Balancing Acts: The communicative roles of cabinet ministers on social media

Online Appendix

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Table A1: Overview of sample manually coded (N=1061)

Name	Minister	Party	Gender	Observations
Olaug V. Bollestad	Agriculture	Christian Democratic	F	186
Ola Elvestuen	Climate	Liberal Party	M	9
Bent Høie	Health	Conservative	M	58
Torbjørn R. Isaksen	Trade	Conservative	M	17
Iselin Nybø	Research	Liberal party	F	239
Siv Jensen	Finance	Progress party	F	265
Sylvi Listhaug	Justice	Progress party	F	181
Kjell Ingolf Ropstad	Children	Christian Democratic	M	106

Table A2. Evaluations of models

Category	Recall	Precision	F1	Cohen's Kappa
Ministry Head	70	66	68	0.53
Member of Cabinet	47	75	58	0.51
Party Politician	74	89	81	0.60
Individual Politician	7	17	10	0.02
Private Person	75	43	55	0.49
Inform	95	79	86	0.20
Communicate	90	83	86	0.83
Mobilizing	45	83	59	0.55
Branding	75	88	81	0.27

In the table we report evaluation metrics for the models. *Recall* denotes the percentage of positives that were discovered by the model, that is, true positives divided by the sum of true positives and false negatives. Precision reflects the percentage of the classified posts that were correctly classified, that is true positives divided by true and false positives. The F1 score is the harmonic mean of Recall and Precision calculated as 2*((Recall*Precision)/(Recall + Precision)). Finally, we report Cohen's Kappa which is (observed agreement – agreement if random) / (1 - agreement if random). We see that the Kappa and F1 follow each other, but that the Kappa is smaller for some of the categories because of differences in the share of the posts that contain the category (and thus differences in what would happen if we did the coding by chance).

Our results are comparable to prior studies. Laurer et al. (2024, p. 93) report the F1-scores from testing four different models on eight tasks. Their best model, which is similar to our SetFit model, BERT-NLI, reaches a mean F1 score across the eight tasks of around 60 which lags our mean here (mean F1 = 71). Across their (p. 94) eight test tasks, only three reaches an F1-score of 70 when trained on 500 examples, and two of their eight models don't get to that level even with 5000/10 000 training examples. Compared with the ELECTRA-based transformer trained on 10 000 sentences (compared to our 515 posts) used in Widman and Wich (2022, p. 9), our models have both stronger and weaker scores. While four of our models reach a F1 above 80, only one of the categories in Widman and Wich (2022) was above 80. However, none of their categories fall below 60, something which is the case for three of the categories here (59, 58 and 55).

Table A3. Communicative Roles Codebook

Ministry head/ head of department	These posts focus on the minister or on the ministry they head. This can manifest itself through thematic links to the sector, or activities related to the role as minister or ministry head. Often used terms are “I” and “The ministry”.
Cabinet member	These posts focus more on the government and often contain links to decided/implemented policies. The shared content can thematically related to a different policy field than the one he/she is minister. Main focus is on the policy the government is conducting. Often used terms are “We” and “The cabinet”.
Party politician	These posts focus more on the party. Either by mentioning of the party as part of a coalition, or by mentioning the party and party policies only. Another manifestation of this professional category can be content that deals with internal party issues (for example, national congress, leadership elections, party conflict and the like). Often used terms are “The party”.
Individual politician	These posts focus on the individual politician, and the party, their ministerial role or government membership are not obvious parts of the content. It is unclear what party affiliation and ministerial position the person in question have. The focus is on own political commitment and own convictions.
Private	The private posts deal with activities and/or topics that are unrelated to the professional work as a politician. The sender's position has no or very unclear connection to politics at all. Shows the person behind the ministerial role, and focuses on personal interests, the self or family and friends. Posts often mention details that are irrelevant to the minister's professional work as a politician.

Note: The role of individual politician was excluded from the main analysis as it was not replicated to a satisfyingly degree in the machine learning process.

Table A4. Communicative purposes codebook

Informing	Broadcasting own, certain message
	Giving a general message
	Providing information
	Spreading information
Communicating	Asking the opinion of others
	Encouraging discussion
	Asking direct questions to followers
Mobilising	Direct encouragement to followers to act
	Distributing campaign messages via hashtags
	Encouraging liking and sharing; tagging others
	Asking direct or encouraging questions
Branding	Portraying the party, cabinet, or ministry in a positive way
	Publishing negative content about other politicians
	Building self-image

Table A5. OLS regression. Basis for b-coefficient plots presented in Figure 3 and Figure 4.

	Role		Purpose		Both	
Characteristic	**Beta**[1]	**SE**	**Beta**[1]	**SE**	**Beta**[1]	**SE**
Ministry Head	-0.14***	0.020			-0.13***	0.020
Member of Government	-0.12***	0.029			-0.12***	0.029
Party Politician	0.04	0.020			0.02	0.022
Private Person	0.18***	0.029			0.19***	0.030
Inform			-0.09***	0.024	-0.05	0.024
Communicate			0.27***	0.041	0.27***	0.041
Mobilise			0.21***	0.039	0.20***	0.039
Branding			-0.03	0.020	0.00	0.022
Mean centered number of characters / 100	0.03***	0.003	0.03***	0.003	0.03***	0.003
(Mean centered number of characters / 100) squared	0.00*	0.000	0.00	0.000	0.00	0.000
R^2	0.023		0.02		0.026	
N			18 918			

[1]*p<0.05; **p<0.01; ***p<0.001

Abbreviations: CI = Confidence Interval, SE = Standard Error

Dependent variable is reactions/mean number of reactions for each minister

Table A6. OLS regression with interaction effects between roles and purposes. The dependent variable is the fixed reaction score.

Characteristic	Beta[1]	SE
Ministry Head	-0.13*	0.056
Inform	-0.06	0.039
Communicate	0.46***	0.084
Branding	0.00	0.034
Mobilise	0.18*	0.080
Member of Government	0.29	0.184
Private Person	0.20***	0.054
Party Politician	-0.08	0.072
I(Message_nchar_mean/100)	0.03***	0.003
I((Message_nchar_mean/100)^2)	0.00	0.000
Ministry Head * Inform	0.02	0.059
Ministry Head * Communicate	-0.10	0.099
Ministry Head * Branding	0.01	0.044
Ministry Head * Mobilise	-0.18	0.096
Inform * Member of Government	-0.34	0.185
Communicate * Member of Government	-0.18	0.110
Branding * Member of Government	-0.09	0.081
Mobilise * Member of Government	0.20	0.133
Inform * Private Person	0.02	0.062
Communicate * Private Person	-0.32	0.417
Branding * Private Person	-0.04	0.064
Mobilise * Private Person	-0.20	0.148
Inform * Party Politician	0.03	0.059
Communicate * Party Politician	-0.20*	0.091
Branding * Party Politician	0.09	0.061
Mobilise * Party Politician	0.16	0.090
Adjusted R^2	0.027	
N	18 918	

[1]*p<0.05; **p<0.01; ***p<0.001
Abbreviations: CI = Confidence Interval, SE = Standard Error

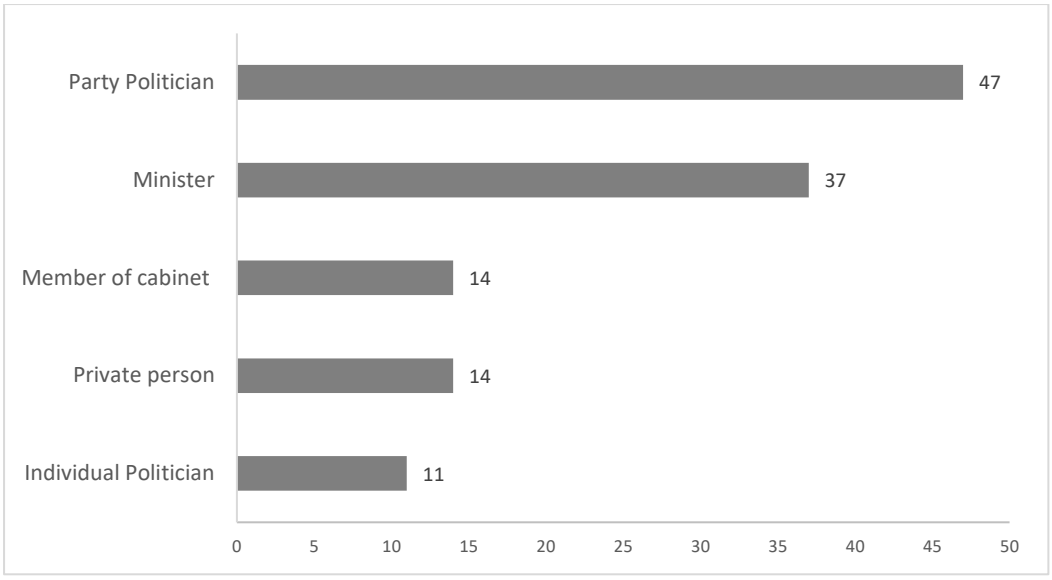

Figure A1. Replicating Figure 1 with manual coded data only

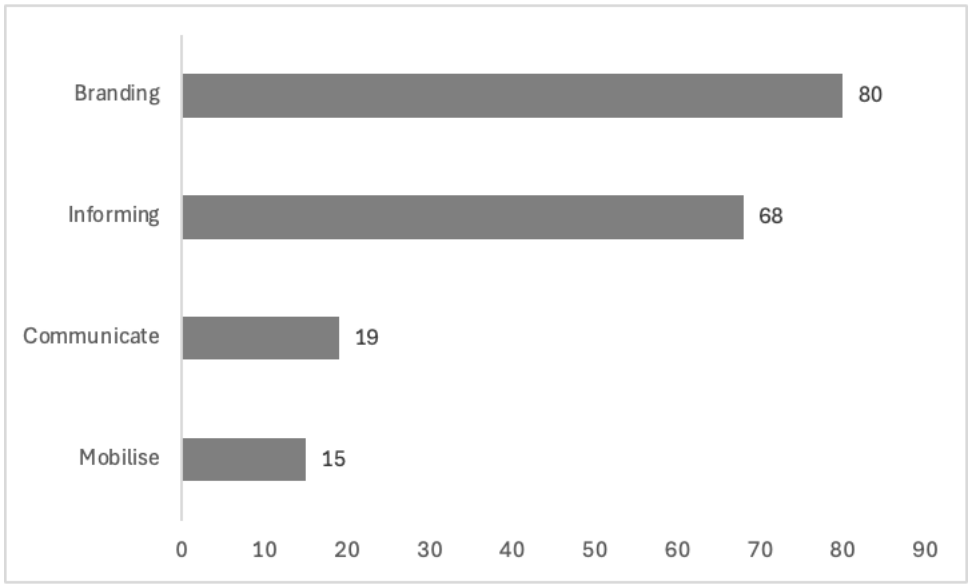

Figure A2. Replicating Figure 2 with manual coded data only

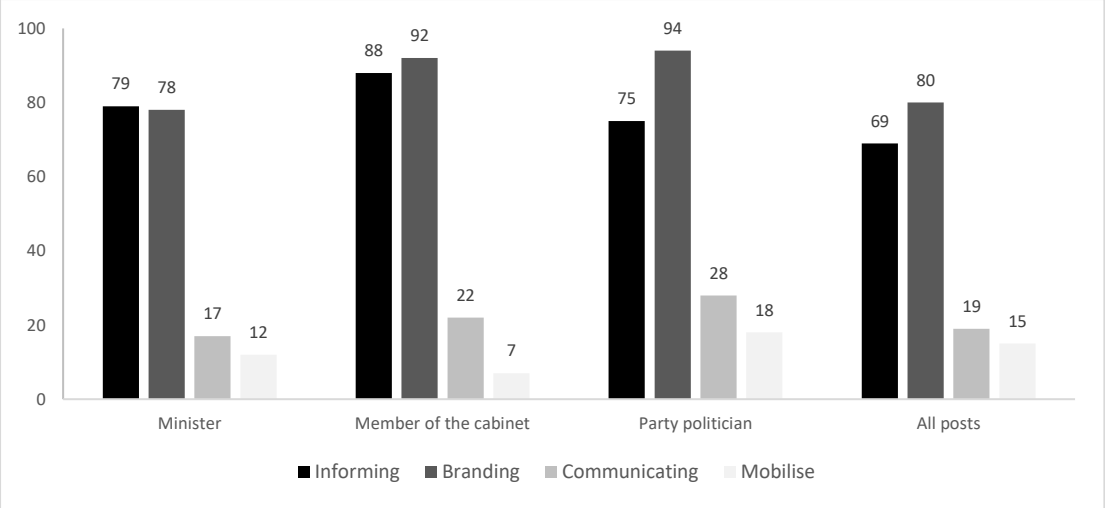

Figure A3. Replicating Figure 3 with manual coded data only

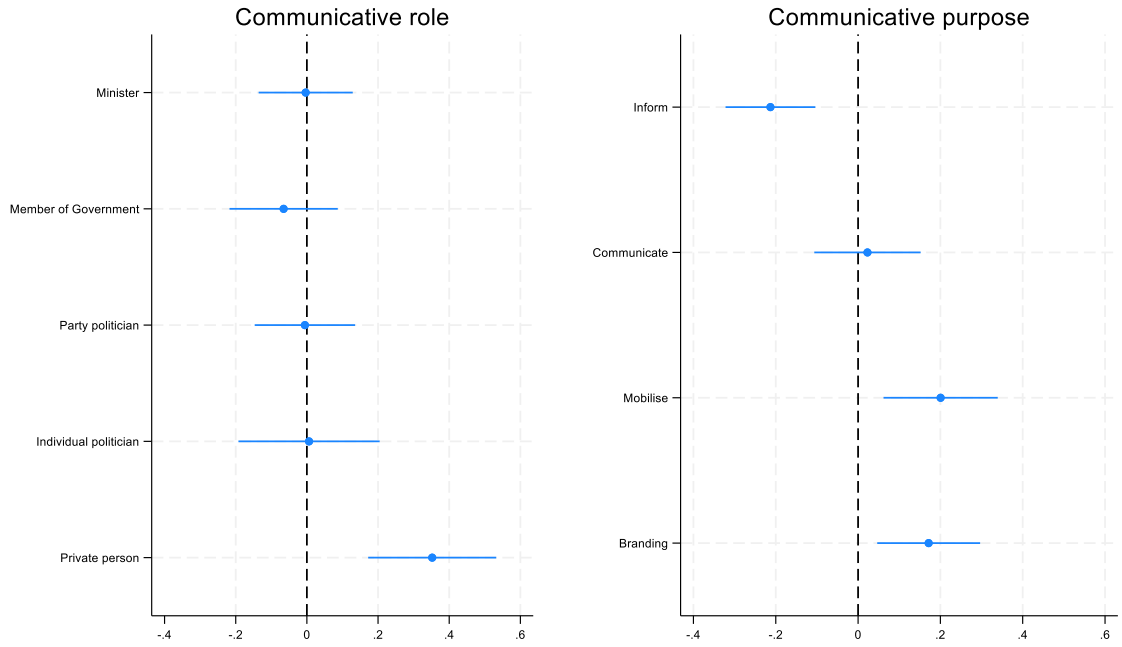

Figure A4. Replicating Figure 4 with manual coded data only

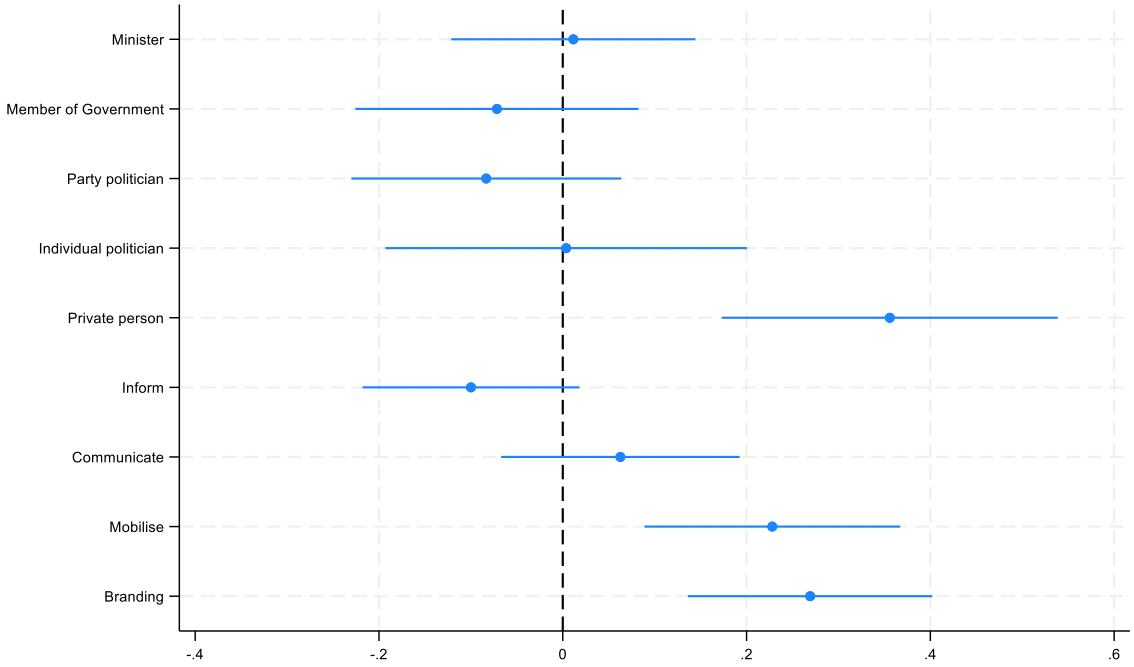

Table A5. Replicating Figure 5 with manual coded data only