Unbundling Polarization

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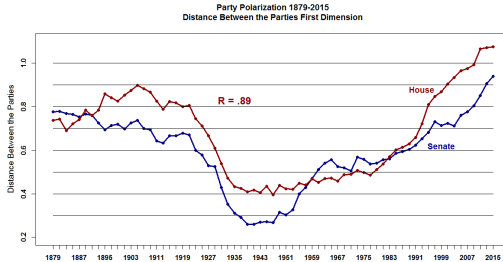Chad Kendall (USC Marshall)
Francesco Trebbi (UBC)

Princeton University
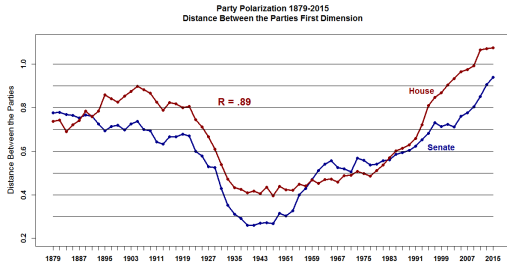
October 7, 2019

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Motivation

"Political polarization has reached levels not seen in decades... Trust in all institutions, including media, government, and business has fallen considerably." - T. R. Heath (2018)

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- Polarization and Economic Uncertainty (e.g. Baker et al., 2014)
- Political Polarization and Inequality (McCarty et al., 2006)

Unbundling Polarization

Motivation

This paper...

- We use a structural approach to:
  (i) quantify the *sources* of polarization
  (ii) determine how polarization affects policy *outcomes*
  (iii) clarify the role of agenda setting and selection on votes.

Sources of Polarization

- Two main sources:
  - members' ideological positions themselves
  - party discipline (Snyder and Groseclose, 2000; Cox and McCubbins, 2005)
- Difficulty separating the two is a well known problem (Krehbiel, 1993, 1999, 2000)
  - cohesion/party unity may reflect self-selection into parties
  - parties may only pursue bills on which they agree (Cox and McCubbins, 2005)

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  - cohesion/party unity may reflect self-selection into parties
  - parties may only pursue bills on which they agree (Cox and McCubbins, 2005)
- Source is important:
  - party discipline may be more amenable to change
  - differential effects on outcomes
- Polarization affects outcomes:
  - directly through votes
  - indirectly through **agenda-setting**

What We Do

- Provide a stylized model of the legislative process from policy selection to roll-call votes
  - policy votes are a result of:
    1. Heterogeneous ideologies
    2. Party discipline
    3. Agenda-setting

- Use internal party records (whip counts) to identify key sources of party control:
  - whip counts provide information on ideology before discipline
  - presence of a whip count indicates the 'value' of a bill

- Estimate the model and perform counterfactual exercises to illustrate how polarization affects outcomes

Whip Counts

- Informal polls of members typically taken a day or two before the roll call vote

- e.g. Whip counts show that repeal of ACA won't have enough votes:

  With Democrats united in opposition, House Republicans are currently short of the 218 votes they need to pass the bill before the Senate could take it up. They can afford only 22 defections, and the latest whip counts put Republican "no" votes at about 20, with a dozen more undecided. - BBC

- e.g. On the Tax Bill, after roll call (it passed with 227 votes vs. 205, with 13 Republicans breaking rank):
  Ryan and House GOP leaders were confident throughout the week that they'd have the 218 votes needed for passage, even with unified Democratic opposition. In fact, they've felt so good about their whip count they barely called on the White House to twist arms. - Politico
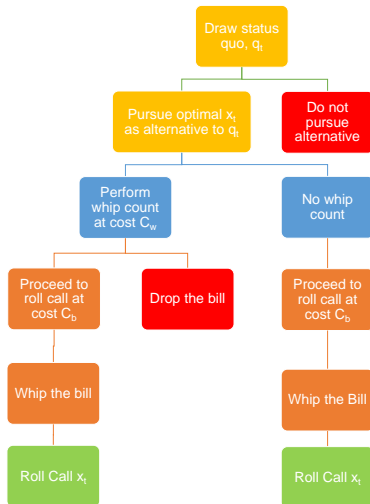
▸ Additional Literature

Setup

- Two parties, $p \in \{R, D\}$, compete for votes over a series of bills
    - have preferences of their median members, $\theta_{m,D}$ and $\theta_{m,R}$
- One-dimensional ideological space
    - bliss points, θ_i
- Continuum of members in each party
- Votes, and hence policy outcomes, are stochastic
    - idiosyncratic shocks, $\delta_{i,t}$, and aggregate shocks, η_t (Normally distributed)
        - $\delta_{i,t}$ can capture individual specific deviations (e.g. learning) and low probability events

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    - $\delta_{i,t}$ can capture individual specific deviations (e.g. learning) and low probability events
    - with continuum of members, η_t means outcomes are uncertain. Also captures anything that affects overall perception/changes of a bill.
- Discipline: on ideologies at cost $c(y_{p,t})$, reward r_p.
- Random recognition - each party proposes with some probability

▸ Details

Introduction
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Model
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Theoretical Results
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Data and Estimation
oooooo

Empirical Results
ooooooo

Counterfactuals
ooooo

Conclusion

Timeline

Voting Decisions and Party Discipline

- Discrete-choice model as in DW-Nominate but with two key improvements:
  - Shocks are on bliss points, θ_i, instead of utility:
    - no need to specify utility function (other than concavity),
    - likelihood becomes a function of marginal voter, $MV_t = \frac{x_t + q_t}{2}$, rather than both q_t and x_t.
  - Bliss point is subject to influence from party through whip, $y_{p,t}$

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Voting Decisions and Party Discipline

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- Party (e.g. Whips) exert discipline:
  - at roll call time, obtain information - know their members' (stochastic) bliss points
  - can exert influence at a personal cost, $c(y_{p,t})$, strictly increasing
  - obtain r_p any time a member votes as the party prefers

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Party Discipline
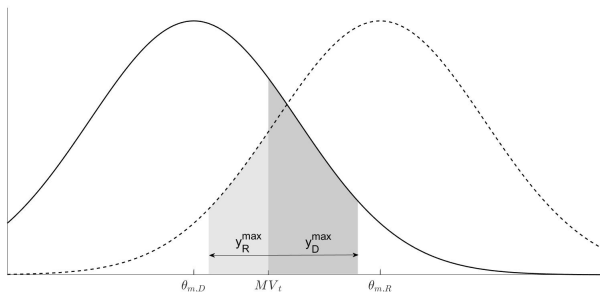
- Key parameter of interest is maximum distance a whip is willing to influence members, $y_p^{max} = c^{-1}(r_p)$

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Introduction Model **Theoretical Results** Data and Estimation Empirical Results Counterfactuals Conclusion
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Optimal Policy Alternatives

- If a policy alternative, x_t, is pursued, want to choose it close to the bliss point of the median member
  ...but, the closer it is, the less likely the bill is to pass
- Trade-off results in a unique optimal policy ▸ Formal Proposition
  - always lies between status quo and party's bliss point

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Whip Counts as Options

- On observing q_t, the proposing party can:
  1. do nothing
  2. pursue an alternative bill with a whip count
  3. pursue an alternative bill without a whip count

- Absent a whip count, bill goes straight to roll call and majority party pays C_b

- With a whip count (at cost C_w), bill can be dropped avoiding C_b
  - provides option value

Which Bills are Pursued

▸ Proposition

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Data

- U.S. House roll call voting data comes from the standard source, VoteView

- Whip count data covering 1977-1986 as compiled by Evans (2012)
    - Corresponds to time when polarization starts to rise
    - Democrats are majority over time period, but both parties conduct whip counts
    - Republican (1977-1980) data from Robert H. Michel Collection
    - Democratic (1977-1986) data from Congressional Papers of Thomas S. Foley

- We merge the data following Evans (2012)
    - 5424 roll called bills
    - 340 bills with whip counts
    - 238/340 bills have subsequent roll calls

▸ Details on Data

Identification (1)

- Key assumption is that whip counts reveal true ideological positions
  on average.
    - if not, would be uninformative... but parties do rely on them
    - reputation prevents lying
    - whips have knowledge about member's positions (difficult to lie)
    - careful record keeping suggestive of importance

▸ Quote

Identifying Assumptions

**Assumption 1 (Ideal Point Locations):** *We normalize the ideal point of one member (without loss of generality, member '0'),* $\theta^0 = 0$.

Assumption 2 (Ideal Point Scale): G_δ *is standard Normal, with CDF denoted by* $\Phi(\cdot)$.

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Identifying Assumptions

Assumption 1 (Ideal Point Locations): *We normalize the ideal point of one member (without loss of generality, member '0'), $\theta^0 = 0$.*

Assumption 2 (Ideal Point Scale): *G_δ is standard Normal, with CDF denoted by $\Phi(\cdot)$.*

Assumptions needed for Agenda Setting only:

Assumption 3 (Status Quo Distributions): *The distribution of status quo policies is $W(q) \sim \mathcal{N}(\mu_q, \sigma_q^2)$. μ_q and σ_q^2 may vary by Congress.*

Assumption 4 (Utility): *The utility a party derives from a policy, k_t, is given by a quadratic loss function around the ideal point of its median member, $u(k_t, \theta_p^m) = -(k_t - \theta_p^m)^2$.*

Party Discipline - Reduced Form
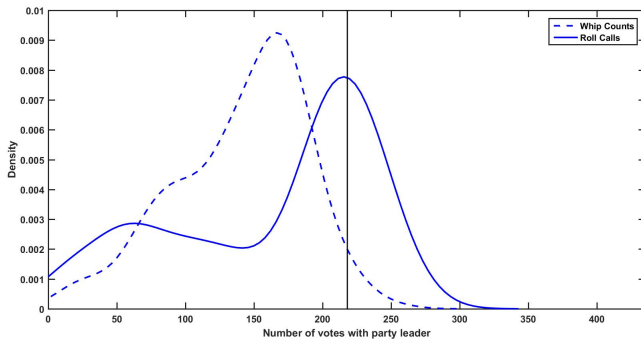
Identification (2)

- Ideological positions, θ_i, from repeated whip count polls (individual fixed effects)

- Marginal voters at whip count ($MV_t - \eta_{1,t}$) and roll call ($MV_t - \eta_{1,t} - \eta_{2,t}$) from multiple votes on same bill (bill fixed effects)

- Maximum whipping distance, y_p^{max}, comes from distance between marginal voter at time of whip count and *per party* marginal voter at roll call.

- Distributions of policies (q_t and x_t) come from distributional assumptions together with theoretical results.

Estimation

- Two stage process (maximum likelihood in each stage):
  1. estimate marginal voters, party discipline parameters, and ideological bliss points ▸ Deriving Likelihood ▸ Likelihood
     - we use *all* bills
  2. estimate flexible status quo distribution to fit estimated marginal voters

     - status quo drawn from Truncated Normal

     - impose model restrictions:
       leadership votes determine where status quo originated
       whip counts closer to party median

     - first-order conditions relate q_t to MV_t (bills with roll calls only)

     - extensive Monte Carlo simulation to demonstrate truncations are recoverable
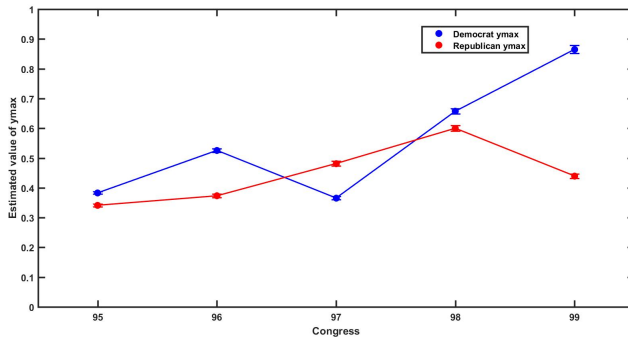   ▸ Likelihood

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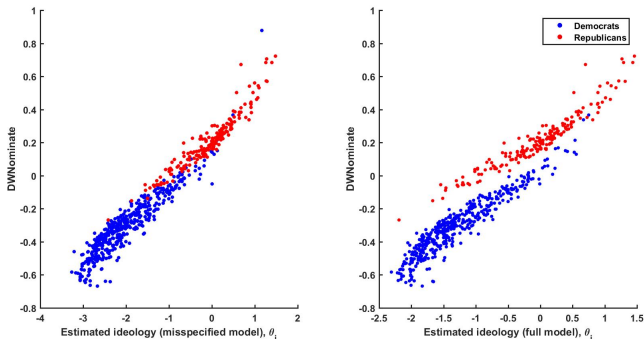
Ideologies (1)

- Correlation between our estimates and DW-Nominate
  - strong, but not perfect, correlation
  - noticeable 'gap' introduced by party discipline (right graph)

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Ideologies (2)
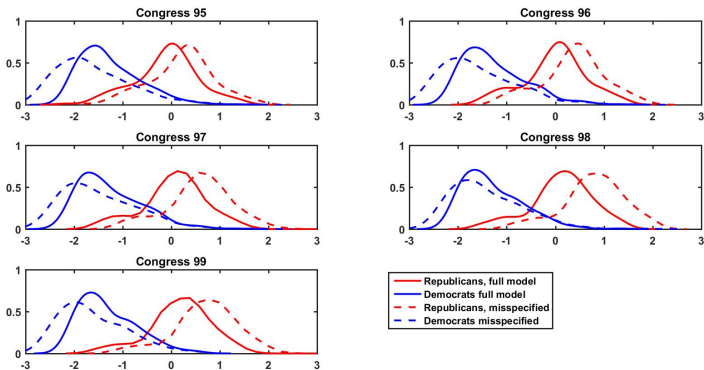
- 34 to 43% of *perceived* polarization is due to party discipline
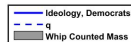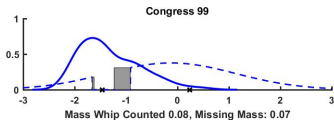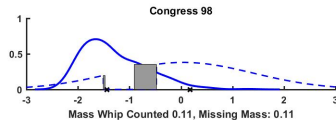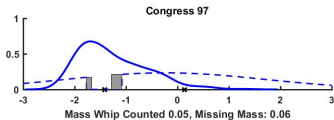
Party Discipline Estimates

Party Discipline is growing over time.

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Which Bills are Whip Counted?

Distance from Marginal Voter to Party Median			
	Whip count	Roll call	p-value
Democrats	0.479	1.234	(0.000)
Republicans	0.910	1.163	(0.010)

- Model predicts whip counts are conducted for policies closer to the party's median (more difficult to pass)

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Agenda-Setting (Democrats)

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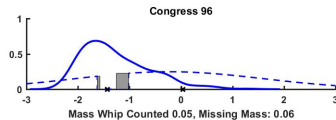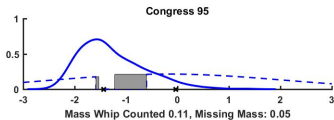
Agenda-Setting (Republicans)
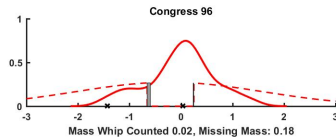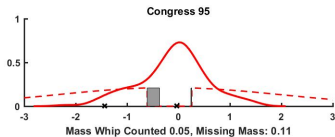
Robustness

- Results within only Final Passage Votes

- Non-constant y^{max} - no whipping on lopsided bills (based on Snyder-Groseclose)

- Subset of votes that proposer coincides with sponsorship data (used in Jenkins et al, 2014, but imprecise in our sample).

- 2nd dimension of ideology: North-South divisions.

▸ Robustness Figures ▸ Robustness Tables

Unbundling Polarization

Salient Bills

- How would the outcomes of votes on important bills have changed if parties exercised no discipline?
  - hold the policies themselves fixed

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Salient Bills - Economic Policies

Bill	Data	Model	No Whipping
Increase of Temporary Debt Limit, (H.R.9290, Congress 95)	**221**	**242**	**185**
Increase of Temporary Debt Limit, (H.R.13385, Congress 95)	**210**	**235**	**201**
Increase of Temporary Debt Limit, (H.R.2534, Congress 96)	**220**	**239**	**208**
Depository Inst. Dereg. and Monetary Ctrl. Act of 1980, (H.R. 4986, Congress 96)	369	404	391
Inc. of Public Debt Limit, Make it part of Budget Process (H.R. 5369, Congress 96)	**225**	**244**	**217**
Economic Recovery Tax Act of 1981 (H.R. 4242, Congress 97)	284	329	276
Garn-St. Germain Depository Institutions Act of 1982 (H.R.6267, Congress 97)	263	279	327
Social Security Amendments of 1983 (H.R.1900, Congress 98)	282	299	230
Tax Reform Act of 1984 (H.R. 4170, Congress 98)	319	370	292

▸ Non-Economic Policies

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Unbundling Polarization

Policies Pursued

- Absent party discipline, the optimal policies pursued would have been different
- Look at two counterfactuals, accounting for change in policies themselves:
  - no party discipline
  - increase in ideological polarization (to DW-Nominate levels)
- Look at average effects because we don't know status quo or alternative for any particular bill

Unbundling Polarization

Bill Approval

	Congress				
	95	96	97	98	99
Average Change in the Probability of Bill Approval					
Democrats					
Baseline Probability (Main Model)	0.357	0.467	0.421	0.431	0.544
Main Model - No Whipping	0.032	0.060	0.009	0.054	0.011
Main Model - Polarized Ideology	-0.005	-0.011	0.010	-0.013	-0.024
Republicans					
Baseline Probability (Main Model)	0.240	0.220	-	-	-
Main Model - No Whipping	-0.034	-0.042	-	-	-
Main Model - Polarized Ideology	0.028	0.032	-	-	-

- Absent whipping, majority party is less likely to pass a bill, minority party more likely

Unbundling Polarization

Policies Pursued

			Congress		
	95	96	97	98	99
Average Change in Pursued Policies, x_t					
Democrats					
Main Model - No Whipping	-0.011	-0.018	-0.003	-0.024	-0.042
Main Model - Polarized Ideology	0.085	0.161	0.107	0.163	0.285
Republicans					
Main Model - No Whipping	-0.011	-0.016	-	-	-
Main Model - Polarized Ideology	-0.057	-0.048	-	-	-

- Increase in ideological polarization results in more extreme policies: farther left for Democrats, right for Republicans

Conclusion

- We find that approximately 40% of polarization is due to party discipline
  - institutional changes may reduce party power

- Our methodology allows us (under some assumptions) to 'de-bias' ideological estimates even in the absence of whip count data
  - results suggest party power has grown over time (in line with the scholarly view)

- The effects of polarization are complex due to the endogeneity of policies
  - a reduction in party discipline reduces the probability of bills passing
  - a reduction in ideological polarization results in less extreme bills

Literature

- Large literature on estimating ideal points (Poole and Rosenthal, 1984;...)
- More closely related to that which attempts to separate out party effects (Jenkins, 2000; Snyder and Groseclose, 2000; Nokken, 2000; Clinton, 2004)
    - we incorporate new data (whip counts) via a new theoretical, estimable framework
- Much smaller literature on the effects of polarization (Binder, 2003; Mian et al., 2014)
    - we provide a theory and quantitative estimates

▸ Back

Agenda-setting

- Random recognition model - each party is chosen to be the proposer with some probability
  - required to match empirical fact that a significant number of bills have majority leadership voting 'no' and minority leadership voting 'yes'
- Proposing party:
  - observes a randomly drawn status quo policy, q_t
  - decides whether or not to pursue an alternative policy
  - if so, sets alternative, x_t
  - decides whether or not to conduct a whip count at cost, C_w
    - whip count allows it to learn about first aggregate shock and drop the bill if not looking promising
    - dropping the bill saves the cost of pursuing a bill, C_b
    - absent whip count, go straight to roll call

Proposition 1

There exists a strictly positive cutoff cost of pursuing a bill, $\hat{C}_b > 0$, such that for all $C_b < \hat{C}_b$, the optimal alternative policies, x_t^{count} and $x_t^{no\ count}$, are unique and contained in (q_t, θ_D^m) for $q_t < \theta_D^m$, contained in (θ_D^m, q_t) for $q_t > \theta_D^m$, and equal to θ_D^m for $q_t = \theta_D^m$. ▸ Back to Theory

Unbundling Polarization

Proposition 2

Fix $C_b < \hat{C}_b$ such that the optimal alternative policies, x_t^{count} and $x_t^{no\ count}$, are unique and fix the cost of a whip count, $C_w > 0$. Then, we can define a set of cutoff status quo policies, $\underline{q}_l, \overline{q}_l, \underline{q}_r$, and $\overline{q}_r$, with $\underline{q}_l \leq \overline{q}_l < \theta_D^m < \underline{q}_r \leq \overline{q}_r$ such that:

1. *for $q_t \in [-\infty, \underline{q}_l] \cup [\overline{q}_r, \infty]$, the optimal alternative policy, $x_t^{no\ count}$, is pursued without conducting a whip count.*

2. *for $q_t \in (\underline{q}_l, \overline{q}_l] \cup [\underline{q}_r, \overline{q}_r)$, the optimal alternative policy, x_t^{count}, is pursued and a whip count is conducted.*

3. *for $q_t \in (\overline{q}_l, \underline{q}_r)$, no alternative policy is pursued.*

Identification (1): Key Assumption

"One common question about whip counts is whether the responses of members can be trusted...Four points are worth mentioning in response. *First,* the whip process is a *"repeated game" and members develop reputations.* There are incentives for them to be truthful. *Second,* congressional *leaders generally know a lot about the constituencies* of rank-and-file members and can be very difficult to fool. *Third,* in a sense it does not matter. If a member claims that she will oppose a bill or amendment unless she receives some concession, then *that essentially becomes her position* and the polled question and the concession are for all practical purposes inseparable. *Fourth, and most important, participants in the whip process believe that whip poll responses are accurate,* which is precisely why they base strategic decisions on the results." (Evans (2012), p.13).

▸ Back to Identification

Details on Data

- Categories:
  - "Yes, Leaning Yes, Yes if Needed, Undecided, Leaning No, No, Expected to be Absent for Vote" (94% of the sample).
  - Split into 2 coarser categories of "Yes" and "No" to match model.

  Composition:
  - "Yes"(44.2%)

  - "Leaning Yes" and "Yes if Needed" (together, 7.2%)

  - 'Leaning No" and "No" (together, 12.5%)

  - "Undecided" (16.7% of the sample), "No Response" (13.0% of the sample), and "Expected to be Absent" (0.8% of the sample)

Direction of Whipping

- We use party leadership votes to assign the party's preferred direction.

- In order of priority, we use:
  - the (majority/minority) party leader's vote,
  - the (majority/minority) party Whip's vote,
  - the direction in which the majority of the party voted (very few).

- For each roll call, we use the same proxy for the proposing party. It determines:

  region of the status quo, directions each party whips.

Deriving Likelihood

Under Assumption 2, the probability i from D votes Yes at the whip count:

$$
\begin{aligned}
P(Yes_t^{i,wc} = 1) &= P(\delta_{1,t}^i + \theta^i \leq MV_t - \eta_{1,t}) \\
&= P(\delta_{1,t}^i \leq \tilde{M}V_{1,t} - \theta^i) \\
&= \Phi(\tilde{M}V_{1,t} - \theta^i).
\end{aligned}
$$

At the roll call stage:

$$
\begin{aligned}
P(Yes_t^{i,rc} = 1) &= P(\delta_{1,t}^i + \delta_{2,t}^i \leq MV_t - \eta_{1,t} - \eta_{2,t} - \theta^i \pm y_D^{max}) \\
&= P(\delta_{1,t}^i + \delta_{2,t}^i \leq \tilde{M}V_{2,t} - \theta^i \pm y_D^{max}) \\
&= \Phi\left(\frac{\tilde{M}V_{2,t} - \theta^i \pm y_D^{max}}{\sqrt{2}} \right).
\end{aligned}
$$

First Stage Likelihood

$$\mathcal{L}_D(\Theta_1; \textit{Yes}_{t,p}^{i,wc}, \textit{Yes}_{t,p}^{i,rc}) =$$

$$\prod_{t=1}^{T} \prod_{n=1}^{N_D} \Phi(\tilde{M}V_{1,t} - \theta^i)^{\textit{Yes}_{t,p}^{i,wc}} \left(1 - \Phi(\tilde{M}V_{1,t} - \theta^i)\right)^{1 - \textit{Yes}_{t,p}^{i,wc}}$$

$$\times \Phi\left(\frac{\tilde{M}V_{2,t} - \theta^i \pm y_D^{max}}{\sqrt{2}}\right)^{\textit{Yes}_{t,p}^{i,rc}} \left(1 - \Phi\left(\frac{\tilde{M}V_{2,t} - \theta^i \pm y_D^{max}}{\sqrt{2}}\right)\right)^{1 - \textit{Yes}_{t,p}^{i,rc}}$$

Second Stage Likelihood

$$\mathcal{L}^{second\ step}(\Theta_1; \tilde{WC}_t, \tilde{MV}_{2,t}) = \prod_{t=1}^{T} P(WC_t)^{WC_t} P(\tilde{MV}_{2,t})^{RC_t}$$
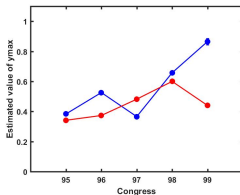
For example, for a whip count for a status quo to the right of a party's median, we have, using Proposition 2:

$$P(WC_t) = \frac{\Phi(\frac{\overline{q}_{r,p} - \mu_q}{\sigma_q}) - \Phi(\frac{q_{r,p} - \mu_q}{\sigma_q})}{P(WC_t \cup RC_t)}$$

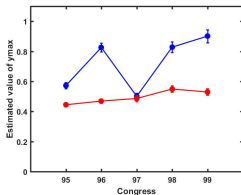For example, the probability of observing a particular realized marginal voter for a status quo drawn from the right of the Democrats median (conditional on observing either a whip count or roll call) is:

$$P(\tilde{MV}_{2,t}) = \int_{\overline{q}_{r,D}}^{\infty} \phi\left(\frac{\tilde{MV}_{2,t} - MV(q_t)}{\sigma}\right) \frac{\phi\left(\frac{q_t - \mu_q}{\sigma_q}\right)}{P(WC_t \cup RC_t)} dq_t$$
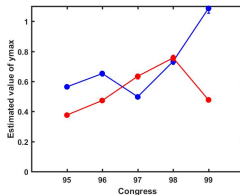
Parameter	Congress				
	95	96	97	98	99
y^{max}, Democrats	0.383	0.526	0.366	0.658	0.865
	(0.002)	(0.003)	(0.003)	(0.005)	(0.007)
y^{max}, Republicans	0.342	0.373	0.482	0.600	0.440
	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)
Aggregate Shock, σ_η			0.859		
			(0.230)		
Party Median - Democrats, θ_D^m	-1.431	-1.431	-1.420	-1.435	-1.462
	(0.038)	(0.038)	(0.042)	(0.040)	(0.095)
Party Median - Republicans, θ_R^m	-0.036	0.042	0.134	0.181	0.236
	(0.049)	(0.138)	(0.139)	(0.034)	(0.049)

N: 711, T: 315 Whip Counted bills, 5424 Roll Called bills

Unbundling Polarization

Robustness

(a) **Baseline**

(b) Only Final Passage Votes

(c) Proxies Coincide

(a) No Whipping on Lopsided Bills

(b) Votes that Split Northern/Southern Democrats Dropped

Unbundling Polarization
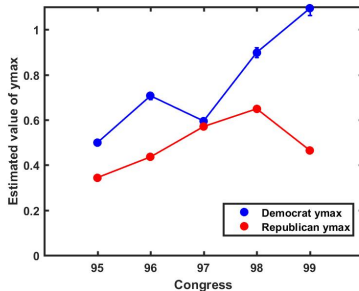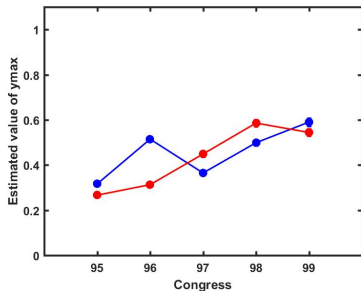
Robustness (2)

Table: Decomposition of Polarization

	Congress				
	95	96	97	98	99
A: Polarization due to ideology $(\theta_R^m - \theta_D^m)$					
Baseline	1.395	1.473	1.554	1.615	1.698
Only Final Passage Votes	1.135	1.308	1.355	1.401	1.441
Proposer Proxies Coincide (Model & Sponsorship)	1.346	1.423	1.490	1.569	1.645
No Whipping on Lopsided Votes	1.615	1.713	1.796	1.895	2.031
Without Votes that Split Northern/Southern Democrats	1.170	1.306	1.335	1.419	1.471
C: Share of Perceived Ideological Polarization due to whipping (B/(A+B))					
Baseline	0.342	0.379	0.353	0.438	0.435
Only Final Passage Votes	0.473	0.498	0.422	0.496	0.498
Proposer Proxies Coincide (Model & Sponsorship)	0.411	0.442	0.432	0.487	0.487
No Whipping on Lopsided Votes	0.265	0.326	0.312	0.364	0.358
Without Votes that Split Northern/Southern Democrats	0.419	0.467	0.466	0.522	0.515

Unbundling Polarization

Salient Bills - Other

Bill	Data	Model	No Whipping
Aid to Turkey/Lifting of Arms Embargo (H.R. 12514, Congress 95)	212	193	147
Foreign Intelligence Surveillance Act of 1978 (H.R. 7308, Congress 95)	261	283	280
National Energy Act, 1978 (H.R. 8444, Congress 95)	247	271	258
Panama Canal Treaty, 1979 (H.R. 111, Congress 96)	**224**	**243**	**180**
Contra Aid, 1984 (H.R. 5399, Congress 98)	294	279	343