In-Party Homogeneity, Out-Party Heterogeneity and the Duration of Legislation: An Event History Analysis.

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Research Question

What are the difference consideration in legislative duration under different out-party and in-party ideology distribution?

Data

The proposals of the second to ninth Legislative Yuan, which are selected through the annual fifty major bills compiled by the Congressional Library News Management System of the Legislative Yuan.

Articulation

The interactive relation between parties and legislators can be further described with the principal-agent relation (Stadler and Castrillo 2009).

1. X represents the political effect brought by successful legislation of a legislator's position $X = \{x_1, x_2, x_3, ..., x_i\}$
2. P is the probability that the legislation action e is taken to achieve the result $Prob[x = x_{ij}|e] = p_i(e)$
3. $U_i^{Propose} = -|x_{ij} - \bar{x_j^c}|\sigma_j^c + |x_{ij} - \bar{x_j^o}|\sigma_j^o - \omega$ is the utility function of legislators
4. ω represents the cost taken to produce a bill through the party's power of setting agenda, that is, the legislative result expected by the party, which can be deemed as agency loss.
5. $U^{Party} = u(\omega) - v(e)$ is the utility function that a party passes a legislator's proposal subtract the cost of attracting the legislator put in effort taken to pass the bill.

Theoretical Framework

Proposition: As all equal, a proposal be passed *iff* the proposer receives the support from her party.

1. The party only supports the proposal when $p_i(e)u(\omega) - v(e) \geq \underline{U}^{Party}$
2. When $|x_{ij} - \bar{x_j^c}|\sigma_j^c$ increase, a proposer has no incentive to put in effort, the duration of passing the proposal increase
3. When $|x_{ij} - \bar{x_j^o}|\sigma_j^o$ increase, a proposer has incentive to put in effort, the duration of passing the proposal decrease

Hypotheses

1. H_1: When the proposal's position in the in-party position distribution is more extreme, require more time to be passed.

2. H_2: When the proposal's position in the out-party position distribution is more extreme, require less time to be passed.

Variables and Operationalization

DV:
The probability of the proposal passage under a given time.

IV:

1. Intra-partisan variation effect
2. Inter-party variation effect

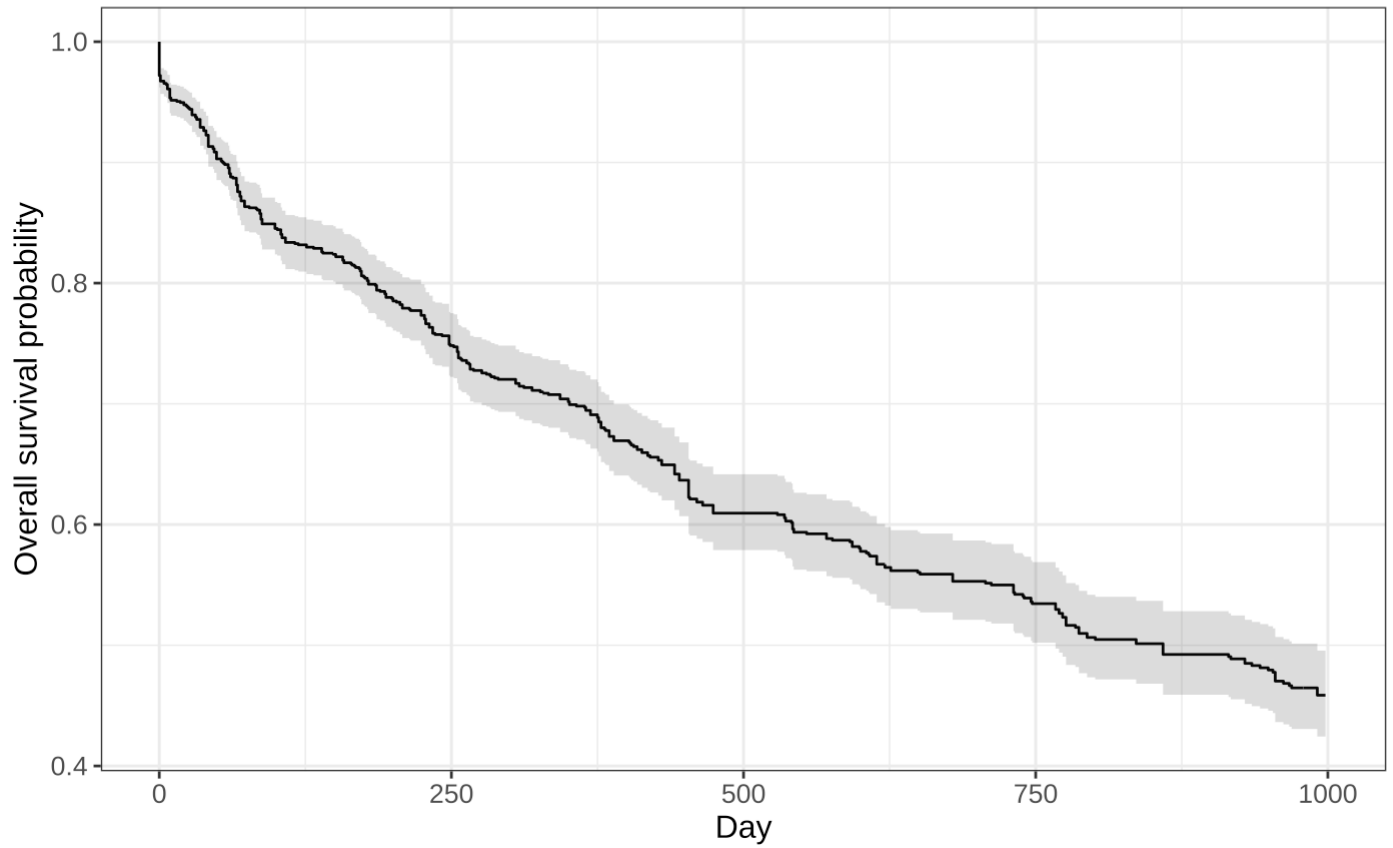
Control:
Administration proposals included or not

Recoding Variables

```r
## DV: legislature duration
date2 <- ymd(data1$date1)
pdate2 <- ymd(data1$pdate1)
data1$ld <- difftime(pdate2, date2, units = "days")
summary(data1$ld)

## IV: inter-party heterogeneity
data1$inter_party_variation_effect <- abs(data1$ideal2 - data1$inter_meanAD) * data1$inter_pvar

## IV: intra-party homogeneity
data1$intra_party_variation_effect <- abs(data1$ideal2 - data1$intra_meanADE1) * data1$intra_pvar

## Control: Execution Yuan proposal included.
data1$EYe <- factor(data1$EYe)
```

Descriptive Statistic

```r
```{r, warning=FALSE}
survfit2(Surv(ld,enacted, type = "right") ~ 1, data = data1) %>%
  ggsurvfit() +
  scale_x_continuous(name="Day", limits=c(0, 1000))+
  labs(
    x = "Days",
    y = "Overall survival probability"
  ) +
  add_confidence_interval()
```
```



Cox proportional hazard model

Semiparametric model:
Do not need to specify the baseline hazard rate $h_0(t)$.

$$h_i(t) = h_0(t)exp(\hat{\beta}_1 x_1 + \hat{\beta}_2 x_2 + \hat{\beta}_3 x_3 + ... + \hat{\beta}_k x_k + \mu_i) \quad (1)$$

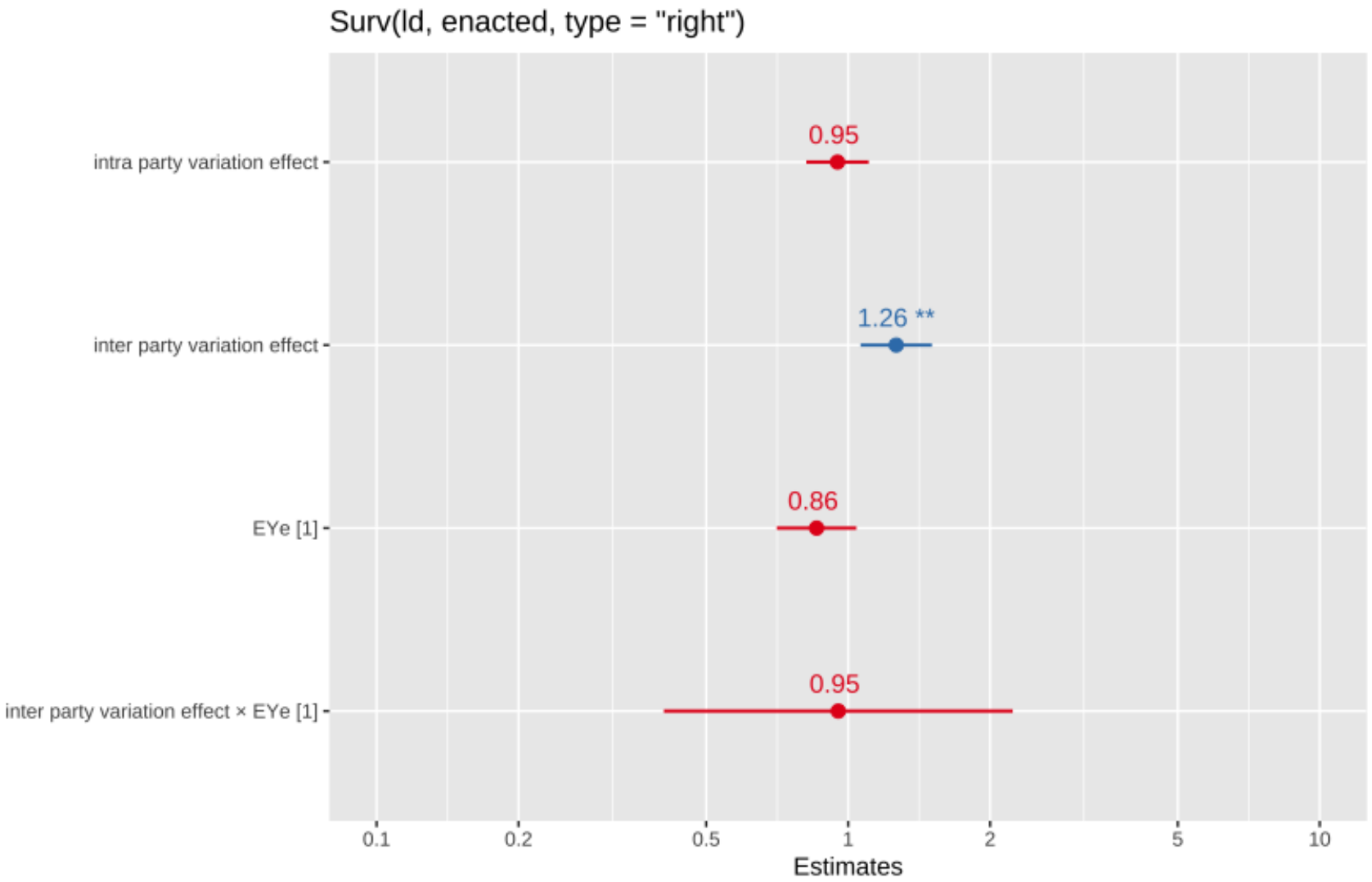
It can be rewritten as:

$$log(\frac{h_i(t)}{h_0(t)}) = \hat{\beta}_1 x_1 + \hat{\beta}_2 x_2 + \hat{\beta}_3 x_3 + ... + \hat{\beta}_k x_k + \mu_i \quad (2)$$

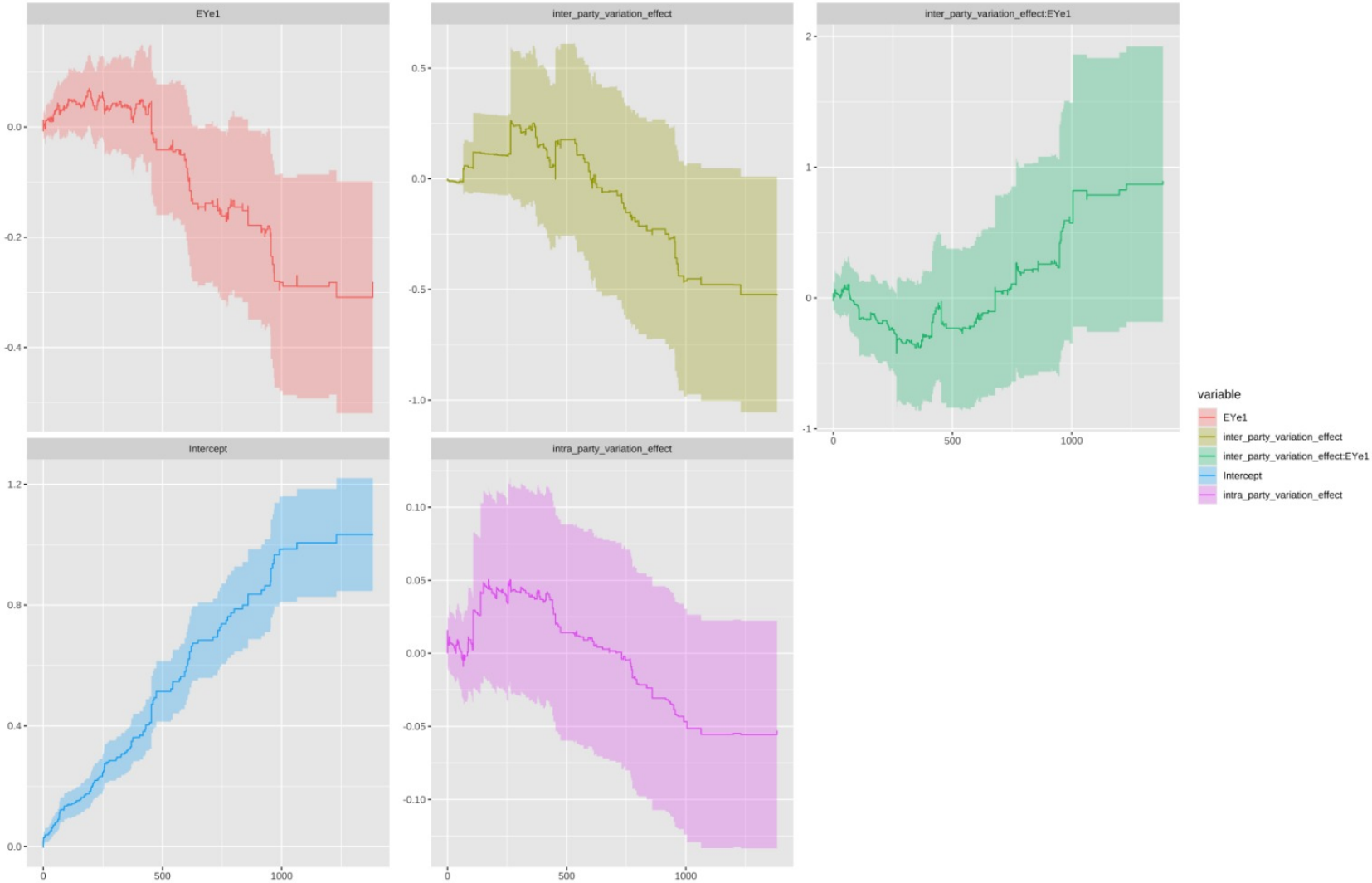
Outcome

	Dependent variable:
	ld
intra_party_variation_effect	−0.052
	(0.078)
inter_party_variation_effect	0.235***
	(0.089)
EYe1	−0.154
	(0.099)
inter_party_variation_effect:EYe1	−0.048
	(0.435)
Observations	1,073
R^2	0.007
Max. Possible R^2	0.997
Log Likelihood	−3,135.518
Wald Test	11.000** (df = 4)
LR Test	8.052* (df = 4)
Score (Logrank) Test	12.578** (df = 4)
Note:	*p<0.1; **p<0.05; ***p<0.01

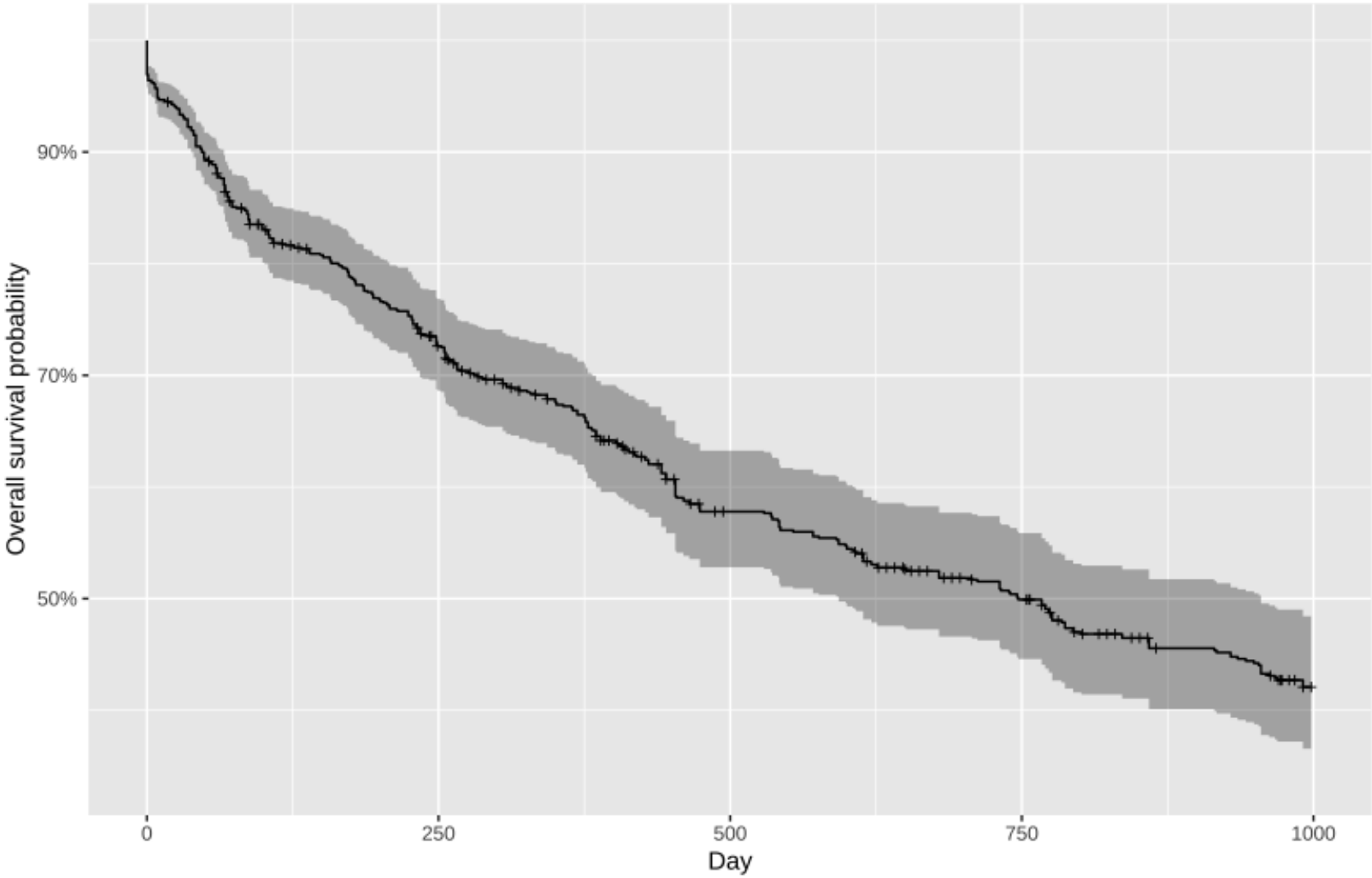
Coefficient



Covariates Change over time



Survival Curve



Takeaways

1. Time is a currency of buying political outcome in Congress.
2. The different "price"(time requirements) for bill passage reflects the cost and payoff.
3. The consideration of the "price" of political outcome varies in different timing and is associated with the interaction between the legislator and parties.