

Appendix

Table A1: Descriptives

Variables	Mean	Median	S.D.	Min.	Max.	N	Overdispersion
Corrected Tweets	307.01	156.17	552.90	0.00	4065.00	148	988.97***
Corrected Total Questions	13.41	10.00	13.72	0.00	131.00	162	13.94***
Corrected Total Motions	28.38	20.50	29.84	0.00	237.00	162	31.17***
Corrected Total Amendments	3.13	1.03	4.62	0.00	22.00	162	6.79***
Tweets	297.80	150.50	554.06	0.00	4065.00	148	1023.85***
Total Questions	12.22	9.00	13.09	0.00	131.00	162	13.94***
Total Motions	26.43	18.50	29.25	0.00	237.00	162	32.17***
Total Amendments	2.96	1.00	4.46	0.00	22.00	162	6.68***
Corrected Questions	9.98	7.00	12.57	0.00	129.00	162	15.72***
Corrected Motions	12.78	9.00	14.09	0.00	101.00	162	15.44***
Corrected Amendments	1.40	0.00	2.81	0.00	19	162	5.60***
Party Social Media Marketeer per MP	0.47	0.21	0.50	0.21	3.00	131	-
Party Ghostwriter Motions per MP	1.60	1.41	0.83	1.00	9.00	131	-
Party Ghostwriter Motions and Amendments per MP	1.64	1.41	0.82	1.00	9.00	131	-
Party Ghostwriter Amendments per MP	0.26	0.00	0.99	0.00	9.00	131	-
Party Ghostwriter Questions per MP	1.63	1.41	0.83	1.00	9.00	131	-
Party Share of Social Media Marketeer on Staff	0.13	0.10	0.08	0.06	0.50	131	-
Party Share of Ghostwriter Motions on Staff	0.55	0.55	0.10	0.25	1.00	131	-
Party Share of Ghostwriter Motions and Amendments on Staff	0.55	0.58	0.10	0.25	1.00	131	-
Party Share of Ghostwriters Questions on Staff	0.55	0.55	0.10	0.25	1.00	131	-
Party Social Media Marketeer	5.08	5.00	2.18	1.00	9.00	131	-
Party Ghostwriter Motions	25.50	22.00	15.14	1.00	48.00	131	-
Party Ghostwriter Motions and Amendments	25.90	22.00	15.25	1.00	48.00	131	-
Party Ghostwriters Questions	25.50	22.00	15.14	1.00	48.00	131	-
Party Seats	16.72	14.00	11.17	1.00	34.00	162	-
Party Logged Seats	2.51	2.64	0.89	0.00	3.53	162	-
Party left right-distance to government	2.25	1.56	1.50	0.34	5.66	157	-
Party = Coalition	0.51	-	-	0.00	1.00	162	-
Party Level of Populism	4.27	3.26	2.27	2.35	8.97	157	-
MP = PPG leader	0.13	0.00	0.34	0.00	1.00	162	-
MP = Speaker	<0.01	-	-	0.00	1.00	162	-
MP = Male	0.62	-	-	0.00	1.00	162	-
MP Year of Birth	1977.43	1979.00	9.51	1952.00	1998.00	162	-
MP Experience	1931.64	853.00	1730.71	26.00	9043.00	162	-
MP Relative List Position	0.69	0.69	0.44	0.00	2.25	157	-
MP Days	195.80	212.00	42.16	23.00	212.00	162	-

* p<0.1, ** p<0.05, *** p<0.01

Table A2: Regressions of Motions

Model	A1	A2	A3	A4	A5	A6	A7
Motion Ghostwriters	0.06** (0.02)						
Party Motion Ghostwriters per MP		0.47** (0.21)	0.33 (0.30)	0.14** (0.06)		0.22*** (0.06)	0.20*** (0.08)
Party Share of Motion Ghostwriters on Staff					1.87** (0.74)		
MP = PPG leader	-1.11*** (0.26)		-1.30*** (0.36)	-1.43*** (0.30)	-1.16*** (0.26)	-1.18*** (0.24)	-1.15*** (0.20)
MP = Speaker	-18.67*** (1.22)		-18.22*** (1.20)	-18.61*** (1.12)	-17.52*** (1.14)	-22.53*** (1.12)	-22.05*** (1.15)
Party Seats	-0.14*** (0.03)		-0.05*** (0.01)		-0.07*** (0.01)	-0.06*** (0.01)	-0.04*** (0.01)
Party left right-distance to government	-0.22*** (0.07)		-0.23** (0.10)	-0.05 (0.06)	-0.17*** (0.06)	-0.14*** (0.05)	-0.13* (0.07)
Party = Coalition	-0.60*** (0.16)		-0.88*** (0.29)	-0.41* (0.21)	-0.73*** (0.22)	-0.50*** (0.17)	-0.52** (0.24)
Party Level of Populism	-0.01 (0.04)		-0.08 (0.06)	-0.05 (0.05)	-0.01 (0.05)	0.03 (0.04)	0.06 (0.05)
MP = Male	-0.01 (0.07)		0.01 (0.08)	-0.01 (0.07)	0.02 (0.06)	0.06 (0.07)	-0.01 (0.08)
MP Year of Birth	-0.01 (0.00)		-0.00 (0.00)	0.00 (0.01)	-0.00 (0.00)	-0.00 (0.01)	0.00 (0.01)
MP Experience	-0.00* (0.00)		-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00* (0.00)	-0.00 (0.00)
MP Relative List Position	-0.26* (0.16)		-0.21 (0.18)	-0.07 (0.14)	-0.21 (0.15)	-0.05 (0.15)	-0.05 (0.13)
Party Logged Seats				-0.79*** (0.12)			
MP Days						0.01*** (0.00)	
Constant	18.09** (8.60)	2.52*** (0.47)	6.84 (9.62)	5.05 (10.71)	12.16 (9.55)	8.31 (10.45)	-3.13 (16.72)
Number of Cases	131	131	114	131	131	131	131
AIC	1062	1133	898	1060	1060	1009	863

* p<0.1, ** p<0.05, *** p<0.01; Model A3 excludes parties with more than 2.44 Motion Ghostwriters per MP; Model A6 analyses the number of motions not corrected for time MP was in parliament; Model A6 analyses the total number of motions, including those for which the MP was not the primary sponsor.

Table A3: Regressions of Amendments

Model	A8	A9	A10	A11	A12	A13	A14	A15
Motion and Amendments Ghostwriters	0.16*** (0.02)							
Party Motion and Amendments Ghostwriters per MP		0.83* (0.43)		0.35*** (0.09)	0.80* (0.42)	0.24** (0.11)		0.33*** (0.11)
Party Amendments Ghostwriters per MP			0.05 (0.08)					
Party Share of Motion and Amendments Ghostwriters on Staff						3.62*** (1.04)		
MP = PPG leader	-1.04** (0.41)		-0.93** (0.39)	-1.13*** (0.35)	-0.94 (0.58)	-1.31*** (0.40)	-1.07*** (0.34)	-1.07*** (0.37)
MP = Speaker	-		-17.73***	-	-	-17.57***	-	-18.78***
	16.33*** (1.08)			16.85*** (0.99)	15.56*** (1.06)		17.97*** (0.97)	
Party Seats	-0.29*** (0.04)		-0.06*** (0.01)	-0.05*** (0.01)	-0.05*** (0.01)		-0.08*** (0.01)	-0.06*** (0.01)
Party left right-distance to government	-0.15*** (0.06)		0.04 (0.08)	0.08 (0.05)	-0.06 (0.09)	0.16** (0.08)	0.04 (0.06)	0.06 (0.07)
Party = Coalition	-0.44** (0.21)		-0.65** (0.31)	-0.47** (0.23)	-0.79*** (0.17)	-0.36 (0.30)	-0.63** (0.26)	-0.36 (0.25)
Party Level of Populism	-0.23*** (0.05)		-0.05 (0.06)	-0.15** (0.06)	-0.37*** (0.10)	-0.16** (0.08)	-0.17** (0.07)	-0.08 (0.08)
MP = Male	0.03 (0.21)		0.08 (0.20)	0.09 (0.19)	0.18 (0.21)	0.05 (0.19)	0.06 (0.19)	0.09 (0.20)
MP Year of Birth	-0.01** (0.01)		-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.01)
MP Experience	-0.00 (0.00)		-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
MP Relative List Position	-0.54* (0.33)		-0.39 (0.33)	-0.36 (0.31)	-0.63 (0.44)	-0.33 (0.31)	-0.36 (0.30)	-0.09 (0.32)
Party Logged Seats					-0.69*** (0.19)			
MP Days							0.01*** (0.00)	
Constant	29.98*** (10.60)	-0.22 (0.82)	19.80 (13.40)	14.42 (14.74)	25.57 (15.90)	13.66 (15.13)	13.38 (14.87)	4.04 (17.22)
Number of Cases	131	131	131	131	114	131	131	131
AIC	581	599	588	584	468	587	584	558

* p<0.1, ** p<0.05, *** p<0.01; Model A11 excludes parties with more than 2.44 Amendment or Motion Ghostwriters per MP; Model A14 analyses the number of amendments not corrected for time MP was in parliament; Model A15 analyses the total number of amendments, including those for which the MP was not the primary sponsor.

Table A4: Regressions of Questions

Model	A16	A17	A18	A19	A20	A21	A22
Question Ghostwriters	0.02 (0.01)						
Party Question Ghostwriters per MP		0.23 (0.16)	0.25** (0.10)	0.06 (0.05)		0.10** (0.05)	0.10* (0.05)
Party Share of Question Ghostwriters on Staff					1.40*** (0.42)		
MP = PPG leader	-1.19*** (0.25)		-1.41*** (0.32)	-1.35*** (0.30)	-1.27*** (0.24)	-1.26*** (0.25)	-1.33*** (0.26)
MP = Speaker	-25.57*** (0.97)		-22.47*** (0.99)	-21.58*** (0.96)	-21.56*** (0.96)	-19.80*** (0.95)	-20.38*** (1.01)
Party Seats	-0.05*** (0.02)		-0.02*** (0.00)		-0.03*** (0.00)	-0.03*** (0.01)	-0.02*** (0.00)
Party left right-distance to government	-0.12** (0.05)		-0.19*** (0.06)	-0.08 (0.05)	-0.11** (0.05)	-0.10** (0.05)	-0.10* (0.05)
Party = Coalition	-0.45*** (0.17)		-0.69*** (0.12)	-0.46*** (0.11)	-0.50*** (0.15)	-0.36*** (0.14)	-0.40** (0.16)
Party Level of Populism	0.10*** (0.03)		0.08 (0.08)	0.08** (0.04)	0.07** (0.03)	0.11* (0.06)	0.13*** (0.03)
MP = Male	-0.14 (0.09)		-0.18 (0.11)	-0.15 (0.10)	-0.13 (0.09)	-0.11 (0.10)	-0.16 (0.14)
MP Year of Birth	-0.00 (0.01)		0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)
MP Experience	-0.00 (0.00)		-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
MP Relative List Position	0.04 (0.10)		0.07 (0.11)	0.11 (0.09)	0.06 (0.10)	0.10 (0.11)	0.12 (0.13)
Party Logged Seats				-0.30*** (0.11)			
MP Days						0.01*** (0.00)	
Constant	5.87 (15.72)	2.22*** (0.33)	-5.11 (17.22)	1.16 (16.14)	3.23 (15.54)	1.23 (15.32)	-5.26 (18.91)
Number of Cases	131	131	114	131	131	131	131
AIC	892	936	758	893	889	853	820

* p<0.1, ** p<0.05, *** p<0.01; Model A18 excludes parties with more than 2.44 Question Ghostwriters per MP; Model A21 analyses the number of motions not corrected for time MP was in parliament; Model A22 analyses the total number of questions including those for which the MP was not the primary sponsor.

Table A5: Regressions of Tweets

Model	A23	A24	A25	A26	A27	A28
Party Social Media Marketeer	-0.25*** (0.07)					
Party Social Media Marketeer per MP		0.29 (0.35)	-1.47** (0.69)	-0.65*** (0.19)		-0.60*** (0.19)
Party Share of Social Media Marketeer on Staff					-3.48*** (0.88)	
MP = PPG leader	-0.29 (0.24)		-0.42 (0.34)	-0.30 (0.26)	-0.23 (0.23)	-0.27 (0.26)
MP = Speaker	-1.02*** (0.16)		-1.13*** (0.28)	-1.06*** (0.18)	-1.03*** (0.17)	-1.01*** (0.16)
Party Seats	0.02** (0.01)		-0.03** (0.01)		-0.02*** (0.01)	-0.02*** (0.01)
Party left right-distance to government	0.39*** (0.09)		0.29*** (0.09)	0.24*** (0.07)	0.20*** (0.06)	0.15** (0.07)
Party = Coalition	0.55** (0.25)		0.28 (0.38)	0.16 (0.27)	0.05 (0.24)	-0.10 (0.31)
Party Level of Populism	0.27** (0.11)		0.12 (0.20)	0.08 (0.07)	0.11* (0.06)	0.14* (0.07)
MP = Male	0.14 (0.10)		0.07 (0.11)	0.10 (0.11)	0.12 (0.10)	0.05 (0.12)
MP Year of Birth	-0.01 (0.01)		-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
MP Experience	0.00 (0.00)		0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
MP Relative List Position	-0.34*** (0.11)		-0.24* (0.14)	-0.40*** (0.11)	-0.39*** (0.11)	-0.25** (0.12)
Party Logged Seats				-0.34*** (0.11)		
MP Days						0.01*** (0.00)
Constant	19.90 (16.48)	5.22*** (0.29)	15.93 (16.96)	30.16* (18.29)	29.82* (17.63)	21.88 (20.57)
Number of Cases	123	123	104	123	123	123
AIC	1546	1567	1279	1548	1549	1521

* p<0.1, ** p<0.05, *** p<0.01; Model A25 excludes parties with more than one Citizen Marketeer staffer per MP; Model A28 analyses the number of tweets not corrected for time MP was in parliament