RESEARCH STATEMENT

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My research lies at the intersection of the fields of political economy, public economics, and applied econometrics. As described in the recent book by Persson and Tabellini (2000), a vibrant literature has developed in theoretical political economy over the previous two decades. This research has developed game theoretical models of the political process and has examined the role of various economic and political factors in the endogenous determination of policies. This theoretical literature, however, has in many cases outpaced empirical research in this area, and the link between the theoretical and empirical literatures has often been weak. Moreover, this political economy literature has often not been well connected to empirical research in the field of public economics, which has often ignored the potential endogeneity of policies. In short, my research agenda aims to bridge these gaps by using theoretical models of the political process in order to provide new insights into empirical questions in the fields of political economy and public economics.

In my research, this link between theoretical and econometric modeling has taken a variety of forms depending upon the question at hand. In some cases, such as in my work on legislative bargaining and racial profiling, I use theoretical models to provide simple testable predictions, which are then examined empirically. In other cases, the link between the theory and empirical work is even tighter. In my work on school district consolidation, for example, I develop an equilibrium empirical model of mergers that is rooted in the economics of matching. I have also used theoretical models of the political process, as in my research on the effect of intergovernmental grants on local spending choices, in order to identify endogeneity problems and to motivate instrumental variables to correct for such problems. Finally, I have used theoretical models in order to provide a framework for conducting empirical welfare analysis, as evidenced in my recent work on socially optimal districting.

Below I describe the substance of my research in several areas. The first area applies insights developed in the theoretical literature on legislative bargaining in order to empirically investigate the role of Congressional institutions in the allocation of federal funds. I next describe my work with Stephen Coate on socially optimal districting. The third section describes my work with Nora Gordon on political integration with an application to school district consolidation. I then describe additional papers on momentum in Presidential primaries, racial profiling, the effect of elections on equity markets, and the effect of fiscal institutions on policy outcomes.

1 Congressional Bargaining over Federal Funds

1.1 Common Pool Problems

At the heart of this research agenda is the common pool problem associated with the provision of local public goods by a central legislature. In particular, local public goods financed from a national tax base provide concentrated benefits to recipient jurisdictions but disperse costs, creating incentives for legislators to use their influence in order to increase own-district spending but to restrain spending in other districts due to the associated tax costs. While these common pool incentives underpin a variety of theoretical analyses, which tend to predict inefficiencies in the allocation of public goods, there is little direct evidence that individual legislators respond to such incentives. In "**Parochial Interests and the Centralized Provision of Local Public Goods: Evidence from Congressional Voting on Transportation Projects**" [**9**], I directly test for reactions to such incentives. In particular, I analyze a vote in the U.S. House of Representatives over whether to strip a set of transportation projects from a larger bill. I first develop measures of project spending in each district and the district-specific costs associated with higher gasoline tax liabilities. The empirical results provide evidence that legislators do respond to common pool incentives: the probability of supporting funding for the projects is increasing in own-district spending but is decreasing in the tax burden associated with aggregate spending. Having found that legislators do respond to such incentives, I then use the parameter estimates in order to conduct an empirical welfare analysis. In particular, I calculate the project sizes that legislators would choose for their districts were they forced to fully internalize the associated tax costs. These efficient spending levels are smaller in aggregate than the observed spending levels, and I calculate significant deadweight loss associated with this overspending.

1.2 Bargaining Power

The desire for each legislator to simultaneously maximize own-district spending but to minimize spending in other districts creates a fundamental conflict within legislatures. How will this conflict between legislators be resolved? In answering this question, Baron and Ferejohn (1987,1989) develop a seminal model of sequential legislative bargaining in which legislators are randomly selected to make proposals under majority rule. In equilibrium, this conflict between legislators is resolved in favor of proposers, who use their control over the legislative agenda in order to secure disproportionate spending for their districts. While this model has been employed in a variety of theoretical applications, there is little empirical work attempting to test the key predictions of this model. In **"Estimating the Value of Proposal Power" [10],** I aim to fill this gap in the literature by investigating the role of proposal power in the cross-district allocation of projects funded by Congress. Given my empirical motivations, I first generalize the Baron and Ferejohn model by incorporating groups of proposers, or committees, and recognition probabilities that vary between current proposers and other legislators. In the context of this model, I then develop a measure of the value of pro-

posal power and show that it can be estimated via a simple regression of project spending on an indicator for committee representation. Moreover, I use the theoretical model to generate quantitative restrictions on the value of proposal power.

The empirical application in this paper examines the role of the transportation authorization committee in the allocation of projects earmarked in the 1991 and 1998 transportation authorization bills. The empirical evidence supports the key qualitative prediction of the bargaining model: members with proposal power, those sitting on the transportation authorization committee, secure more project spending for their districts than do other representatives. This finding is robust to two corrections for possible legislator self-selection onto committees: fixed effects and instrumental variables. Support for the quantitative restrictions on the value of proposal power, which are more powerful than the qualitative restrictions, is more mixed. I then empirically address several alternative models of legislative behavior, including partisan models, informational roles for committees, and models with appropriations committees.

While the above paper focuses on the role of proposal power in resolving the conflict over the allocation of federal funds,"**Legislative Representation, Bargaining Power, and the Distribution of Federal Funds: Evidence from the U.S. Senate" [11]** investigates another potential source of political power, the size of delegations, in Congress. While representation in the U.S. House is proportional to population, each state has two Senators, and many have hypothesized that this disproportionate representation provided to small states in the Senate may lead to a bias in the allocation of federal funds. To further investigate this potential small state bias, I first develop a legislative bargaining model that allows for variation in both delegation sizes and state population. The model predicts that, holding population constant, an increase in state delegation sizes will lead to higher federal spending being located in the state, and this effect can be decomposed into two underlying channels: a proposal power channel and a vote yield channel, the latter of which reflects the fact that larger delegations are more attractive coalition partners from the perspective of the proposer. The empirical section analyzes the cross-state distribution of projects earmarked in Congressional appropriations bills. We use within-state, cross-chamber variation by comparing projects earmarked in Senate bills to those in House bills and find a small state bias that is significantly larger than those measured using the methods in the existing literature. Building upon this evidence of a small state bias, I then empirically evaluate the role of the two theoretically-identified underlying channels and find that, taken together, these can explain the entirety of the measured small state bias. Finally, an empirical welfare analysis demonstrates the inefficiency of the observed small state bias and suggests that, if anything, large states should be over-represented in central legislatures.

1.3 Flypaper Effect

Contrary to simple theoretical models, which predict an equivalence between grants and private income, a long line of studies has found a positive correlation between federal grants and public spending by recipient governments. That is, public monies stick in the public sector,

and this finding has thus become known as the flypaper effect. In "**Endogenous Federal Grants and Crowd-out of State Government Spending: Theory and Evidence from the Federal Highway Aid Program**" [**12**], I re-examine this finding in the context of a framework with endogenously determined grants. In particular, I first develop a legislative bargaining model in which states are heterogenous in their preferences for public goods. In the model, a central legislature first determines the allocation of federal grants across states; taking these grants as given, jurisdictions then set the level of public spending. The model documents an incentive for the proposer to include in the coalition legislators from those states with strong preferences for public goods, and, to the extent that such preferences are unobserved by the econometrician, we argue that this correlation between preferences and grant receipts has likely biased existing work towards measuring a flypaper effect. To correct for such endogeneity, the model motivates instruments based on the political power of delegations in the legislature.

The empirical application in this paper studies a panel dataset of federal highway aid to state governments. Using the OLS regression methods of the existing literature, which implicitly assume an exogenous distribution of federal grants, our analysis reports a flypaper effect similar to that found in the existing literature. As motivated by the theoretical model, we then develop three measures of the political power of state Congressional delegations: committee representation, affiliation with the majority party, and length of service, or tenure. Using these measures as instruments for grant receipts, the measured flypaper effect disappears, and grants do appear to crowd-out local contributions to public spending. These findings suggest that the endogeneity of federal grants has contributed to the measured flypaper effect in the existing literature.

2 Redistricting

Given the key role that political parties play in shaping legislation, the drawing of district lines for electing legislators in the United States has become a contentious process and has attracted attention among voters, politicians, and parties alike. This considerable public interest in districting has given rise to a large political science literature, which analyzes and evaluates districting plans and the redistricting process. In this literature, districting plans are characterized by their associated seat-vote curve, which relates the fraction of seats won by a party to their support among voters. The key properties of a seat-vote curve are its *partisan bias,* which measures how the districting advantages one or the other party, and *responsiveness*, which measures how the composition of the legislature changes in response to changes in citizens' voting behavior.

While this literature is certainly interesting from a positive perspective, the normative lessons to be drawn from its findings are unclear. Is partisan bias necessarily bad? What is the optimal degree of responsiveness? In **"Socially Optimal Districting: A Theoretical and Empirical Exploration"** [**6**], we develop a welfare economics approach to answering

these and related questions.[1] To understand optimal districting, we first develop a simple model of legislative elections designed to capture salient features of the U.S. political system. In the context of this model, we characterize the *optimal seat-vote curve,* which describes the ideal relationship between votes and seats. Interestingly, this optimal seat-vote curve is linear and can thus be fully characterized by its partisan bias and responsiveness parameters. We then show that, under a weak condition, there exist districtings under which the seat-vote curve is optimal, and the nature of these optimal districtings is described.

The paper then uses the model to develop an empirical methodology for computing actual and optimal seat-vote curves and for measuring the potential welfare gains that would emerge from implementing optimal seat-vote. This method is applied to analyze districting plans in place during the 1990s to elect U.S. state legislators. We find that the districtings used by the states in our data set lead to electoral systems that are overly responsive to changes in voters' preferences. While there is significant variation across states, the potential welfare gains from optimal districting are on average small relative to the overall surplus generated by legislatures. This appears to be because state districting plans are reasonably close to optimal rather than because there are little aggregate gains to be had from varying districting plans. Interestingly, implementing proportional representation would lead to welfare gains in all states and would produce welfare levels quite close to those achieved with socially optimal districting.

3 Political Integration

The number of school districts in the United States has plummeted from around 120,000 in 1940 to under 15,000 today. What explains the pattern of school district consolidations over this period? Why do some districts voluntarily integrate, while others choose to remain small? How do districts that do merge choose their partners? In attempting to answer these and related questions, a theoretical and empirical literature on political integration has investigated the role of a variety of factors, such as economies of scale, heterogeneity, and state policy. In empirically evaluating the impact of these factors in consolidation choices, researchers are immediately confronted with several methodological issues. First, mergers must typically be approved by voters in both districts, and the decision-making is two-sided; standard discrete choice models, such as the logit, are designed for single agent decision making. Second, in addition to deciding whether or not to merge, districts typically have multiple borders and thus must decide with whom to merge. Third, merger decisions are spatially interdependent. That is, if two districts merge, then the choice set is altered for all adjacent districts. Unfortunately, we know of no existing estimators that simultaneously account for all three of these key features of typical merger protocol.

To overcome these limitations of existing estimators, in **"The Causes of Political Integration: An Application to School District Mergers"** [**7**] we develop an econometric

[1] This paper combines research previously reported in "**Socially Optimal Districting"** [**4**] and **"Socially Optimal Districting: An Empirical Investigation" [5].**

model of discrete choice that accounts for these three features of the merger protocol. This approach is rooted in the economics of matching and thus allows for two-sided decision making, multiple potential partners, and spatial interdependence. In the context of this model, we show that, under a seemingly reasonable restriction on preferences, which we refer to as *symmetry in match quality*, a unique stable matching exists. Moreover, this stable matching can be calculated via a simple iterative algorithm. Finally, we develop a simulation-based estimator, which uses this iterative algorithm in order to calculate the probability of a merger between any two adjacent districts in a stable matching. To illustrate its value, we then apply this methodology through an analysis of school district mergers in the state of Iowa, which experienced a wave of consolidation during the early 1990s. We use a pre-consolidation school district map in order to identify all potential mergers, which can occur only between adjacent districts. To examine the role of district characteristics in these mergers, we have also collected data on pre-merger district characteristics, such as population, demographics, and property values. Finally, in order to examine the role of the state government, we have calculated the state-level financial incentives specific to each potential merger. Our results demonstrate the importance of economies of scale as well as diseconomies of scale in explaining the patterns of mergers in Iowa during this time period. We also find an important role for both state financial incentives in encouraging these mergers and various measures of heterogeneity, which serve as a repelling force in merger decisions.

In a related paper, **"The Effects Of School District Consolidation on Educational Cost and Quality"** [**8**], we examine the effects of these consolidations in Iowa. The main effects of the consolidations eligible for state aid are exactly those predicted by the rewards themselves: temporarily increased state aid and decreased property taxes. State consolidation aid slowed the adoption of a new local revenue source, the instructional support levy, only in cases where districts received state aid for consolidating. We identify no effect of consolidation on instructional spending per pupil, class size, or the high school dropout rate, regardless of whether the consolidation was eligible for the state incentives.

4 Other projects

4.1 Sequential Elections

In **"Momentum in Presidential Primaries"** [**15**], we investiage the role of momentum and social learning in sequential voting systems. In the econometric model, voters are uncertain over candidate quality, and voters in late states attempt to infer the information held by those in early states from voting returns. Candidates experience momentum effects when their performance in early states exceeds expectations. The empirical application focuses on the responses of daily polling data to the release of voting returns in the 2004 presidential primary. We find that Kerry benefited from surprising wins in early states and took votes away from Dean, who held a strong lead prior to the beginning of the primary season. The voting weights implied by the estimated model demonstrate that early voters have up to 20

times the influence of late voters in the selection of candidates, demonstrating a significant departure from the ideal of "one person, one vote." We then address several alternative, non-learning explanations for our results. Finally, we run simulations under different electoral structures and find that a simultaneous election would have been more competitive due to the absence of herding and that alternative sequential structures would have yielded different outcomes.

4.2 Racial Profiling

In **"A New Look at Racial Profiling: Evidence from the Boston Police Department" [1]**, we provide new evidence on the role of preference-based versus statistical discrimination in racial profiling using a unique data set that includes the race of both the motorist and the officer. We build upon the model presented in Knowles, Persico and Todd (2001) and develop a new test for distinguishing between preference-based and statistical discrimination. In particular, we show that if statistical discrimination alone explains differences in the rate at which the vehicles of drivers of different races are searched, then, all else equal, search decisions should be independent of officer race. We then test this prediction using data from the Boston Police Department. Consistent with preference-based discrimination, our baseline results demonstrate that officers are more likely to conduct a search if the race of the officer differs from the race of the driver. We then investigate and rule out two alternative explanations for our findings: officers are better at searching members of their own racial group and the non-random assignment of officers to neighborhoods.

4.3 Policy Platforms and Equity Prices

My paper **"Are Policy Platforms Capitalized Into Equity Prices? Evidence from the Bush / Gore 2000 Presidential Election" [13]** tests for the capitalization of policy platforms into equity prices using a sample of 70 firms favored under Bush or Gore platforms during the 2000 U.S. Presidential Election. Two sources of daily data during the six months leading up to the election are incorporated: firm-specific equity returns and the probability of a Bush victory as implied by prices from the Iowa electronic market. For this group of politically-sensitive firms, the daily baseline estimates demonstrate that platforms are capitalized into equity prices: under a Bush administration, relative to a counterfactual Gore administration, Bush-favored firms are worth 3 percent more and Gore-favored firms are worth 6 percent less, implying a statistically significant differential return of 9 percent. Estimates based on weekly returns are even stronger, suggesting a differential return of 16 percent. The most sensitive sectors include tobacco, worth 13 percent more under a favorable Bush administration, Microsoft competitors, worth 15 percent less under an unfavorable Bush administration, and alternative energy companies, worth 16 percent less under an unfavorable Bush administration. A corresponding analysis of campaign contributions, which allows for heterogeneity in the importance of policy platforms to the firms, supports the baseline estimates.

4.4 Supermajority Voting Requirements

A substantial literature, as summarized by Poterba (1996), has investigated the effect of state fiscal rules and institutions, such as balanced budget requirements and tax and expenditure limitations, on fiscal outcomes. This literature, however, has often suffered from policy endogeneity problems given that certain types of jurisdictions may be more likely to adopt these fiscal rules. My paper **"Supermajority Voting Requirements for Tax Increases: Evidence from the States," [15]** attempts to overcome these problems by using a theoretical model to identify and suggest corrections for these endogeneity problems in a study of supermajority voting requirements. In this theoretical model, legislatures controlled by a pro-tax party adopt a supermajority requirement in order to reduce the majority party agenda control. The propensity of pro-tax states to adopt supermajority requirements results in an underestimate of the true effect of these requirements on taxes. To correct this identification problem, the paper first uses fixed effects to control for unobserved attitudes and then employs instrumental variables that measure the difficulty of amending state constitutions. These results are significantly stronger than those found using the OLS methods of the existing literature, and the paper concludes that supermajority requirements have significantly reduced taxes.

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