Replication of Public and Private Information in International Crises: Diplomatic Correspondence and Conflict Anticipation (ISQ)

NOTE: This notebook reproduces the in- and out-of-sample analyses in the paper. For the initial processing and text analysis of the cables, please see folder "topic_models"

Data Preparation

```
## New names:
## * docid -> docid...2
## * docid -> docid...3
```

In-sample estimation

Table 1 (manuscript)

Table 3 (appendix)

	Base	Structural	S+Bonds	S+News	S+Bonds+News	S+Cables	S+Bonds+News+Cables
Intercept	321.71**	−16248.87**	−21994.55**	−21613.23**	−27455.64**	−21502.18**	−24370.46**
	(32.82)	(2042.92)	(2539.48)	(4207.68)	(4831.15)	(3031.44)	(4716.69)
Time Since MID	0.38*	0.44**	0.31	0.34*	0.27	0.12	−0.03
	(0.19)	(0.17)	(0.17)	(0.16)	(0.17)	(0.16)	(0.15)
Time Since MID^2	−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)
Time Since MID^3	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)
Military Exp*		0.20**	0.20**	0.35**	0.33**	0.24**	0.27**
		(0.03)	(0.03)	(0.06)	(0.06)	(0.04)	(0.06)
Military Pers*		−54.37	195.77*	54.04	203.48*	60.58	363.64**
		(56.98)	(87.71)	(69.06)	(92.41)	(69.91)	(92.47)
Imports*		143.71**	107.50**	103.84**	89.96**	128.77**	65.21**
		(23.19)	(24.87)	(25.77)	(26.30)	(23.61)	(24.92)
Exports*		−126.93**	−118.99**	−126.88**	−124.71**	−113.25**	−88.58**
		(27.53)	(27.22)	(26.81)	(26.71)	(26.04)	(25.39)
Population*		44.83**	53.05**	73.87**	75.84**	56.97**	71.95**
		(5.73)	(6.06)	(11.15)	(11.13)	(7.79)	(10.84)
Iron+Steel Prod.*		−37.55**	−38.13**	−33.20**	−35.04**	−40.11**	−38.24**
		(4.36)	(4.30)	(4.32)	(4.37)	(4.39)	(4.44)
Bond Close*			427.99**		349.34*		392.34**
			(115.26)		(143.87)		(139.41)
Bond Return (log)*			813.47		289.38		−379.29
			(1352.32)		(1292.57)		(1118.60)
*News 1				−2850.55	398.95		−1612.14
				(1968.67)	(2372.07)		(2146.17)
*News 2				−7125.19**	−3830.74		−4748.41*
				(1835.39)	(2274.87)		(2083.21)
*News 3				−2927.87	274.86		−2014.07

	Base	Structural	S+Bonds	S+News	S+Bonds+News	S+Cables	S+Bonds+News+Cables
				(2092.77)	(2467.58)		(2253.39)
*News 4				−6980.66**	−3864.22		−5166.24*
				(2068.76)	(2425.85)		(2228.03)
*News 5				−8447.65**	−5256.19*		−5764.05**
				(1950.13)	(2343.41)		(2123.42)
*News 6				−4341.39*	−896.55		−3007.49
				(1833.23)	(2310.56)		(2117.12)
*News 7				−7152.42**	−3877.00		−4923.61*
				(1852.28)	(2283.82)		(2089.02)
*News 8				−8064.81**	−4839.71*		−6101.69**
				(1764.05)	(2200.94)		(2027.70)
*News 9				−7710.05**	−4809.47*		−4860.13*
				(1808.28)	(2161.04)		(1970.91)
*News 10				−4951.15*	−2217.23		−5493.00*
				(1989.33)	(2277.46)		(2206.46)
*News 11				−6065.41**	−2721.33		−5329.41*
				(1871.31)	(2315.66)		(2100.45)
*News 12				−7469.32**	−3512.43		−7025.08**
				(2342.57)	(2847.12)		(2632.75)
*News 13				−5271.48**	−2129.68		−5068.04*
				(1778.49)	(2191.97)		(2000.63)
*News 14				−6763.33**	−3502.86		−4998.81*
				(1774.67)	(2218.58)		(2036.73)
*Cable 1						−798.25	−2243.64
						(1346.13)	(1309.33)
*Cable 2						−1103.21	−1328.25
						(1513.65)	(1470.84)
*Cable 3						1600.76	165.92
						(1715.12)	(1657.32)
*Cable 4						−907.26	−1534.31
						(1336.65)	(1278.08)
*Cable 5						920.32	110.44
						(1293.51)	(1230.02)
*Cable 6						868.02	−2193.91
						(1712.23)	(1664.01)
*Cable 7						−1101.27	−3054.71*
						(1383.88)	(1358.69)
*Cable 8						1977.72	840.37
						(1202.99)	(1146.26)
*Cable 9						2735.72*	1605.84
						(1117.67)	(1065.95)
*Cable 10						−2903.22*	−3700.11**
						(1231.80)	(1189.33)
*Cable 11						−763.09	−2233.04
						(1234.70)	(1199.60)
*Cable 12						−502.30	−1706.01
						(1192.74)	(1147.07)
*Cable 13						1112.13	−454.05
						(1335.10)	(1290.20)
*Cable 14						190.39	−2615.97
						(1579.66)	(1514.27)
*Cable 15						2421.64	849.14
						(1513.65)	(1453.37)
*Cable 16						−1171.36	−766.94
						(1309.81)	(1247.97)
*Cable 17						1910.69	1172.31
						(1240.77)	(1191.28)
*Cable 18						−2049.89	−3639.63*
						(1700.45)	(1612.91)
*Cable 19						69.39	−1045.81
						(1239.69)	(1188.94)
*Cable 20						3476.87*	1489.89
						(1396.92)	(1398.38)
*Cable 21						−1690.90	−2287.95
						(1213.57)	(1204.39)
*Cable 22						−3530.66*	−3617.36**
						(1393.65)	(1359.71)

	Base	Structural	S+Bonds	S+News	S+Bonds+News	S+Cables	S+Bonds+News+Cables
*Cable 23						573.41	−425.92
						(1175.85)	(1136.46)
*Cable 24						519.83	−921.69
						(1516.28)	(1462.70)
*Cable 25						1478.20	−1110.77
						(1679.23)	(1611.76)
R^2	0.03	0.26	0.28	0.39	0.40	0.50	0.60
Adj. R^2	0.03	0.24	0.26	0.35	0.36	0.46	0.54
Num. obs.	411	411	411	411	411	411	411

$^{**}p < 0.01$; $^{*}p < 0.05$.

Table 2: Time to next MID as a function of public and private information (full results). Starred coefficients are lagged

	Base	Public Info. (S+ Bonds + News)	Public + Private Info. (S+Bonds+News+Cables)
Intercept	−16248.87**	−27455.64**	−24370.46**
	(2042.92)	(4831.15)	(4716.69)
Military Exp*	0.20**	0.33**	0.27**
	(0.03)	(0.06)	(0.06)
Military Pers*	−54.37	203.48*	363.64**
	(56.98)	(92.41)	(92.47)
Imports*	143.71**	89.96**	65.21**
	(23.19)	(26.30)	(24.92)
Exports*	−126.93**	−124.71**	−88.58**
	(27.53)	(26.71)	(25.39)
Population*	44.83**	75.84**	71.95**
	(5.73)	(11.13)	(10.84)
Iron+Steel Prod.*	−37.55**	−35.04**	−38.24**
	(4.36)	(4.37)	(4.44)
Time Since MID	0.44**	0.27	−0.03
	(0.17)	(0.17)	(0.15)
Time Since MID^2	−0.00**	−0.00**	−0.00**
	(0.00)	(0.00)	(0.00)
Time Since MID^3	0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)
Bond Close*		349.34*	392.34**
		(139.41)	(139.41)
Bond Return (log)*		289.38	−379.29
		(1292.57)	(1118.60)
Cables Topics Included	NO	NO	YES
News Topics Included	NO	YES	YES
R^2	0.26	0.40	0.60
Adj. R^2	0.24	0.36	0.54
Num. obs.	411	411	411

$^{**}p < 0.01$; $^{*}p < 0.05$.

Table 1: Time to next MID as a function of public and private information. Coefficients on the 26 cables topics and on the 14 news topics not reported (see appendix for full results and additional models). Starred coefficients are lagged
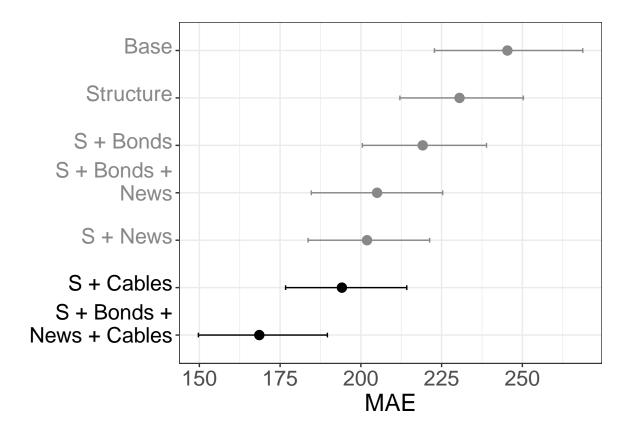
Out-of-sample predictions and evaluation

First run an iterative loop. Learn from t1->t200, predict on t201, etc. Collect these predictions in m1
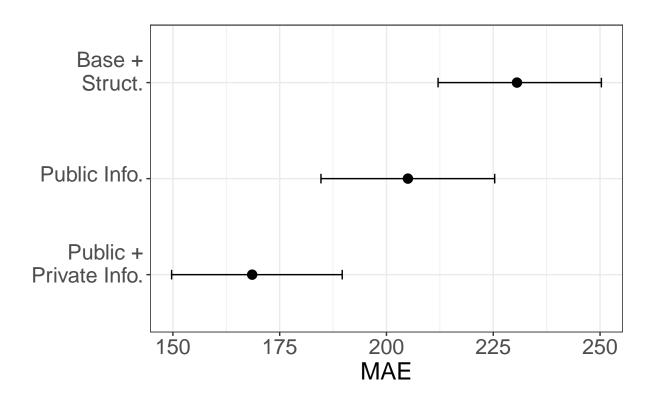
```
## [1] "... 100 predictions completed, up to 1888-05-23"
## [1] "... 150 predictions completed, up to 1892-07-15"
## [1] "... 200 predictions completed, up to 1896-09-22"
## [1] "... 250 predictions completed, up to 1900-11-16"
## [1] "... 300 predictions completed, up to 1905-01-16"
## [1] "... 350 predictions completed, up to 1909-03-16"
## [1] "... 400 predictions completed, up to 1913-05-15"
```

MAE figures

```
## [1] "bootstrapping for  base.error"
## [1] "bootstrapping for  str.error"
## [1] "bootstrapping for  str.bonds.error"
## [1] "bootstrapping for  str.news.error"
## [1] "bootstrapping for  str.Nocables.all.error"
## [1] "bootstrapping for  str.cables.error"
## [1] "bootstrapping for  all.error"
```



```
## [1] "bootstrapping for  str.error"
## [1] "bootstrapping for  str.Nocables.all.error"
## [1] "bootstrapping for  all.error"
```
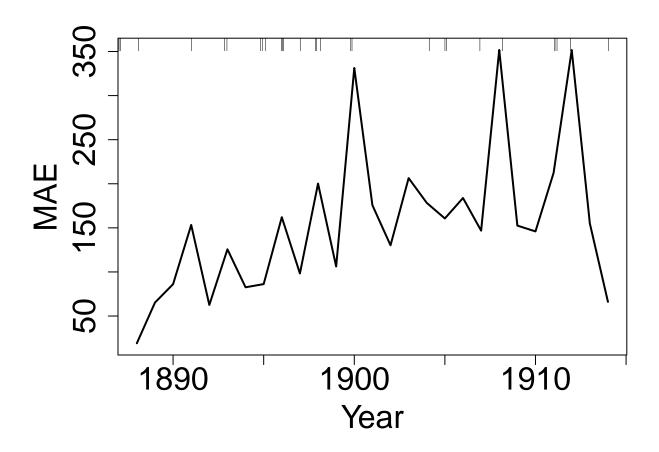
Significance tests (appendix table 4)

Marginal effect of each topic on MAE
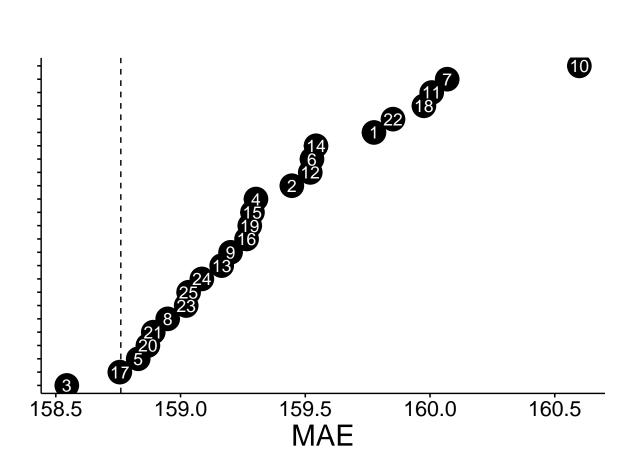
What happens if we remove a particular cable topic?
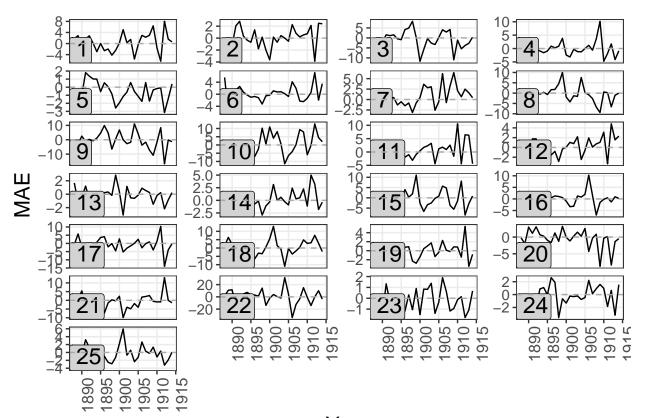
First run an iterative loop. Learn from t1->t200, predict on t201, etc. Collect these predictions in m1

```
## [1] "MAE when cables topics are removed"
## [1] "Calculating MAE when  cables topic 1 is removed"
## [1] "Calculating MAE when  cables topic 2 is removed"
## [1] "Calculating MAE when  cables topic 3 is removed"
## [1] "Calculating MAE when  cables topic 4 is removed"
## [1] "Calculating MAE when  cables topic 5 is removed"
## [1] "Calculating MAE when  cables topic 6 is removed"
## [1] "Calculating MAE when  cables topic 7 is removed"
## [1] "Calculating MAE when  cables topic 8 is removed"
## [1] "Calculating MAE when  cables topic 9 is removed"
## [1] "Calculating MAE when  cables topic 10 is removed"
## [1] "Calculating MAE when  cables topic 11 is removed"
## [1] "Calculating MAE when  cables topic 12 is removed"
## [1] "Calculating MAE when  cables topic 13 is removed"
## [1] "Calculating MAE when  cables topic 14 is removed"
## [1] "Calculating MAE when  cables topic 15 is removed"
## [1] "Calculating MAE when  cables topic 16 is removed"
## [1] "Calculating MAE when  cables topic 17 is removed"
## [1] "Calculating MAE when  cables topic 18 is removed"
## [1] "Calculating MAE when  cables topic 19 is removed"
## [1] "Calculating MAE when  cables topic 20 is removed"
## [1] "Calculating MAE when  cables topic 21 is removed"
## [1] "Calculating MAE when  cables topic 22 is removed"
## [1] "Calculating MAE when  cables topic 23 is removed"
## [1] "Calculating MAE when  cables topic 24 is removed"
## [1] "Calculating MAE when  cables topic 25 is removed"
```

```
## NULL
##  [1] 1880.029 1880.905 1881.181 1882.016 1882.131 1882.962 1883.028 1884.951
##  [9] 1887.017 1887.085 1888.079 1891.006 1892.826 1892.972 1894.819 1894.942
## [17] 1895.087 1895.983 1896.040 1896.094 1897.017 1897.851 1897.919 1898.147
## [25] 1899.807 1899.875 1904.136 1905.003 1905.080 1906.933 1908.185 1911.065
## [33] 1911.079 1911.190 1911.933 1914.020
```

MAE

MAE

Year

```
## [1] "MAE when news topics are removed"
## [1] "Calculating MAE when  news topic 1 is removed"
## [1] "Calculating MAE when  news topic 2 is removed"
## [1] "Calculating MAE when  news topic 3 is removed"
## [1] "Calculating MAE when  news topic 4 is removed"
## [1] "Calculating MAE when  news topic 5 is removed"
## [1] "Calculating MAE when  news topic 6 is removed"
## [1] "Calculating MAE when  news topic 7 is removed"
## [1] "Calculating MAE when  news topic 8 is removed"
## [1] "Calculating MAE when  news topic 9 is removed"
## [1] "Calculating MAE when  news topic 10 is removed"
## [1] "Calculating MAE when  news topic 11 is removed"
## [1] "Calculating MAE when  news topic 12 is removed"
## [1] "Calculating MAE when  news topic 13 is removed"
## [1] "Calculating MAE when  news topic 14 is removed"
## [1] "Calculating MAE when  news topic 15 is removed"
## [1] "Calculating MAE when  news topic 16 is removed"
## [1] "Calculating MAE when  news topic 17 is removed"
## [1] "Calculating MAE when  news topic 18 is removed"
## [1] "Calculating MAE when  news topic 19 is removed"
## [1] "Calculating MAE when  news topic 20 is removed"
## [1] "Calculating MAE when  news topic 21 is removed"
## [1] "Calculating MAE when  news topic 22 is removed"
## [1] "Calculating MAE when  news topic 23 is removed"
## [1] "Calculating MAE when  news topic 24 is removed"
## [1] "Calculating MAE when  news topic 25 is removed"
```