarity score between each bill in the corpus and rank these differences in order. Next, we calculate the average rank order difference of each specification, which is the average difference of each specification against all others. The resulting value, normalized to the [0,1] interval, is the *preText* score [0,1]. This score measures how different is a specific specification from the rest of specifications.

Finally, we estimated a linear regression “to understand the impact of each particular preprocessing decision conditional on all other decisions” (Denny and Spirling, 2018: 183) Table A4 present these results. A statistically negative coefficient indicates that “it tends to reduce the *preText* score for a given specification, thus reducing the risk of drawing unusual conclusions from an analysis with that preprocessing specification applied”, whereas a positive coefficient tends to indicate the opposite.

The results show that the removal of the text not part of the bill itself tends to produce a more “usual” preprocessing specification. However, both stop words and common words seem to produce a more unusual specification. Hence, we re-calculated a dissimilarity index based on a corpus in which we keep these words. Such variant of the dissimilarity index correlates at 0.98 with our original index. Finally, note that the removal of numbers does not produce a statistically different specification. For the sake of completeness, we also re-calculated a dissimilarity index without removing numbers, which again correlates highly with our original bi-gram-based dissimilarity index ($\rho = 0.96$).

Table A4: Determinants of the *preText* score

Text not part of the bill	-0.011*** (0.001)
Lowercasing	0.001 (0.001)
Punctuation	-0.000 (0.001)
Numbers	0.001 (0.001)
Stemming	0.001 (0.001)
Stop words	0.010*** (0.001)
Common words	0.004*** (0.001)
Intercept	0.143*** (0.001)
N	128
R-squared	0.77

*p<0.05; **p<0.01; ***p<0.001. Standard errors in parentheses. OLS estimates.

4 Comparison between human coding and computer-generated dissimilarity index

Table A5: Overview of human coding instructions[‡]

Category	Rationale for coding	Typical example
None	No change at all, output text is the same as the input text.	20100062-1: Arrêté fédéral concernant un crédit-cadre pour la protection de l'environnement mondial
Formal	Change is a pure reformulation: for example, use of synonyms, structure of the sentence modified but same meaning, etc.	20150031-1: Arrêté fédéral relatif au soutien de la Confédération au Parc suisse d'innovation
Minor	Modifications that exceed a formal change but are not important. For example, some indications or examples may have been added or, on the contrary, removed. This typically orients the bill in a specific way but does not change its core.	20120029-3: Arrêté fédéral concernant la continuation du financement de la coopération avec les États d'Europe de l'Est et de la CEI
Medium	Modification of the means to achieve the purpose of the bill (or more than 10 minor changes). For example, modification of a procedure.	20030460-1: Loi sur l'Assemblée fédérale
Major	Modification of the objectives of the bill itself (or more than 5 medium changes). For example, post-disaster policy measures + funding for reconstruction over a period of few years modified into 'simple' emergency funding.	20000013-4: Arrêté fédéral sur les moyens financiers permettant de remettre en état les forêts suite aux dégâts causés par l'ouragan Lothar.

[‡]Coding instructions are based on Jegher and Lanfranchi (1996: 38). See also Hall (1993).

Table A6: Ordered logistic regression: Prediction of human-coded change by computer-generated dissimilarity index

	<i>Dependent variable:</i>				
	Type of change (qualitative)				
	(1)	(2)	(3)	(4)	(5)
Dissimilarity (n=1)	11.900*** (1.775)				
Dissimilarity (n=2)		10.930*** (1.499)			
Dissimilarity (n=3)			9.679*** (1.330)		
Dissimilarity (n=4)				8.904*** (1.232)	
Dissimilarity (n=5)					8.444*** (1.173)
cut 1 (None → Formal)	-0.552 (0.338)	0.087 (0.380)	0.259 (0.396)	0.388 (0.409)	0.507 (0.423)
cut 2 (Formal → Minor)	1.613 (0.347)	2.619 (0.454)	2.879 (0.491)	3.081 (0.522)	3.269 (0.550)
cut 3 (Minor → Medium)	3.848 (0.505)	4.881 (0.602)	5.067 (0.626)	5.217 (0.648)	5.375 (0.670)
cut 4 (Medium → Major)	7.129 (1.005)	8.053 (1.025)	7.947 (0.964)	7.927 (0.939)	7.998 (0.936)
Observations	100	100	100	100	100
Log likelihood	-113.14	-107.58	-108.69	-109.32	-109.37
Pseudo R-squared	0.218	0.256	0.249	0.244	0.244

Note:

*p<0.05; **p<0.01; ***p<0.001

5 Substantial modifications

20 bills (0.01 %) in our data show a dissimilarity greater than 0.8. They typically have in common that a large part of the bill was removed or added. In some cases, a completely new project was formulated. Table A7 succinctly summarizes the modifications made to these bills.

Table A7: Bills with a dissimilarity index greater than 0.8

Bill	Dissimilarity	Modifications between input and output bill
19960059-1	0.87	<ul style="list-style-type: none"> • Modification of measures for financing of big rail infrastructure (2 out of the 3 original measures kept and 5 added for a total of 6) • Modification of the temporal applicability of the bill
19980039-3	0.88	<ul style="list-style-type: none"> • Addition of two important conditions for payment of a subsidy
19990028-9	0.87	<ul style="list-style-type: none"> • More government funding allocated to the promotion of rail freight traffic (+ 300 mio CHF/year) • Modification of conditionality requirements
20010056-1	0.92	<ul style="list-style-type: none"> • Modification of reservations to an international treaty
20020035-1	0.93	<ul style="list-style-type: none"> • Addition of measures regarding the implementation of the treaty
20030021-2	0.86	<ul style="list-style-type: none"> • Modification of government funding allocated to export promotion • Addition of decision-making basis related to export promotion
20030047-2	0.86	<ul style="list-style-type: none"> • Modification of measures arising from budgetary relief: whole part related to asylum and foreigners law removed
20040020-1	0.95	<ul style="list-style-type: none"> • Modification of credit packages due to EU-CH agreement • Modification of rules with regard to the use of funds
20040062-1	0.85	<ul style="list-style-type: none"> • Modification of measures to make the health system more efficient • Mitigation of some measures → delayed implementation
20040444-1	0.88	<ul style="list-style-type: none"> • Deletion of the revocation clause regarding the divorce convention • Modification of tribunal procedures regarding divorce
20050025-1	0.82	<ul style="list-style-type: none"> • Modification of the funding of the health system
20050053-1	0.84	<ul style="list-style-type: none"> • Funding of the disability insurance with a modification of the VAT + funding of big rail infrastructure projects (second part dropped) • Addition of temporal limit for increase of VAT + more specific which reference value is used
20060427-1	0.88	<ul style="list-style-type: none"> • Addition of some precisions regarding the adaptation of treatment prices to new law • Addition of an adaptation of treatments prices to inflation
20060441-1	0.87	<ul style="list-style-type: none"> • Modifications of clauses regarding the protection against cold calling
20070073-1	0.82	<ul style="list-style-type: none"> • Addition of conditions regarding funding allocated to the Swiss Museum of Transport
20080029-1	0.92	<ul style="list-style-type: none"> • Addition of measures regarding the implementation of the treaty (extension of the treaty on the free movement of persons to two Eastern European Countries)
20090013-5	0.84	<ul style="list-style-type: none"> • 2 out of 3 clauses regarding homeowners' reimbursement of loans after 30 years removed
20100052-3	0.94	<ul style="list-style-type: none"> • Modification of the asylum procedure • Replacement of absolute measures by test phases (asylum law)
20110047-1	0.94	<ul style="list-style-type: none"> • Modifications regarding the withholding tax
20120462-1	0.83	<ul style="list-style-type: none"> • Great part of the text removed and sent back to government asking for a new proposal • Minor modifications but very short text

6 N-grams weighted by inverse document frequency (IDF)

We applied the following weighting strategy to assess the extent to which the commonness of n-grams influence our dissimilarity score.

$$idf_i = \log_{10} \frac{|D|}{|\{d_j : t_i \in d_j\}|}$$

where $|D|$ is the total number of documents in the corpus, and $|\{d_j : t_i \in d_j\}|$ is the number of documents containing the term t_i .

Then, we rescale the *idf* score so that the rescaled index has a mean of 1 and can't take negative values. Practically, we use this transformation:

$$idf_r = 1 + (idf_i - \mu_{idf_i}) \left(\frac{0.0812}{\sigma_{idf_i}} \right)$$

where μ_{idf_i} is the mean of the *idf_i* score and σ_{idf_i} the standard deviation. Finally, since we want to weight the *change*, we weight only M_{01} and M_{10} . Thus, the weighted dissimilarity index is calculated as:

$$\bar{S} = 1 - \frac{M_{11}}{(M_{11} + \overline{M_{01}} + \overline{M_{10}})}$$

where

M_{11} represents the total number of shared n-grams (*unweighted*) between the input and the output text;

$\overline{M_{01}}$ represents the total number of n-grams present in the output but not in the input, *weighted* by their rescaled *idf_i* score;

$\overline{M_{10}}$ represents the total number of n-grams present in the input but not in the output, *weighted* by their rescaled *idf_i* score.

Note that $\overline{M_{01}} = M_{01}$ if each weighted n-gram of $\overline{M_{01}}$ was weighted by the mean *idf_i*, and $\overline{M_{10}} = M_{10}$ if each weighted n-gram of $\overline{M_{10}}$ was weighted by the mean *idf_i*. In other words, this means that if the part of a bill that was modified contains only bi-grams that are averagely meaningful, the weighted dissimilarity index will have the same value as the original dissimilarity index. For example, if two bi-grams were modified:

$$S = \bar{S} = 1 - \frac{10}{(10 + 1 + 1)} \approx 0.17$$

Now, if these two bi-grams are less informative than the mean (that is, a bit more common within the corpus):

$$\bar{S} = 1 - \frac{10}{(10 + 0.9 + 0.9)} \approx 0.15$$

And, if these two bi-grams are more informative than the mean (that is, a bit less common within the corpus):

$$\bar{S} = 1 - \frac{10}{(10 + 1.1 + 1.1)} \approx 0.18$$

7 Statistical Model Quality Assessment

Below, we present the normalized (randomized) quantile residuals of our full model. As Stasinopoulos et al. (2017: 418) note “the advantage of normalized (randomized) quantile residuals is that, whatever the distribution of the response variable, the true residuals always have a standard normal distribution when the assumed model is correct”. A perfect normal distribution should have mean = 0, variance = 1, skewness = 0, kurtosis = 3 and Filliben correlation coefficient or normal probability plot correlation coefficient = 1. Table A8 reports these scores. The reported values depart only slightly from those ideal values. Thus, the analysis of residuals reinforces our confidence in the adequacy of the model.

Table A8: Summary of the Quantile Residuals

Mean	-0.282
Variance	0.618
Skewness	0.051
Kurtosis	3.629
Filliben correlation coeff.	0.996

8 Figures

Figure A1: Correlation matrix of dissimilarity scores

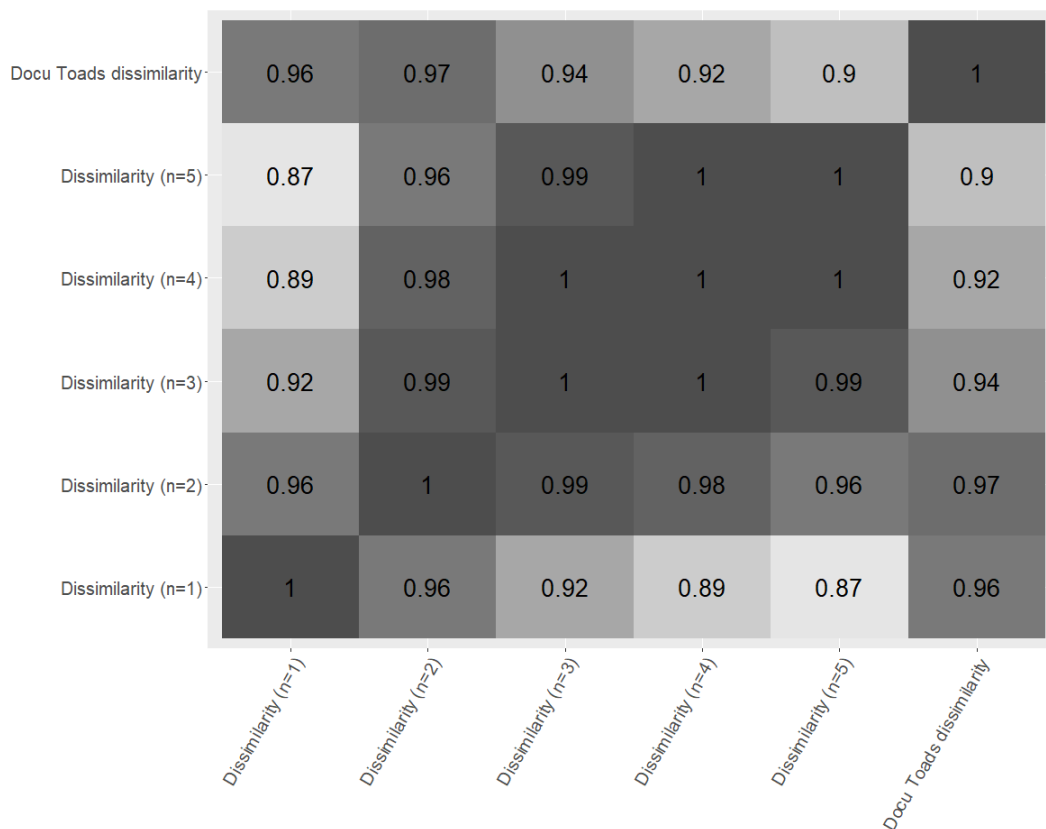


Figure A2: Comparison of Jegher's (1999) human coding and our dissimilarity index

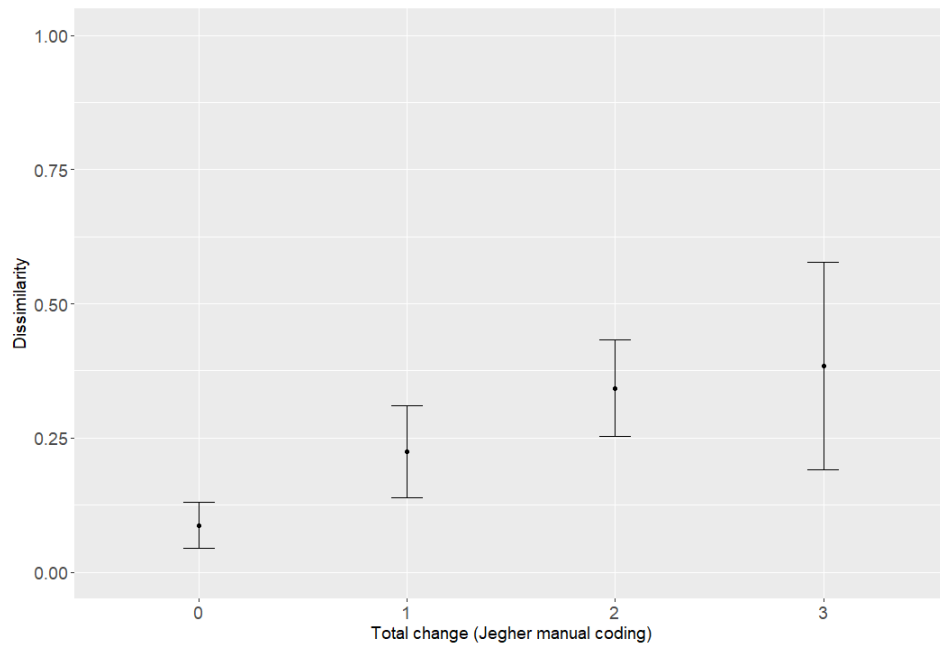


Figure A3: Precision and recall scores for different threshold values

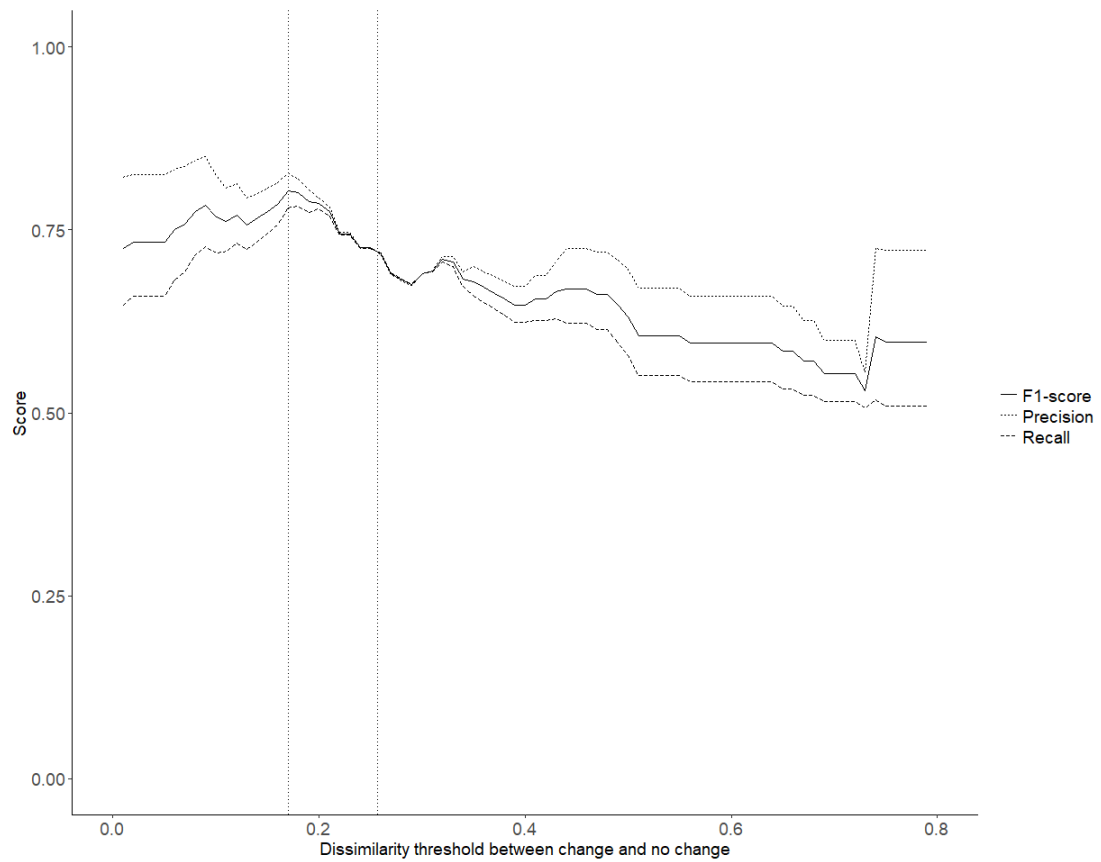


Figure A4: Share of modified bills for different dissimilarity thresholds

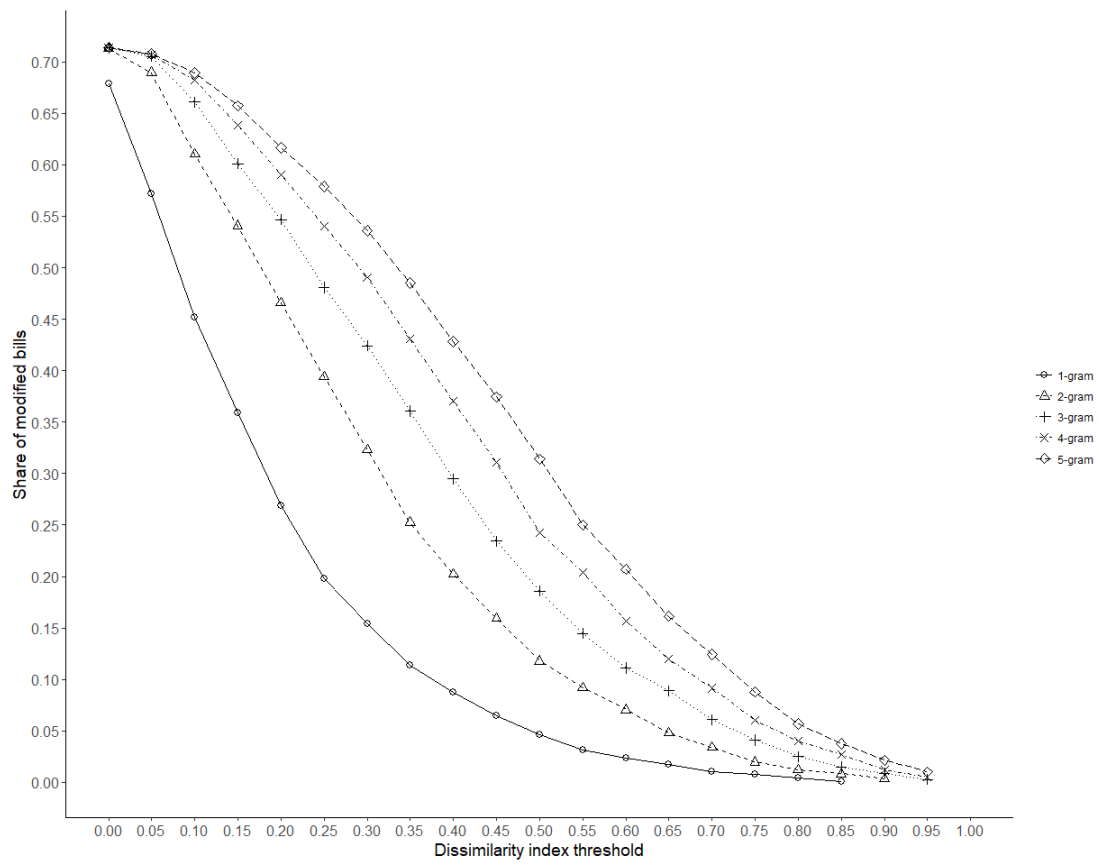
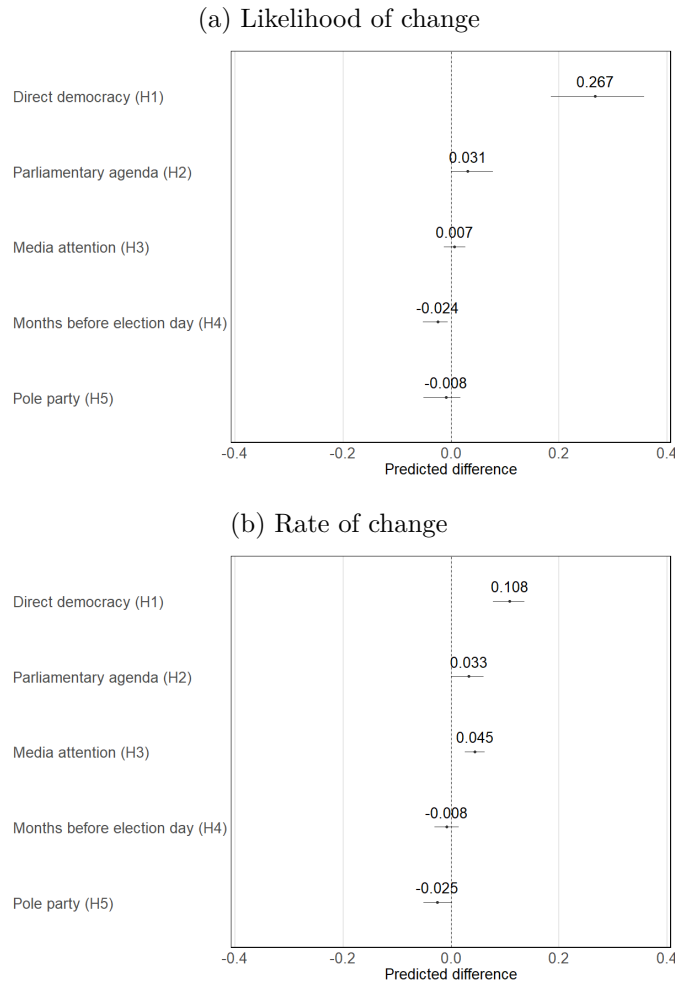


Figure A5: Alternative graphs produced from main model (cf. table 3 in main text)



‡95 % confidence interval calculated via bootstrapping with replacement (1,000 replications). Other predictors fixed at their mean or mode. For *prominence in the parliamentary agenda* (H2), the difference corresponds to the difference between categories “medium’ and “low”. For *media attention* (H3), the effect corresponds to the difference between plus/minus one standard deviation from the mean. For *months before election day* (H4), the effect corresponds to the difference between a pre-election period of 7 months before election day and a pre-election period of 36 months before election day (plus/minus one standard deviation from the mean).

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