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Estimating Multilayer Network Effects and Their Impact on Congressional Polarization

This paper proposes a new method to identify and estimate the parameters of a congressional speech model where members of Congress choose the optimal political ideology expressed by their speeches. Crucially, legislators' preferences over the political ideology in their discourses depend on the speeches' policy positions of their peers. We use a novel approach to define legislators' peers using a multilayer network data structure where individuals form different types of social and professional connections, e.g., cosponsorship, committees, and caucuses membership for the U.S. Congress context. Because we use observational data to define the links in our multilayer network, we allow those relationships to be formed endogenously in the system. We propose an original strategy to uniquely identify heterogeneous network effects by characterizing a subset of individuals' attributes in the population with a stochastic process where dependence vanishes in the multilayer network space. In particular, we assume that interest groups' contributions and their average contributions to state politicians affect legislators' speeches. Yet, those average contributions are uncorrelated with the unobserved characteristics of other legislators far apart in the network space. We provide an interest group contributions game and a multilayer network formation model under which the main identifying assumptions hold. Under the proposed theoretical framework, we offer a new multilayer measure of distance that provides a source of exogenous variation we use to form moment conditions for identification. We present a Generalized Method of Moments estimator that uses the main identifying assumptions as input and is consistent and asymptotically normal at the standard rate. We characterize the asymptotic variance-covariance matrix that considers the intrinsic network dependence among individuals for correct inference. We use the model's parameters to perform a counterfactual analysis to explain the effects of interest groups' contributions and the presence of spillovers in expressed political ideology on congressional polarization.

About the Speaker

Dr. Carrubba is the Samuel Candler Dobbs Professor and is the founding director and Department Chair of Quantitative Theory and Methods of Emory University. Previously he also served as the Chair of the Department of Political Science of Emory University. He earned his PhD from Stanford University in 1998 and previously served as an assistant professor at SUNY–Stony Brook. His specialization is in comparative legislative and judicial politics, comparative institutions, European politics, and game theory. Current research projects include studies of legislative behavior and roll-call vote analysis, the design and change of judicial institutions (with application to the European Court of Justice), and statistical tests of game theoretical models.