Social Interactions and Legislative Activity

Nathan Canen (University of Houston)
Matthew O. Jackson (Stanford, CIFAR, Santa Fe)
Francesco Trebbi (UC Berkeley, NBER, CEPR)

JEEA Teaching Materials

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Motivation

- The functioning of deliberative bodies (e.g., Congress) relies on informal interactions among its members.
  - E.g., to pass and craft legislation.
- However, such environments are rife with strategic behavior:
  - Legislators choose how much/with whom to socialize.
  - Having key allies influences the benefits of such interactions (i.e., quality of a bill, likelihood of it passing).
  - The environment is rife with partisan (identity) based affiliation and preferences.
- Studying the effects of electoral competition, political polarization or counterfactual policies on congressional behavior should accommodate the above.
This Paper

1. Proposes a novel theoretical model accommodating:
   - Endogenous formation of connections (individuals’ choices affect whom they work with).
   - Strategic decisions on the resulting network (links affect benefits of legislative effort).
   - Homophily (social interactions are biased along party lines).

2. Results on the effects of electoral competition and (non-linear) effects of polarization on legislative behavior.
   - Closed-form theory, reduced-form and structural results.
   - Such predictions would not be borne out of non-network data.
   - Empirically validated assumptions. Model fit also suggests it outperforms alternatives.

Model

- $N = \{1, 2, \ldots, n\}$ politicians, divided into $k = 1, \ldots, K$ parties.
- Each politician chooses two types of effort, both affecting reelection/bill approval:
  - $x_i$: Legislative Effort (e.g., crafting legislation, floor speeches).
  - $s_i$: Social Effort (e.g., attending social events/networking)
- Each party $P_\ell$ has a level of partisanship/structural homophily, $p_\ell$,
  - Members of $P_\ell$ spend a fraction $p_\ell$ of their interactions exclusively at party $\ell$ events (e.g., party and caucus meetings...)
  - The remainder, $1 - p_\ell$, are at events in which they mix with members of all parties. (e.g., committee or social events...)
Socialization

The network $G = \{g_{i,j}\}_{i,j \in N}$ is given by $g_{ij}(s) = s_i s_j m_{ij}(s)$, where:

if $j \in P(i)$ then

$$m_{ij}(s) = p(i) \frac{p(j)}{\sum_{k \in P(i), k \neq i} p(k)s_k} + (1 - p(i)) \frac{(1 - p(j))}{\sum_{k \neq i} (1 - p(k))s_k},$$

and if $j \notin P(i)$ then

$$m_{ij}(s) = (1 - p(i)) \frac{(1 - p(j))}{\sum_{k \neq i} (1 - p(k))s_k}.$$

- Politicians meet own-party members in two ways: at their own events (same party) and at general events (both parties).
- Politicians are met with the relative frequency with which they are present at events.
- Consistent with qualitative evidence, (some) econometric models of network formation (e.g., Mele, 2017; Graham, 2020)
Preferences

- Following Cabrales et al., 2011, preferences for $i$ are:

$$u_i(x_i, x_{-i}, s_i, s_{-i}) = \alpha_i x_i + \phi_i \sum_{j \neq i} x_i(g_{ij}(s)x_j) - \frac{c}{2} x_i^2 - \frac{1}{2} s_i^2.$$  

- If $G$ was exogenous and known, it is the problem of Ballester et al., 2006.

- We study Nash equilibria in the limit (simultaneous) game (large $n$).
The Electoral Motive for Preferences

- In the paper, rationalize these preferences electorally:

\[ u_i(x_i, x_{-i}, s_i, s_{-i}) = Pr(\text{reelected}) - \frac{c}{2}x_i^2 - \frac{1}{2}s_i^2 \]

- Reelection depends on baseline electoral competition \((V_{i,0})\), and passing a bill (increasing in \(x_i\) and leg. effort of those \(i\) is connected to)
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- In this set-up, \(\phi_i\) is:
  - \textit{increasing} in the likelihood of passing a bill conditional on effort, parameterized by \(\gamma_{P(i)}\),
  - \textit{increasing} in the electoral returns to passing a bill, measured by \((1 - e^{-\lambda\zeta_{P(i)}})\),
  - \textit{increasing} in electoral competition in \(i\)'s district, parametrized by \(\rho V_{i,0}\).
Theoretical Results

Proposition

In any equilibrium of the game above:

1. An increase in $\phi_i$ increases both equilibrium effort levels $s_i^*$ and $x_i^*$.

2. An increase in $i$’s type, $\alpha_i$, increases both $s_i^*$ and $x_i^*$.

3. A decrease in the relative cost of legislative effort, $c$, increases both $s_i^*$ and $x_i^*$. 
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3. A decrease in the relative cost of legislative effort, $c$, increases both $s_i^*$ and $x_i^*$.

**Corollary**

Politicians who face greater electoral competition (lower $V_{i,0}$, all else held equal) have higher equilibrium effort levels $(s_i^*, x_i^*)$. 
Figure: Numerical Example Where Increases in Partisanship Increases Social Effort

(a) Equilibrium Social Effort, Aggregated across Party 1 Members (Higher Types)

(b) Aggregate Equilibrium Social Effort Across All Legislators

- Consistent with increasing cosponsorships and partisanship in Congress.
Validating Key Model Assumptions

Figure: Correlation between Raw Measures of Legislative Effort and Social Effort.

(a) Cosponsorships and Floor Speeches

(b) Cosponsorships and Bills Sponsored
### Empirical Evidence Consistent with the Corollary

**Table 2.** Evidence on lower (past) winning margins being positively correlated with social effort.

<table>
<thead>
<tr>
<th></th>
<th>Outcome: Log(1+Cospilonships in a Congressional Term/100)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>$V_{i,0}$—Previous winning margin</td>
<td>$-0.088^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
</tr>
<tr>
<td>Ideology controls</td>
<td>Yes</td>
</tr>
<tr>
<td>Additional individual controls</td>
<td>No</td>
</tr>
<tr>
<td>Congress fixed effects</td>
<td>No</td>
</tr>
<tr>
<td>State fixed effects</td>
<td>No</td>
</tr>
<tr>
<td>$N$</td>
<td>2,580</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors are in parentheses. The outcome is the log of (1+the Number of Cosponsorships in a Congressional term/100). Ideology controls are the politician’s DW-Nominate score and its DW-Nominate score squared. Additional individual controls include party fixed effects, tenure, and a Grosewart score to measure the value of Committee assignments (see the Data Section). The last column drops candidate-Congress observations whose previous election was uncontested (i.e. winning margins above 0.9). ***denotes $p < 0.01$. 
Model (Structural) Estimation

- However, many questions of interest depend on quantifying model parameters.
  - Returns to social effort ($\phi_i$).
  - Party types ($\alpha_i$), etc.

- In the paper, we show how those parameters are:
  - Statistically identified, and
  - Consistently Estimated using equilibrium equations.
(Some) Structural Results

<table>
<thead>
<tr>
<th>Congress</th>
<th>105</th>
<th>106</th>
<th>107</th>
<th>108</th>
<th>109</th>
<th>110</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Democrats:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean $\alpha_i$</td>
<td>1.218</td>
<td>1.183</td>
<td>1.210</td>
<td>1.256</td>
<td>1.249</td>
<td>1.156</td>
</tr>
<tr>
<td>Standard deviation of $\alpha_i$</td>
<td>0.091</td>
<td>0.077</td>
<td>0.082</td>
<td>0.100</td>
<td>0.095</td>
<td>0.067</td>
</tr>
<tr>
<td><strong>Republicans:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean $\alpha_i$</td>
<td>1.292</td>
<td>1.345</td>
<td>1.343</td>
<td>1.416</td>
<td>1.360</td>
<td>1.230</td>
</tr>
<tr>
<td>Standard deviation of $\alpha_i$</td>
<td>0.078</td>
<td>0.076</td>
<td>0.074</td>
<td>0.103</td>
<td>0.081</td>
<td>0.103</td>
</tr>
</tbody>
</table>

| Types, $\alpha_i$ |     |     |     |     |     |     |

| Returns to social effort, $\varphi_i$ |     |     |     |     |     |     |
| Mean $\varphi_i$ | 0.037 | 0.043 | 0.047 | 0.046 | 0.045 | 0.045 |
| Standard deviation of $\varphi_i$ | 0.001 | 0.002 | 0.0002 | 0.0001 | 0.0004 | 0.0003 |
| Republicans: |     |     |     |     |     |     |
| Mean $\varphi_i$ | 0.031 | 0.033 | 0.034 | 0.033 | 0.034 | 0.037 |
| Standard deviation of $\varphi_i$ | 0.001 | 0.001 | 0.0001 | 0.0001 | 0.0003 | 0.0001 |

Notes: We show the mean and the standard deviation of the (estimated) distributions of $\alpha_i$ and of $\varphi_i$ for each party, highlighting the differences in those distributions. They are computed using the estimates from Table 3.
Our model allows for: network formation, strategic actions, homophily, statistical identification and practical estimation.

Its assumptions and theoretical predictions are consistent with the data.

In the paper, we further show that this model:

- with interior partisanship $p_1, p_2$ outperforms fully partisan alternatives.
- fits legislative effort better than existing alternative networks (e.g., alumni, committee).
- fits bill passage better than simple “regression” fits.
Final Remarks

- Our model allows for: network formation, strategic actions, homophily, statistical identification and practical estimation.

- Its assumptions and theoretical predictions are consistent with the data.

- In the paper, we further show that this model:
  - with interior partisanship $p_1, p_2$ outperforms fully partisan alternatives.
  - fits legislative effort better than existing alternative networks (e.g., alumni, committee).
  - fits bill passage better than simple “regression” fits.

Thank you!