

Online appendix

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How to get data

The data is located in the github repository “<https://github.com/martigso/ministersNor/>”. For those familiar with github, cloning the repository and running “online_appendix.Rmd” should produce this document (here done through R):

```
system("cd <where/to/put/the/repository>")

system("git clone git@github.com:martigso/ministersNor.git")
```

Prepping data

In order to load the data, the preferred way for R-users is to use the .rda-file. There is, however, also a .csv-file available in the repository for those that do not use R. Further, a the parliamentary experience and youth party experience variable needs to be recoded in order to reproduce the results:

```
load("./data/ministers.rda")
ministers$youthAny <- ifelse(ministers$youthCen==1 | ministers$youthLoc==1, 1, 0)
ministers$parlTen_cum2 <- ifelse(ministers$parlTen_cum > 31, 1, 0)
source("./thesis/R/getmode.R")
```

The models

All models require the *survival*-package

```
library(survival)
```

Base model

```
base <- coxph(Surv(dur_start, dur_end, event2) ~ resigcalls + age_cen +
             factor(gender) + factor(education_dum) +
             frailty(jurisdiction),
             data=ministers, subset=prime_minister==0 & nsd_id!=299)
summary(base)[["coefficients"]]
```

##		coef	se(coef)	se2	Chisq
##	resigcalls	0.22029539	0.07188380	0.07129413	9.3917978
##	age_cen	0.05519404	0.01361082	0.01335714	16.4443173
##	factor(gender)Female	0.14977469	0.24045675	0.23403913	0.3879743
##	factor(education_dum)Lowe	0.04400423	0.26283855	0.25736666	0.0280292
##	frailty(jurisdiction)	NA	NA	NA	12.7112043
##		DF		p	
##	resigcalls	1.000000	2.179584e-03		
##	age_cen	1.000000	5.010014e-05		
##	factor(gender)Female	1.000000	5.333661e-01		
##	factor(education_dum)Lowe	1.000000	8.670402e-01		
##	frailty(jurisdiction)	6.570713	6.458088e-02		

Including experience

```
experience <- coxph(Surv(dur_start, dur_end, event2) ~ resigcalls +
  age_cen + factor(gender) + factor(education_dum) +
  factor(youthAny) + minister_exp_cum_y_lag + factor(parlTen_cum2) +
  frailty(jurisdiction),
  data=ministers, subset=prime_minister==0 & nsd_id!=299)
summary(experience)[["coefficients"]]
```

	coef	se(coef)	se2	Chisq
## resigcalls	0.22850401	0.07240057	0.07189617	9.9610178
## age_cen	0.04923202	0.01498254	0.01473546	10.7975278
## factor(gender)Female	0.18165444	0.24602725	0.23946923	0.5451620
## factor(education_dum)Lowe	0.08433686	0.26528310	0.25861826	0.1010685
## factor(youthAny)1	0.26139893	0.32629477	0.32488672	0.6417818
## minister_exp_cum_y_lag	0.10403582	0.03790614	0.03714358	7.5326320
## factor(parlTen_cum2)1	-0.31694734	0.24551258	0.24249097	1.6665821
## frailty(jurisdiction)	NA	NA	NA	14.2433772
##	DF	p		
## resigcalls	1.000000	0.001598896		
## age_cen	1.000000	0.001016357		
## factor(gender)Female	1.000000	0.460301246		
## factor(education_dum)Lowe	1.000000	0.750551182		
## factor(youthAny)1	1.000000	0.423066328		
## minister_exp_cum_y_lag	1.000000	0.006059132		
## factor(parlTen_cum2)1	1.000000	0.196716967		
## frailty(jurisdiction)	6.813724	0.042681938		

Cabinet attributes

```
cab <- coxph(Surv(dur_start, dur_end, event2) ~ resigcalls +
  age_cen + factor(gender) + factor(education_dum) +
  factor(CabinetType) + factor(structure)+
  frailty(jurisdiction),
  data=ministers, subset=prime_minister==0 & nsd_id!=299)
summary(cab)[["coefficients"]]
```

	coef	se(coef)	se2	Chisq
## resigcalls	0.23820925	0.07213317	0.07159998	10.90553913
## age_cen	0.05722156	0.01377593	0.01351244	17.25351118
## factor(gender)Female	0.25660064	0.24852908	0.24123819	1.06600941
## factor(education_dum)Lowe	-0.08364841	0.27006293	0.26383097	0.09593683
## factor(CabinetType)Majori	0.18821315	0.22150954	0.22042281	0.72196315
## factor(structure)Coalitio	-0.50065628	0.24286833	0.24139937	4.24949745
## frailty(jurisdiction)	NA	NA	NA	12.99852456
##	DF	p		
## resigcalls	1.000000	9.587713e-04		
## age_cen	1.000000	3.270925e-05		
## factor(gender)Female	1.000000	3.018486e-01		
## factor(education_dum)Lowe	1.000000	7.567612e-01		
## factor(CabinetType)Majori	1.000000	3.955007e-01		
## factor(structure)Coalitio	1.000000	3.926195e-02		
## frailty(jurisdiction)	6.563598	5.819495e-02		

Full model

```
all <- coxph(Surv(dur_start, dur_end, event2) ~ resigcalls + age_cen + factor(gender) +
  factor(youthAny) + minister_exp_cum_y_lag + factor(parlTen_cum2) +
  factor(education_dum) + factor(CabinetType) + factor(structure) +
  frailty(jurisdiction),
  data=ministers, subset=prime_minister==0 & nsd_id!=299)
summary(all)[["coefficients"]]
```

##		coef	se(coef)	se2	Chisq
##	resigcalls	0.23766565	0.07269748	0.07224417	10.687943116
##	age_cen	0.05242982	0.01535560	0.01510421	11.657976542
##	factor(gender)Female	0.27587551	0.25614736	0.24894667	1.159969460
##	factor(youthAny)1	0.30081293	0.32923009	0.32783137	0.834822135
##	minister_exp_cum_y_lag	0.09054903	0.03938626	0.03861411	5.285403506
##	factor(parlTen_cum2)1	-0.26774195	0.24799681	0.24457710	1.165576108
##	factor(education_dum)Lowe	-0.02524585	0.27598605	0.26884056	0.008367692
##	factor(CabinetType)Majori	0.15917112	0.22187732	0.22070487	0.514639017
##	factor(structure)Coalitio	-0.38202102	0.25748385	0.25590137	2.201276156
##	frailty(jurisdiction)	NA	NA	NA	14.340038966
##		DF	p		
##	resigcalls	1.000000	0.0010783604		
##	age_cen	1.000000	0.0006392784		
##	factor(gender)Female	1.000000	0.2814718741		
##	factor(youthAny)1	1.000000	0.3608818542		
##	minister_exp_cum_y_lag	1.000000	0.0215049084		
##	factor(parlTen_cum2)1	1.000000	0.2803120992		
##	factor(education_dum)Lowe	1.000000	0.9271151006		
##	factor(CabinetType)Majori	1.000000	0.4731375274		
##	factor(structure)Coalitio	1.000000	0.1378965347		
##	frailty(jurisdiction)	6.773552	0.0403695721		

Robustness models

Age squared

```
agesq <- coxph(Surv(dur_start, dur_end, event2) ~ resigcalls +
  poly(age_cen, 2, raw = FALSE) + factor(gender) +
  factor(youthAny) + minister_exp_cum_y_lag + factor(parlTen_cum2) +
  factor(education_dum) + factor(CabinetType) + factor(structure) +
  frailty(jurisdiction),
  data=ministers, subset=prime_minister==0 & nsd_id!=299)
summary(agesq)[["coefficients"]]
```

##		coef	se(coef)	se2	Chisq
##	resigcalls	0.23741057	0.07290391	0.07244106	10.604703363
##	poly(age_cen, 2, raw = FA	11.36309975	3.42494630	3.39358673	11.007434362
##	poly(age_cen, 2, raw = FA	-1.12655478	2.82168724	2.78582577	0.159399473
##	factor(gender)Female	0.28226087	0.25672728	0.24959788	1.208807961
##	factor(youthAny)1	0.30763362	0.32966034	0.32825581	0.870831638
##	minister_exp_cum_y_lag	0.09252801	0.03963086	0.03880092	5.451041902
##	factor(parlTen_cum2)1	-0.26649312	0.24796867	0.24459897	1.154990418
##	factor(education_dum)Lowe	-0.01972070	0.27569872	0.26855640	0.005116526
##	factor(CabinetType)Majori	0.16887800	0.22273845	0.22177687	0.574851628

```
## factor(structure)Coalitio -0.38694020 0.25760919 0.25610479 2.256134515
## frailty(jurisdiction)      NA      NA      NA 14.465673184
##                             DF      p
## resigcalls                 1.000000 0.0011280035
## poly(age_cen, 2, raw = FA 1.000000 0.0009074717
## poly(age_cen, 2, raw = FA 1.000000 0.6897100099
## factor(gender)Female      1.000000 0.2715683307
## factor(youthAny)1         1.000000 0.3507251790
## minister_exp_cum_y_lag    1.000000 0.0195566599
## factor(parlTen_cum2)1     1.000000 0.2825069117
## factor(education_dum)Lowe 1.000000 0.9429760315
## factor(CabinetType)Majori 1.000000 0.4483374240
## factor(structure)Coalitio 1.000000 0.1330858888
## frailty(jurisdiction)     6.811786 0.0393937983
```

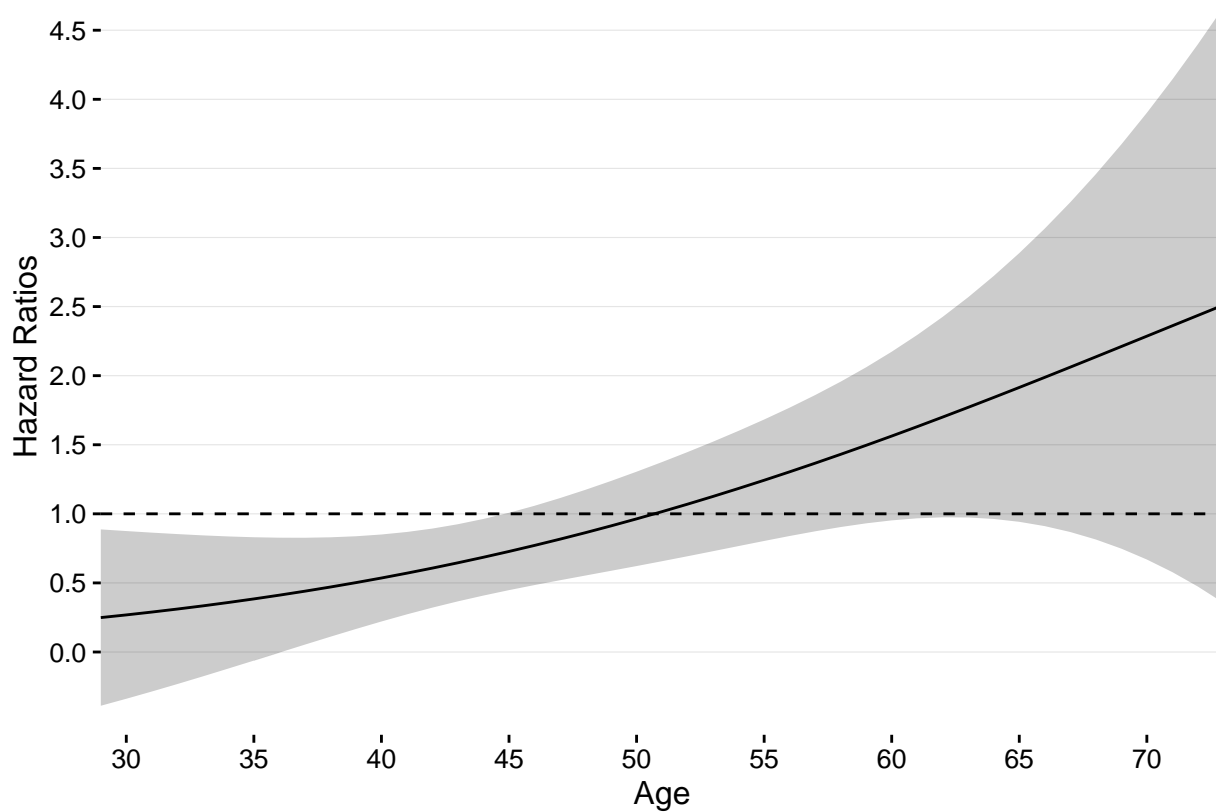
The close to linear relationship between durability and age squared can easily be shown by plotting the regression line for each value on age:

```
pred1 <- with(ministers, data.frame(resigcalls=min(resigcalls),
                                   age_cen=round(min(age_cen),
                                                    digits = 0):round(max(age_cen),
                                                    digits = 0),
                                   gender=getmode(gender),
                                   minister_exp_cum_y_lag=median(minister_exp_cum_y_lag),
                                   parlTen_cum2=getmode(parlTen_cum2),
                                   youthAny=getmode(youthAny),
                                   education_dum=getmode(education_dum),
                                   CabinetType=getmode(CabinetType),
                                   structure=getmode(structure)))

pred_plot <- data.frame(predict(agesq, newdata=pred1,
                               type="risk", se=TRUE, reference="sample"), pred1)

pred_plot$upper <- pred_plot$fit+1.96*pred_plot$se.fit
pred_plot$lower <- pred_plot$fit-1.96*pred_plot$se.fit
pred_plot$age_cen <- pred_plot$age_cen + median(ministers$age)

ggplot(pred_plot, aes(x=age_cen, y=fit))+
  geom_line(stat="identity", color="black")+
  geom_ribbon(aes(ymin=upper, ymax=lower, color=NULL), alpha=.2, fill="black") +
  geom_hline(aes(yintercept=1), linetype="dashed")+
  labs(y="Hazard Ratios", x="Age")+
  scale_x_continuous(breaks=seq(0,100,5), expand=c(0,0))+
  scale_y_continuous(breaks=seq(0,10,.5), expand=c(0,.21))+
  theme(legend.position=c(.15,.9),
        panel.grid.major.x=element_blank(),
        panel.grid.minor=element_blank(),
        panel.border=element_blank(),
        strip.background=element_blank(),
        panel.margin=unit(1, "cm"),
        axis.line=element_line(lineend = "square"),
        axis.title.y=element_text(vjust=1.5, siz=12),
        axis.title.x=element_text(vjust=0, size=12))
```



Parliamentary experience == in parliament > 0 days

The following example shows how parliamentary experience does matter when it is coded as 1 when a minister has been in parliament more than 0 days:

```
ministers$parlTen_cum3 <- ifelse(ministers$parlTen_cum > 0, 1, 0)
parl_onday <- coxph(Surv(dur_start, dur_end, event2) ~ resigcalls + age_cen +
  factor(gender) + factor(youthAny) + minister_exp_cum_y_lag +
  factor(parlTen_cum3) + factor(education_dum) +
  factor(CabinetType) + factor(structure) + frailty(jurisdiction),
  data=ministers, subset=prime_minister==0 & nsd_id!=299)
summary(parl_onday)[["coefficients"]]
```

	coef	se(coef)	se2	Chisq
## resigcalls	0.26372655	0.07321717	0.07280647	12.97423806
## age_cen	0.05735880	0.01546299	0.01519356	13.75984158
## factor(gender)Female	0.32554912	0.25726830	0.24953448	1.60125499
## factor(youthAny)1	0.55698101	0.34520522	0.34322500	2.60331114
## minister_exp_cum_y_lag	0.10786392	0.04033162	0.03962142	7.15255413
## factor(parlTen_cum3)1	-0.64554397	0.27150430	0.26820042	5.65325053
## factor(education_dum)Lowe	0.06495546	0.27646392	0.26978946	0.05520194
## factor(CabinetType)Majori	0.16979192	0.21992400	0.21868042	0.59605836
## factor(structure)Coalitio	-0.32681668	0.25661064	0.25510078	1.62203091
## frailty(jurisdiction)	NA	NA	NA	14.03327295
##	DF	p		
## resigcalls	1.000000	0.0003158064		
## age_cen	1.000000	0.0002077296		
## factor(gender)Female	1.000000	0.2057254505		
## factor(youthAny)1	1.000000	0.1066407070		

```
## minister_exp_cum_y_lag      1.000000 0.0074857307
## factor(parlTen_cum3)1      1.000000 0.0174230469
## factor(education_dum)Lowe  1.000000 0.8142468173
## factor(CabinetType)Majori 1.000000 0.4400859032
## factor(structure)Coalitio 1.000000 0.2028088383
## frailty(jurisdiction)      6.680095 0.0428572005
```

Seats and reshuffles

Following Huber and Martinez-Gallardo (2008), I test the whether adverse selection could have a limiting effect on resignation calls by including party size of the minister and reshuffles (Kam and Indridason 2005). 1 indicates that the minister has been reshuffled in this cabinet, and 0 that he has not:

```
reshuffles <- coxph(Surv(dur_start, dur_end, event2) ~ resigcalls + age_cen +
  factor(gender) + factor(youthAny) + minister_exp_cum_y_lag +
  factor(parlTen_cum2) + factor(education_dum) +
  factor(CabinetType) + factor(structure) + factor(reshuffle)+
  frailty(jurisdiction),
  data=ministers, subset=prime_minister==0 & nsd_id!=299)
summary(reshuffles)[["coefficients"]]
```

```
##              coef      se(coef)      se2      Chisq
## resigcalls      0.22994552 0.07362355 0.07310707  9.7547558
## age_cen          0.05283975 0.01537747 0.01512323 11.8073356
## factor(gender)Female 0.28220680 0.25745416 0.24983117  1.2015313
## factor(youthAny)1    0.31501884 0.33003068 0.32854119  0.9110966
## minister_exp_cum_y_lag 0.09771515 0.04025712 0.03943123  5.8916689
## factor(parlTen_cum2)1 -0.27745849 0.24907396 0.24562219  1.2409074
## factor(education_dum)Lowe -0.03515661 0.27666593 0.26941187  0.0161474
## factor(CabinetType)Majori 0.14225169 0.22323933 0.22197461  0.4060444
## factor(structure)Coalitio -0.37680099 0.25795838 0.25630108  2.1336580
## factor(reshuffle)1    -0.35329770 0.49315969 0.48870400  0.5132234
## frailty(jurisdiction)      NA         NA         NA 14.9908465
##              DF              p
## resigcalls      1.000000 0.001788594
## age_cen          1.000000 0.000589978
## factor(gender)Female 1.000000 0.273015826
## factor(youthAny)1    1.000000 0.339823630
## minister_exp_cum_y_lag 1.000000 0.015212677
## factor(parlTen_cum2)1 1.000000 0.265296245
## factor(education_dum)Lowe 1.000000 0.898883079
## factor(CabinetType)Majori 1.000000 0.523984091
## factor(structure)Coalitio 1.000000 0.144096524
## factor(reshuffle)1    1.000000 0.473746777
## frailty(jurisdiction) 6.963947 0.035427499
```

```
# This will download some data on first run
if(any(grepl(".html", list.files("./data/seats/")))==FALSE){
  source("./data/seats/getseats.R")
}
load("./data/seats/seats.rda")

ministers <- merge(x = ministers, y = seats, by.x = c("party", "election_year"),
  by.y = c("party_name", "election_year"), all.x = TRUE)

seats <- coxph(Surv(dur_start, dur_end, event2) ~ resigcalls + age_cen +
  factor(gender) + factor(youthAny) + minister_exp_cum_y_lag +
```

```

factor(parlTen_cum2) + factor(education_dum) +
factor(CabinetType) + factor(structure) + seats +
frailty(jurisdiction),
data=ministers, subset=prime_minister==0 & nsd_id!=299)
summary(seats)[["coefficients"]]

```

```

##               coef      se(coef)      se2      Chisq
## resigcalls      0.240225649 0.073153590 0.072661283 10.78369164
## age_cen         0.053027386 0.015442044 0.015208292 11.79209225
## factor(gender)Female 0.275252731 0.256422703 0.249210800 1.15225958
## factor(youthAny)1 0.299289014 0.329694339 0.328305342 0.82405950
## minister_exp_cum_y_lag 0.086833515 0.040129509 0.039421328 4.68216895
## factor(parlTen_cum2)1 -0.267470319 0.247959863 0.244476617 1.16355901
## factor(education_dum)Lowe -0.033437965 0.276649985 0.269428262 0.01460893
## factor(CabinetType)Majori 0.117383082 0.238659921 0.236209467 0.24190900
## factor(structure)Coalitio -0.208511934 0.440684515 0.430153246 0.22387534
## seats           0.004016016 0.008386672 0.008184915 0.22930396
## frailty(jurisdiction)      NA      NA      NA 13.88282847
##               DF      p
## resigcalls      1.000000 0.0010239826
## age_cen         1.000000 0.0005948285
## factor(gender)Female 1.000000 0.2830766392
## factor(youthAny)1 1.000000 0.3639959296
## minister_exp_cum_y_lag 1.000000 0.0304772449
## factor(parlTen_cum2)1 1.000000 0.2807286536
## factor(education_dum)Lowe 1.000000 0.9037960610
## factor(CabinetType)Majori 1.000000 0.6228307212
## factor(structure)Coalitio 1.000000 0.6361028385
## seats           1.000000 0.6320404122
## frailty(jurisdiction) 6.644584 0.0443775006

```

Resignation call coding scheme

Fixed string	Varying string
“Minister name” AND	“gå* av*”
	“må* gå*”
	“bør* gå *
	“burde* gå *
	“skulle* gå *
	“trekke* seg”
	“avgang*”
	“avskjed*”
	“vurder* sin”
	“vurder* stilling*”
	“vurder* posisjon*”
	“fratre*”
	“takk* av”
	“tre* tilb*”
	“avsett*”
	“avsatt”
	“skift* ut”
	“mistill*”