Generative Dynamics of Supreme Court Citations

Christian Schmid,∗ Ted Hsuan Yun Chen,† Bruce Desmarais,† and David Hunter∗

∗Dept. of Statistics, †Dept. of Political Science
Pennsylvania State University

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How to study supreme court citations?

Existing studies tend to focus on the case as the unit of observation.
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Case-level approaches have two primary shortcomings:

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We propose a dyadic, network-analytic approach.
Transitivity

Parden v. Terminal R. Co.

Pennsylvania v. Union Gas Co.

Seminole Tribe of Fla. v. Florida
Reciprocity

Johnson v. Mayor of Baltimore
Western Air Lines v. Criswell

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Supreme Court Citations
Popularity and Activity

Baker v. Carr

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Supreme Court Citations
Characteristics of the Supreme Court Citation Network

- Acyclic, but only partially.
Characteristics of the Supreme Court Citation Network

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- Edges can be formed but never destroyed.
Characteristics of the Supreme Court Citation Network

- Acyclic, but only partially.
- Edges can be formed but never destroyed.
- Edges can only be formed with nodes entry.
The Citation-TERGM

\[ C_t \]
\[ C_{\leq t} \]
\[ C_{< t} \]

receiving case

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Supreme Court Citations
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## Data

<table>
<thead>
<tr>
<th>Chief Justice</th>
<th>Terms</th>
<th>Cases</th>
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<tbody>
<tr>
<td>CE Hughes</td>
<td>1937 - 1941</td>
<td>629</td>
</tr>
<tr>
<td>HF Stone</td>
<td>1942 - 1946</td>
<td>766</td>
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<tr>
<td>FM Vinson</td>
<td>1946 - 1953</td>
<td>788</td>
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<td>E Warren</td>
<td>1954 - 1969</td>
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<td>WE Burger</td>
<td>1970 - 1986</td>
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<td>W Rehnquist</td>
<td>1987 - 2005</td>
<td>2022</td>
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<td>J Roberts</td>
<td>2006 - 2015</td>
<td>796</td>
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</tbody>
</table>

![Supreme Court Citations Diagram]
c-TERGM Specification

Dependence Effects

- # Transitive Ties
- # Out-two-stars
- # Mutual Dyads
- # In-two-stars
c-TERGM Specification

Dependence Effects
- # Transitive Ties
- # Out-two-stars

Exogenous Effects
- Ideological Distance (dyad)
- Issue Area (sender; receiver; mixing matrix)
- Justice (sender; receiver; homophily)
- # Mutual Dyads
- # In-two-stars
- Age (receiver)
- Overruled Case (receiver)
- Majority size (receiver)
- Ideological Breadth (receiver)
Results: Dependence Effects

Reciprocity

![Graph showing the trend in Reciprocity from 1940 to 2000.]

Transitivity

![Graph showing the trend in Transitivity from 1940 to 2000.]

Activity

![Graph showing the trend in Activity from 1940 to 2000.]

Popularity

![Graph showing the trend in Popularity from 1940 to 2000.]

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Supreme Court Citations
Results: Predictive Performance

- Randomly split dyads 80/20 into training and test sets
- Estimate models using training set, then predict test set
- This process was repeated ten times
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Conclusion

Key Findings
1. Citation is characterized by reciprocity and transitivity
2. Dependence effects improve models of citations
3. c-TERGM represents comprehensive method
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1. Citation is characterized by reciprocity and transitivity
2. Dependence effects improve models of citations
3. c-TERGM represents comprehensive method

Limitations

1. Do not consider the signs of the citations
2. We miss recent terms
3. Case emergence considered exogenous
Questions or Comments?

I can be reached at ted.hsuanyun.chen@gmail.com.

A copy of the slides will be available at my website: https://tedhchen.com or our project github page: https://github.com/desmarais-lab/Supreme_Court_Citation(Network).
The likelihood of the c-TERGM is given by

\[
l(\theta, C_{\leq T}) = \prod_{t=1}^{T} \frac{\exp[\theta' h(C_t, C_{<t})]}{\sum_{C_t^* \in C_t} \exp[\theta' h(C_t^*, C_{<t})]}.
\]  

(1)

Decomposition:

\[
\begin{aligned}
\mathbf{h}(C_t, C_{<t}) & \quad \text{Net Stats} \\
\theta & \quad \text{Effects} \\
\exp[\theta' h(C_t^*, C_{<t})] & \quad \text{exp} \\
\sum_{C_t^* \in C_t} \exp[\theta' h(C_t^*, C_{<t})] & \quad \text{Normalizer}
\end{aligned}
\]

\[
+ \text{Weight}
\]

\[
\mathbf{h} \text{ can capture virtually any form of interdependence among the edges}
\]

+ covariates
### Issue Areas

<table>
<thead>
<tr>
<th></th>
<th>Issue Area</th>
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<th>Issue Area</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Criminal Procedure</td>
<td>8</td>
<td>Economic Activity</td>
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<tr>
<td>2</td>
<td>Civil Rights</td>
<td>9</td>
<td>Judicial Power</td>
</tr>
<tr>
<td>3</td>
<td>First Amendment</td>
<td>10</td>
<td>Federalism</td>
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<tr>
<td>4</td>
<td>Due Process</td>
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<td>Interstate Relations</td>
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<td>Privacy</td>
<td>12</td>
<td>Federal Taxation</td>
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<td>6</td>
<td>Attorneys</td>
<td>13</td>
<td>Miscellaneous</td>
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<td>7</td>
<td>Unions</td>
<td>14</td>
<td>Private Action</td>
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