Supplemental Appendix for "Partisan Policymaking in the Extended Party Network: The Case of Cap and Trade Regulations"

Zachary Albert*

* *University of Massachusetts, Amherst, USA*; zalbert@polsci.umass.edu

1. Actor Sampling Procedure

The sample of policy actors examined here includes a wide range of interest groups, think tanks, and members of Congress. While the main focus of this paper is the role of partisan organizations in the policy process, a considerable number of centrist groups were also included. To avoid a biased sample, preexisting lists of organizations and members of Congress were utilized to compile a list of relevant actors. First, the interest group sample was defined by combing Project Vote Smart's *National Special Interest Groups* database, which lists all organizations that publish issue positions or endorse candidates during elections. This selection criterion provides an initial indication that these groups are active in the political process beyond simply donating to candidates. Project Vote Smart has categorized these organizations, based on their mission statements, into ideological or policy domains. Here, the sample of interest groups includes organizations coded as conservative or liberal as well as those active in the policy domains of Agriculture and Food, Business, Energy, Environment, Labor, and Oil and Gas.

The think tank sample comprises organizations listed on the University of Pennsylvania's 2008 to 2014 *Global Go To Think Tank Index Reports*. These reports rank think tanks according to 28 criteria measured by international surveys of roughly 7,500 scholars, public and private donors, policymakers, and journalists. From these reports, the sample was defined by identifying each organization ranked among the most influential American think tanks in five categories: Domestic Economy, Energy and Resources, Environment, International Economy, and Science and Technology.

Data from the *Federal Election Commission (FEC)* was collected in order to identify the partisanship of interest group contributions[1], while the partisanship of each think tank was

[1]Specifically, interest groups whose affiliated PAC contributed more than 60 percent of its donations to Democratic (Republican) candidates were coded as liberal (conservative), and groups that gave less than 60 percent of their contributions to candidates from a single party were coded as centrist.

hand coded by undergraduate research assistants based on their mission statement.[2] Finally, the sample of formal party members was collected from Lindsey Cormack's (2017) *DCinbox*, a database of all MC e-mail newsletters since 2009. Any member who discussed the issue of cap-and-trade in these e-mail correspondences was included in the sample. Table 1 displays the interest groups and think tanks in the final sample, and Table 2 lists the members of Congress (starred actors were included in the final diffusion network).

Interest Group and Think Tank Sample

Interest Groups	Issue Area	Ideology
Americans for Democratic Action	General Liberal	Liberal
Audubon Society*	Environment	Liberal
Citizens for Global Solutions*	Environment	Liberal
Clean Water Action	Environment	Liberal
Defenders of Wildlife*	Environment	Liberal
Environment America*	Environment	Liberal
Environmental Defense Fund*	Environment	Liberal
League of Conservation Voters*	Environment	Liberal
National Wildlife Federation*	Environment	Liberal
Natural Resources Defense Council*	Energy	Liberal
Nature Conservancy*	Environment	Liberal
Sierra Club*	Environment	Liberal
60 Plus Association	General Conservative	Conservative
American Conservative Union	General Conservative	Conservative
American Forest and Paper Association	Environment	Conservative
Americans For Prosperity	General Conservative	Conservative
Eagle Forum*	General Conservative	Conservative
Independent Petroleum Association of America*	Oil and Gas	Conservative
National Association of Manufacturers*	Business	Conservative
National Taxpayer Union*	General Conservative	Conservative

Continued on next page

[2]Think tanks were coded as either liberal, conservative, or centrist – according to the coding scheme developed by (Rich, 2004) – with liberal groups classified as Democratic EPN members and conservative groups as part of the Republican EPN. Liberal think tanks have mission statements that express a desire to use government programs to overcome economic, social, or gender inequalities; express concerns for group-based social justice; seek environmental protections and sustainability; and/or advocate for lower defense spending and limited military intervention. Conservative think tanks advocate for free market solutions; promote limited government; express concern for individual liberties; seek to protect traditional family values or religious freedom; and/or aim to protect national interests through a strong military. Centrist think tanks are those groups without a discernible ideological approach and whose mission statement does not fit either the liberal or conservative coding scheme.

Table 1 – *Continued from previous page*

Interest Group and Think Tank Sample		
United States Chamber of Commerce*	Business	Conservative
Consumer Alliance for Energy Security*	Energy	Centrist
National Parks Conservation Association*	Environment	Centrist
American Energy Alliance*	Energy	Centrist
Think Tanks		
Belfer Center*	Environment	Liberal
Center on Budget and Policy Priorities*	Economy	Liberal
Center for Global Development*	Environment	Liberal
Demos US*	Economy	Liberal
Earth Institute at Columbia University*	Environment	Liberal
Independent Institute*	General	Liberal
International Food Policy Research Institute*	Environment	Liberal
Pew Center on Global Climate Change*	Environment	Liberal
RAND Corporation*	General	Liberal
Resources for the Future	Energy and Environment	Liberal
World Resources Institute*	Energy and Environment	Liberal
Worldwatch Institute*	Environment	Liberal
Acton Institute*	Economy	Conservative
American Enterprise Institute*	General Conservative	Conservative
Cato Institute*	General Conservative	Conservative
Competitive Enterprise Institute	General Conservative	Conservative
Heritage Foundation*	General Conservative	Conservative
Manhattan Institute*	General Conservative	Conservative
Mercatus Center*	General Conservative	Conservative
National Center for Policy Analysis*	Economy, Energy	Conservative
Reason Foundation*	General	Conservative
Aspen Institute*	General	Centrist
Atlantic Council of the United States*	Energy	Centrist
Carnegie Endowment for International Peace	Environment	Centrist
Council on Foreign Relations*	General	Centrist
Economic Policy Institute*	Economy	Centrist
Independent Institute*	General	Centrist
Information Technology and Innovation Foundation*	Science and Tech	Centrist
New America Foundation*	Science and Tech	Centrist
Peterson Institute for International Economics*	Economy	Centrist
Pew Research Center*	General	Centrist
Technology, Entertainment, Design	Science and Tech	Centrist

Table 1: Sample of interest group and think tank actors. Issue area information comes from Project Vote Smart and the Civil Society's Program at Penn State, respectively. Starred groups are included (i.e. have ties) in the final diffusion network.

Formal Party Member Sample					
Democrats		**Republicans**			
Rep. Boccieri*	Rep. Mitchell*	Rep. Alexander*	Rep. Flores	Rep. McCaul*	Rep. Thompson*
Rep. Capps*	Rep. Moore*	Rep. Austria*	Rep. Forbes*	Rep. McCotter*	Rep. Thornberry*
Rep. Christensen*	Rep. Pelosi*	Rep. Bachmann*	Rep. Granger*	Rep. Moran*	Rep. Upton*
Rep. DeGette*	Rep. Perriello*	Rep. Bachus*	Rep. Graves*	Rep. Myrick	Rep. Walberg*
Rep. Dingell*	Rep. Polis*	Rep. Biggert*	Rep. Griffith	Rep. Neugebauer*	Rep. Westmoreland
Rep. Donnelly*	Rep. R. Brady*	Rep. Blackburn*	Rep. Hall	Rep. Olsen*	Rep. Whitfield*
Rep. Engel*	Rep. S. Murphy*	Rep. Blunt*	Rep. Herger*	Rep. Petri	Sen. Collins*
Rep. Eshoo*	Rep. Sablan*	Rep. Boehner*	Rep. Hurt*	Rep. Pitts *	Sen. Isakson*
Rep. Himes*	Rep. Visclosky*	Rep. Boustany*	Rep. Issa*	Rep. Rehberg	Sen. Johanns*
Rep. Hirono*	Rep. Wilson*	Rep. Cantor	Rep. Jenkins*	Rep. Rogers*	Sen. Roberts
Rep. Honda*	Sen. Dorgan*	Rep. Capito*	Rep. K. Brady*	Rep. Rose*	Sen. Thune*
Rep. Inslee*	Sen. Lincoln*	Rep. Crapo*	Rep. Lucas*	Rep. Sensenbrenner*	Sen. Vitter*
Rep. Klein*	Sen. Nelson*	Rep. Culberson*	Rep. Manzullo*	Rep. Simpson*	Sen. Wicker*
Rep. McMahon*		Rep. Davis*	Rep. Marchant*	Rep. T. Murphy*	

Table 2: Sample of formal party members, by party. Includes all members who sent e-mail updates about the issue of cap-and-trade. Starred actors are included (i.e. have ties) in the final diffusion network.

2. Text Cleaning and Pre-Processing

The corpus of documents collected for this project initially contained a great deal of "noise", or words and symbols lacking substantive content. In order to trace the flow of *meaningful* discourse across actors, I employed several common text cleaning techniques. First, I removed from the corpus all numbers and punctuation, general *stop words* (or words that are substantively insignificant, like "a" and "please"), and corpus-specific stop words (or words – like "American Clean Energy" – that all actors are likely to use). Second, I *stemmed* words to their base or root form (e.g. "debate", "debating", and "debated" are all transformed to their root, "debat*"), ensuring that words that differ in tense but not in substance are comparable. Third, in the analysis of these documents I focus on bigrams (two-word phrases), rather than single words, as the unit of analysis. This decision focuses attention on more substantively meaningful *concepts* and helps further eliminate noise in the documents.

Finally, I weighted the remaining bigrams in the corpus to focus attention on the most substantively significant terms, or those terms that are relatively rare but still appear in an analytically significant number of publications. Specifically, I rely on the *term frequency-inverse document frequency* (TF-IDF) statistic to weight bigrams according to their relative importance in the overall corpus (see Sinclair (2016) for more on this type of weighting). Practically, this means that each bigram in the corpus is weighted so that extremely common and extremely rare words are both discounted, giving greater weight instead to those terms that substantively distinguish different documents from similar documents.

The result of this text processing is a *document-term matrix* with rows corresponding to each bigram, columns corresponding to each actor in the corpus, and cells containing the first date on which the actor used that term. Because the average actor did not use most terms, the matrix is quite sparse. To account for this sparsity – and to further focus on analytically meaningful discourse in this study – the weights for each bigram were averaged across all actors and only those bigrams in the top 5 percent of the distribution were retained.

3. ERGM Model Diagnostics

Exponential random graph models are powerful statistical tools when there is reason to believe that the probability of a tie forming between two actors in a network is dependent upon both the structure of the overall network and actor or dyadic attributes (Cranmer and Desmarais, 2016). Theory leads us to expect that both of these conditions are met in the case of inter-actor discursive influence. However, ERGMs are only useful if they are not degenerative (i.e. if they converge). Degeneracy in these models arises from a lack of fit due to both poor model specification as well the nature of the observed data (Morris and Li, 2015).

There are several ways to test for model convergence and to ensure that the model is a good representation of the observed network. One is to compare the sample statistics used by the MCMC sampler to the statistics in the observed network. Figure 1 presents such a comparison for each coefficient in the model. The lefthand figure for each term is a trace plot of the observed statistics (black line) and the simulated sample statistics at each step (blue lines). For every network statistics, the simulated values fluctuate evenly around the observed value, indicating that the model has converged and is not degenerate. The righthand figure for each coefficient presents this information in a slightly different way, plotting the distribution of the difference between the observed statistic and the simulated values. The roughly normal distributions, centered on zero, suggest that the model has in fact converged around the observed values.

As a check of model fit, we can assess whether the distributions of statistics simulated by the model match the means of the observed network terms. Figure 2 provides this comparison, with the observed means for network statistics plotted as data points on the black line and the distributions of simulated model statistics represented by boxplots. If a model has good fit with the observed data, the black line should roughly track the median simulated value for each statistic, represented by the horizontal black line in each boxplot.

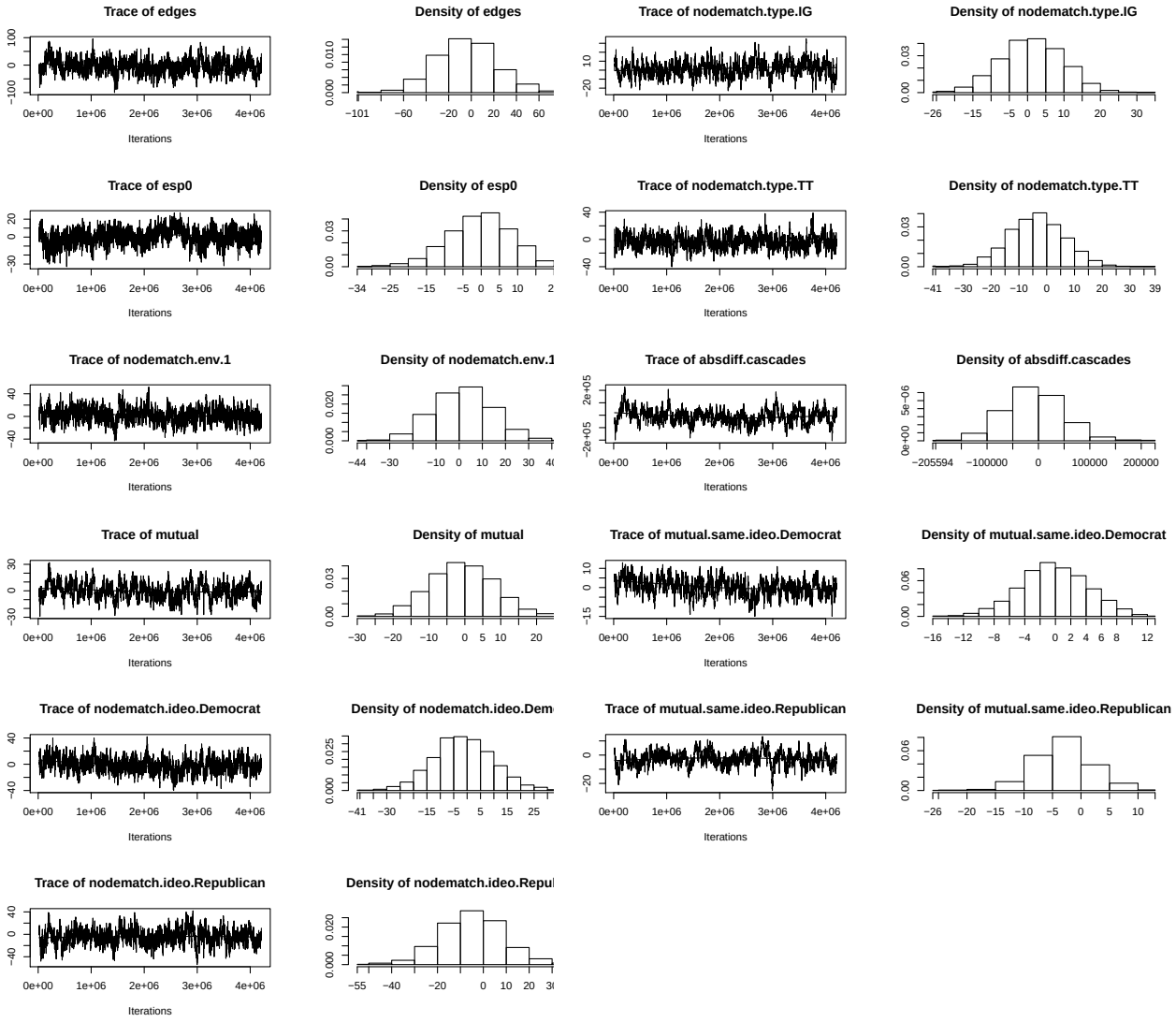

Figure 1: MCMC diagnostic statistics for ERGM terms. For each coefficient, the lefthand figure is a trace plot with the solid black line representing the observed statistic for the term and the blue data points representing the MCMC simulated sample statistics at each step. The righthand figure is a density plot of the difference between the observed and simulated values.

Indeed, for each model statistic the true value falls well within the interquartile range, or between the 2nd and 3rd quartiles. For certain variables – such as Edgewise Shared Partners, Mutual Reciprocity, and Both Democrats – the true value is almost exactly equal to the simulated median. For others – such as Both Environmental, Both Interest Groups, and Mutual x Both Republican – the observed values are relatively further from the simulated means but still fall within an acceptable range. In short, Figure 2 suggests that the model adequately reproduces the observed network properties or, in other words, the model has good fit with the observed data.

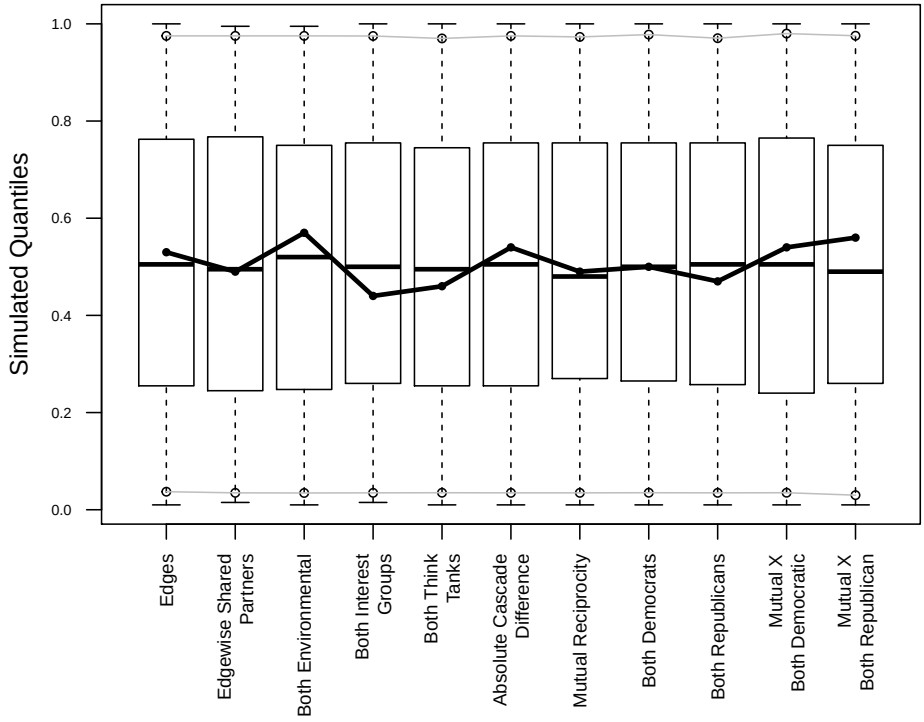

Figure 2: Goodness-of-fit for model statistics. Data points on the black line represent the observed means for each statistic, while the boxplots depict the distribution of simulated statistics from the model. Models with good fit have observed statistics close to the simulated median (the horizontal black line in each boxplot).

4. Cap-and-Trade Narratives

The influence pathways identified in this study represent the dissemination of meaningful partisan narratives across interest groups, think tanks, and members of Congress. While these narratives may adopt similar language (i.e. actors sometimes utilize similar bigrams), actors with different partisan preferences frequently advanced contradictory narratives about the effects of cap-and-trade policy. Within each partisan coalition, these narratives were fairly consistent and flowed from prominent outside organizations to members of Congress, who often adapted these narratives to fit their particular districts. Table 3 provides further information on these narratives, including examples from a variety of actors across time.

Partisan Cap-and-Trade Narratives	
Costs and Benefits of Cap-and-Trade Regulations	
Democratic Narrative: The proposed regulations would have environmental, economic, and foreign policy benefits.	**Republican Narrative:** The proposed regulations would place unfair economic burdens on American consumers and industries but would not dramatically improve the environment.
• Regulations "will simultaneously put the nation on the emission reduction pathway needed to prevent the worst global warming impacts, meet other objectives such as reducing our oil dependence, and promote continued strong economic growth." (National Resource Defense Council, 2007)	• "Only in Congress could legislators propose to raise energy prices..., require firms to use nonexistent technology, mandate greenhouse gas emissions back to 19th century levels – and then describe the bill as an economic rescue package." (Manhattan Institute, 2009)
• The proposed legislation offered "the most emission reductions at the lowest cost to society." (Environment America, 2008)	• Previous regulations resulted in "windfall profits for emitters and higher energy prices for consumers, and, until the advent of the global economic recession, almost no reduction in carbon dioxide emissions." (Reason Foundation, 2009)
• Cap-and-trade regulations would "jolt our nascent economic recovery" and "foster development of our clean energy economy, reduce our dependence on dirty and dangerous fossil fuels, and forestall climate change." (Rep. Jay Inslee, 2010)	• Cap-and-trade regulations "will result in energy shortages and high energy prices, which in turn means higher prices for just about everything else... [T]o add insult to injury, by itself ACES will not affect global greenhouse gas concentrations in any meaningful way." (US Chamber of Commerce, 2009)
	• "U.S. emission reductions [are] futile unless China and India also acted." (Cato Institute, 2010)
Appropriate Body for Regulatory Implementation	
Democratic Narrative: Existing federal agencies – namely the EPA – should be charged with policy implementation.	**Republican Narrative:** The EPA has distorted existing environmental regulations and cannot be trusted to implement cap-and-trade. Instead, the private sector should lead any environmental protection efforts.

Continued on next page

Table 3 – *Continued from previous page*

Partisan Cap-and-Trade Narratives	
• Working through the EPA and the CAA "will simplify the legislative task, because it takes advantage of many tried-and-true underlying components of the current Clean Air Act that do not have to be recreated in a new statute... The EPA also has the most experience administering market-based emissions regulation and emissions performance requirements." (National Resources Defense Council, 2007)	• "[I]t is of critical importance that Congress not overlook the 'wild card' of potentially duplicative regulation of greenhouse gases under the CAA. We hope Congress will ultimately acknowledge that the CAA is simply not compatible with the regulation of greenhouse gases, and that it should enact a legislative fix removing greenhouse gases from the purview of the CAA." (US Chamber of Commerce, 2008)
• "Climate legislation could be vastly simplified by leaving more of the implementation decisions to the U.S. Environmental Protection Agency or other agencies" because the "EPA can be trusted to use its discretion wisely." (Pew Center on Global Climate Change, 2010)	• Regulating carbon dioxide – "a gas we emit with each breath" – would represent "an unprecedented expansion of the Clean Air Act far beyond anything intended by Congress." (Rep. Wally Herger, 2010)
	• "There has been little notice of how an approach that is supposed to be an alternative to command-and-control regulation will involve a massive interagency bureaucracy to execute it, with undoubtedly substantial compliance costs for the private sector... [T]he bill requires the EPA's administrator to perform over six hundred tasks in connection with the operation of the law. One wonders whether the EPA administrator will have time for any other environmental issues." (American Enterprise Institute, 2009)
	• A free market approach built around technological advancement "offers the market the opportunity to find the winners and losers in future alternative energy sources." (Heritage Foundation, 2007)
Value of Incentivizing Clean vs. Traditional Energy Production	
Democratic Narrative: Increased renewable energy production – incentivized by regulations – would not only limit global warming but also have positive economic effects.	**Republican Narrative:** Incentivizing clean energy production at the expense of traditional energy sectors would be economically disastrous and technological infeasible.
• "Shifting America's entire energy market toward clean, renewable" energy sources is necessary "to solve the climate crisis." (Environmental Defense Fund, 2009)	• "When people are hurting, and struggling to afford gasoline, food, and other necessities, common sense requires that we draw upon America's own vast reserves of oil and natural gas." (American Enterprise Institute, 2008)
• The "current dependency on oil and other fossil fuels is putting the squeeze on American families" while the "jobs that benefit from the clean energy industry touch every aspect of America's economy." (National Wildlife Federation, 2008)	• "The problem is that there are no renewables available that to any meaningful extent can take the place of coal, oil and natural gas, which produce 85 percent of our energy. The result, Americans will pay a penalty for their use of needed carbon-based fuels." (Rep. Glenn Thompson, 2010)

Table 3: Alternative partisan narratives – with examples from the corpus of documents – regarding the proposed cap-and-trade regulations. Within each EPN, these narratives tended to represent common arguments and talking points, while across the two parties common bigrams tended to be employed in entirely contradictory ways.

References

Cormack, Lindsey. 2017. "DCinbox – Capturing Every Congressional Constituent E-newsletter from 2009 Onwards." *The Legislative Scholar* 2(1):27–34.

Cranmer, Skyler J. and Bruce A. Desmarais. 2016. "A Critique of Dyadic Design." *International Studies Quarterly* 2(60):355–362.

Morris, Martina and Ke Li. 2015. Degeneracy, Duration, and Co-evolution: Extending Exponential Random Graph Models (ERGM) for Social Network Analysis PhD thesis University of Washington.

Rich, Andrew. 2004. "Think Tanks, Public Policy, and the Politics of Expertise.".

Sinclair, Barbara. 2016. *Unorthodox Lawmaking: New Legislative Processesin the US Congress*. Washington, DC: CQ Press.