Separation of Powers and New Public Spending*

A Theory of President-Congress Bargaining with an Application to the New Deal

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Abstract

We develop a model of American legislative politics to explain the shape of new public spending programs. In the model, the distribution of federal funds across regions of the country is the outcome of a bargaining game in which the President acts as the agenda setter and Congress bargains over the final shape of the spending bill. The model highlights the importance of (a) the American president being independently elected, which leads to a more balanced outcome than if proposal power was allocated to some member of Congress, and (b) the institutional rules within Congress, in particular the bicameral structure and the sequentiality of the legislative process. Finally, we illustrate our findings in the context of the distribution of New Deal spending.

Keywords: Political Economy, Legislative Bargaining, Presidential Politics, Public Spending, US Congress, New Deal.

JEL Codes: C78, D72, H11, H50, N42, P48.

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1 Introduction

In this paper, we develop a model of American legislative politics, and we use this model to explain the shape of new public spending programs. Specifically, we examine the role of the President, and the interaction between the President and Congress, in shaping the geographical distribution of new public spending. We do this by carefully considering, and formally modeling, the constraints faced by the President as a consequence of the separation of power between the executive and the legislature and the difference between the president’s objectives and the objectives of the members of Congress. Our model differs from most formal theories of legislative politics in that we are primarily interested in times of major change, in which the President functions as the *de facto* agenda-setter and Congress bargains over the final shape of the bills. As an example of such a period, we use the New Deal, in particular the programs enacted during President Roosevelt’s first “100 days” in office, to illustrate the implications of our theoretical results.

Our model highlights the importance of the American president being independently elected. More specifically, it demonstrates the importance of the president not being selected from any group, or coalition of groups, in Congress. The independent election of the president means that his proposals will be different from the proposals of any of the groups in Congress. For times when it is reasonable to think of the President as the *de facto* agenda-setter in legislative politics, our model predicts a distribution of spending that cannot be replicated with any member of Congress setting the agenda. In particular, with the president as the independently elected agenda-setter, we obtain a more balanced geographical distribution of spending, with all regions receiving some share of the outlays, than if the president was removed from the model and proposal power was allocated to some member of Congress.

While the modeling of the role of the president in distributive politics is perhaps the most novel feature of our model, Congress is by no means less relevant. The interaction between the President and Congress is at the heart of our analysis, and we formally model the way new spending bills move through Congress. Thus, we deliver insights into the institutional structure of Congress, which provides a link between our model and the traditional Congress-centric literature on distributive politics.\(^1\) More specifically, we use our model to demonstrate the importance of the institutional rules within Congress, in particular its bicameral structure and the sequentiality of the legislative process, in settings where Congress primarily functions as a constraint on the president. The existence of two chambers, with different geographical representations, implies that the president, if he wants his proposal to pass unaltered through

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\(^1\)See the work on legislative bargaining by Baron and Ferejohn (1989) and other, more recent, work like that on bicameralism and malapportionment by Ansolabehere, Snyder and Ting (2003).
Congress, has two qualitatively different types of proposals that he may choose from. He may choose to generate support in Congress by building a coalition which includes the same groups (regions) in both the House of Representatives and the Senate, or he may choose to build a coalition that includes different groups in the two chambers. Choosing the latter means choosing a more even distribution of funds; hence this is the choice that a president with particularly strong preferences for balanced allocations (i.e. equal of close to equal spending per capita over different regions) will make. The possibility to make such a choice exists because the geographical representation in the Senate differs from that of the House, combined with the fact that legislation moves through the two chambers *sequentially*, with spending bills first having to move through the House.

We illustrate our results in the context of a real-world period of major crisis and large-scale policy change. Specifically, we apply our theoretical framework to the distribution of New Deal spending. Using a formal model allows us to back out the preference parameters of the Roosevelt administration and to derive a number of counterfactuals to the actual legislative outcomes during the New Deal. In particular, we estimate what would have happened if the president, instead of being independently elected by the nation as a whole, had been elected from any of the groups in Congress. More generally, we show qualitatively how changes in the preferences of the president would have changed the distribution of spending following from the new programs enacted in the 1930s. We also use the model to illustrate how the institutions and rules, for instance the sequential nature of the bicameral legislative process, shaped the outcome.

At the most general level, our results may be situated in a comparison between parliamentary and presidential political systems. As described by Laver (2006), a key distinction, perhaps *the* key distinction, between parliamentarism and presidentialism is the fact that in parliamentary systems the government is chosen by, and accountable to, the parliament. In presidential systems, the government is typically appointed by the president, who is directly elected by the people. Exactly this distinction underlies the first of the theoretical results described above. The fact that we predict a balanced outcome, i.e., an outcome where all regions receive positive amounts of spending, would not be true if we modified the model in such a way that the president (government) was chosen by the legislature rather than directly by the people. Hence, while we recognize that there may be other aspect of political systems that could lead parliamentary regimes to generate balanced outcomes, we have identified one way in which presidential systems will favor equality in public spending.

In addition to the broader discussion of separation of powers, and parliamentarism vs. presidentialism, our model contributes to a more detailed understanding of the role played by the president in American distributive politics. As carefully documented by Berry et
al. (2010), “the empirical literature on distributive politics focuses almost exclusively on the internal operations of Congress.” For instance, the influential literature on legislative bargaining, initiated by Baron and Ferejohn (1989), exclusively deals with Congress and the way its internal rules, in particular its proposal recognition rules, determine the distribution of spending. Berry et al. (2010) convincingly show that presidents do, in fact, matter; tracking US federal expenditures from 1984 to 2007, they find that regions being represented by the president’s party systematically receive more federal outlays, while committee membership and majority party membership in Congress appears to have little or no influence on the distribution of outlays. The results of another recent study, Larcinese et al. (2006), points in the same direction. Larcinese et al. (2006) find that states that heavily supported the incumbent president in past elections tend to receive more funds, and that states having a governor from the same party as the president receive more federal funds.

Although these recent contributions fill significant gaps in the understanding of the president’s role in distributive politics, and rightly place the president at the center of distributive politics, they say little about the mechanisms behind the president’s role. Theoretical studies of the president’s role in distributive politics are quite rare. A notable exception is the work of McCarty (2000), who develops a formal model of distributive politics including both the president and Congress. McCarty shows that the president’s veto may have large effects on the distribution of spending, and that it may move spending toward the efficient level (with a straightforward benefit-to-cost analysis used to label programs as efficient or inefficient). Our analysis is similar to his in that the difference in the size of the electoral districts (nationwide vs. small districts) between the president and the members of Congress is key to understanding how the president may shape public spending. However, McCarty assumes that the president only cares about his constituency (an exogenously specified subset of districts), while we do not impose any constituency restrictions on the preferences. (Such restrictions of the president’s preferences are possible in our model, but not required for the results we derive.) More importantly, our model differs from that of McCarty in the role assigned to the president. In McCarty’s model, Congress initiates policy and the role of the president is to decide whether to veto the proposal made by Congress. In our model, the

2Baron and Ferejohn (1989) predict a highly uneven outcome with some regions completely excluded from the allocation of spending. Hence their predicted outcome is qualitatively the same as our model would deliver if the president was removed and proposal power reallocated to some member of Congress.

3Although these papers discuss different mechanisms through which the president could shape distributive politics, their results do little to distinguish among the mechanisms. In the words of Berry et al (2010): “Our empirical findings, we recognize, do not distinguish among the president’s particular channels of ex ante and ex post influence. We have highlighted the president’s ability to propose a budget, rally legislative support for it, threaten veto deviations from it, and then, once it is enacted, to further manipulate how money are actually spent. But ... it is extraordinarily difficult to isolate the relative importance of specific elements of the president’s arsenal (in particular, proposer and veto prerogatives) in influencing policy outcomes.”
president is the one who proposes the distribution of spending. (We also discuss the veto power of the president in a brief extension to the baseline model, but it does not play the same important role in our model.) As the veto is the only legislative power *constitutorially* assigned to the president, we do *not* argue that there is anything wrong with the setup of McCarty's model. However, while proposal powers are not part of the president's constitutionally assigned arsenal, we do believe that it is, for some time periods and policy areas, appropriate to think of the president as the agenda-setter in American politics. In particular, we believe this to be the appropriate assumption for periods of serious crises and/or large-scale reform. Hence, we view our model as a complement, rather than competition, both to the model of McCarty and to models focusing exclusively on Congress, with our model having more to say about periods of exceptional change rather than day-to-day politics.

In addition to the insights about the legislative process behind spending programs, this paper may be situated, through the main application, within the literature on the politics behind the distribution of New Deal spending. An extensive body of work in economic history, initiated by Reading (1973) and Wright (1974) and later extended by, among others Wallis (1984, 1987, 1988), Anderson and Tollison (1991), Couch and Shugart (1998), Fleck (1999, 2001, 2008) and Fishback, Kantor and Wallis (2003), has analyzed the objectives behind, and the process shaping, the new programs that were enacted during the 1930s. The early contributions to this literature, in particular the work of Wright, suggest that the regional distribution of the major New Deal programs were politically rather than economically motivated, with concerns for re-election (of FDR) determining the distribution of spending. Subsequent analyses, for instance by Anderson and Tollison (1991) and Couch and Shugart (1998), show both that the structure of congress mattered for the distribution of spending, and that the president, in addition to being concerned with re-election, appears to have rewarded loyal voters. However, Wallis (1984, 1985, 1998) shows that while political concerns did matter, so did the officially stated economic concerns of “relief, recovery and reform.” Furthermore, the more recent work of Fishback, Kantor and Wallis (2003) and Fleck (2008) indicates that the economic reasons behind the programs interacted with political motives in complicated ways, making the different possible objectives hard to disentangle.

In the rest of the paper, we first describe extensively the assumptions and modeling choices behind the theoretical model. We then, in Section 3, derive a number of theoretical results characterizing legislative decision-making in the US Congress, and the outcome of the interaction between the President and Congress. This part is the core of the paper. Section 4 contains the empirical application, i.e. the analysis of the New Deal. Finally, Section 5 contains a conclusion.
2 Building a President-Congress Bargaining Model

Modeling Goals It is far from obvious what a good model of legislative politics applied to the context of major reforms and new spending initiatives should look like. At least three existing frameworks come to mind as related and potentially able to speak on the questions posed here. The first of these is the legislative bargaining literature, centered around the seminal contribution of Baron and Ferejohn (1989) and its extensions.\footnote{Most notably, by Banks and Duggan (2000, 2006) and Baron (1996).} The second is the agenda-setter model developed by Romer and Rosenthal (1978, 1979) and extended in the veto bargaining framework by, among others, McCarty (1997), Groseclose and McCarty (2000) and Cameron (2000). The third is the pivotal politics model developed by Krehbiel (1998), a theoretical framework based on the idea that, for any particular issue, a pivotal voter (legislator) can be identified, and the final outcome hinges upon her preferences.\footnote{In addition to models of legislative politics in the US, we draw inspiration from theoretical studies of president-Congress interactions in Latin America, such as the model of Brazilian politics developed by Alston and Mueller (2005).}

While these and other related approaches provide insights of great value for understanding legislative politics, in the US and elsewhere, none of the three frameworks contain the level of institutional detail necessary to interpret specific legislative settings, such as the dramatic period in 1933 after the landslide victory of FDR and the Democrats. Hence, we develop a new model of legislative politics in the US that is richer in detail but less general than existing frameworks.\footnote{Krehbiel’ s (1998) framework contains more institutional detail than the other models. It is different in purpose and lacks some of the features that we consider important for the particular application in this paper. Still, we do think of the pivotal politics model as the work most closely related to the model we develop here.}

What are then the key institutional features of US legislative politics? We view the following features, ranked in order of deemed importance, as sufficient to give a good characterization of the formal institutional environment: (i) There are two chambers with different distribution of seats across states, and law-making follows a sequential procedure, with the House of Representatives moving before the Senate on spending bills, (ii) The President is elected nationally while Congress members are elected by local constituencies (iii) Disagreements between the two chambers are resolved in a conference committee, (iv) The President has legislative veto power, (v) Committee and subcommittee chairs, as well as Congress members with formal “leadership positions” (such as the majority leader and the speaker of the House), can be quite influential and often have the power to stop legislation from happening, and (vi) There is a filibuster option in the Senate. To this, an informal institutional feature should be added: the fact that the President often, when it comes to major reform, functions...
as the de facto agenda-setter, despite not having such a role assigned constitutionally.

While all relevant, trying to include all of these institutional features in one model proves to be very difficult. Here, we model explicitly the first three of the listed features. In addition, we model the President as the agenda-setter. Though the President does not literally introduce appropriations bills, we assume he communicates regularly with congressional leaders who do shape those decisions at least on first pass. In other words, the assumption is not literal, but there are empirical “as-if” counterparts, particularly in emergency situations. Including the fourth feature (veto power) in the model would have no effect on the outcome. The two latter features are not formally modeled. We believe them to be less important for understanding the nature of the spending allocation across broad regions, though we certainly acknowledge that there are other questions for which they would be crucial. In particular the role of committees (v) is clearly an important feature in many other settings. In addition, the role of influential individual legislators (leaders) could help with the interpretation of the allocation of spending at a more detailed regional level.

Assumptions on Preferences When it comes to the preferences of the President and the Congress members, we assume that the decision to implement a program and the decision about the allocation of spending can be analyzed separately, and we do not explicitly analyze preferences over the generation of revenue. That is, we focus exclusively on the spending side, and therefore implicitly assume that any preferences that the President and the legislators might have had over the tax collection (and over budget deficit levels) did not interact with their preferences for the shape of the spending. This is a significant simplification, but one that is, at the very least, in line with much of the economic history literature on major political initiatives such as the literature on reform during the New Deal period.

Regarding the members of Congress, we model them as “perfect representatives” of their constituencies, with preferences defined (only) over the allocation received by their states. Given the assumption that the size and shape of the spending bill can be analyzed separately, this still allows for the Congress members having (ideological) preferences regarding the size of public spending. It does mean, however, that once the size of the spending is determined, the legislators bargain only with the welfare of their own region in mind. We view this assumption in the spirit of Mayhew’s (1974) now-classic conclusion that members of Congress are primarily driven by reelection concerns, and therefore seek a tight link to their own

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7 A number of studies have extensively analyzed the role of committees. These studies, however, are focused primarily on explaining the existence of committees, rather than predicting their effects. Among the most influential studies are Shepsle and Weingast (1987a, 1987b), Gilligan and Krehbiel (1987), Weingast and Marshall (1988) and Epstein and O’Halloran (1999).

8 For instance, Wallis (1998) ascribes the large share of New Deal funds that went to Nevada to the influence of Key Pittman, President Pro Tempore of the Senate 1933-1940.
constituencies. The assumption is also in line with the legislative bargaining literature on
distributive politics initiated by Baron and Ferejohn (1989).

Since the parameters of the President’s utility function are at the core of what is to be
determined in our empirical analysis, the details of this utility function will be discussed
more extensively both in the theoretical and empirical sections. For now, simply note that
we allow for the welfare of all regions (citizens) to enter the President’s utility function. This
difference between the utility functions of the legislators and the President is meant to reflect
the feature that the nationally elected President and the locally elected Congress members
represent very different constituencies. We do not claim that this representation captures
everything that matters during major reforms. We do, however, believe that our setup
captures many of the most important aspects that follow from the structure of Congress and
the conflict of interest between the President and the legislators, and we believe this to be
true in particular for the application to the New Deal.

3 A Model of President-Congress Bargaining

We consider a bargaining game in which the President acts as the agenda setter, and Congress
determines the final division of a fixed amount of resources, which is normalized to one. The
set of congressional players is given by $I = \{1, \ldots, I\}$. Each player $i$ is a homogeneous group
of representatives and senators that maximizes a common objective. Each player $i$ holds a
fraction $q_i$ of the total seats in the House and a fraction $p_i$ of the seats in the Senate. No
player has an absolute majority of seats in either chamber.

An outcome of the bargaining game is an allocation of resources among players. We rule
out transfers from one region to another. Thus, the set of feasible allocations is given by

$$\{x \in \mathbb{R}^I_+ : \sum_{i=1}^{I} x_i \leq 1\}.$$  

The utility function of player $i$ is linear in the amount of resources it receives, i.e.,

$$u_i (x) = x_i.$$  

The President’s preferences over the allocation of resources are represented by a continuous
utility function

$$f (x) : \mathbb{R}^I_+ \to \mathbb{R}.$$  

9In our application to the New Deal (Section 4), congressional players correspond to the delegations from
groups of states, i.e., regions. More generally, a group may coincide with a party, or with a cross-chamber
faction (e.g., Tea Party, Southern Democrats) with aligned preferences over the allocation of federal resources.
The timing of the game is as follows. First, the President proposes an allocation $x$. The House then evaluates the proposal. With an initial yes/no vote, the House determines whether to pass the bill on unchanged. If the proposal passes unchanged, the Senate takes on the proposal. Otherwise, a House member is randomly selected to renegotiate the allocation, by proposing an amendment $x'$. Each member has the same probability of being recognized, and hence, player $i$ has a probability $q_i$ of being recognized. An amendment proposal is a take-it-or-leave-it offer that one group of states makes to the rest of the chamber. The House votes on the proposed amendment, a positive vote resulting in the bill being passed on to the Senate, a negative vote implying the bill is scratched and no resources are assigned (i.e., the outcome of the bargaining game is $x_i = 0$ for all $i$). The Senate follows a similar procedure, where the text approved by the House represents the initial proposal. If the Senate approves the initial proposal, then the outcome is directly implemented. If the Senate modifies the initial proposal, bargaining in the Conference Committee leads to a convex combination of the House and Senate bills being passed. In particular, if $x^H$ and $x^S$ denote the bills passed in the House and in the Senate respectively, the Conference Committee implements

$$x^C = \frac{x^H + x^S}{2}.$$  

Voting over the Conference report is not explicitly modeled. Equivalently, we could introduce a single, binary vote whereby “no” results in the bill being scrapped.

Given our model of Congress, the President’s strategy set consists of all possible initial proposals. A strategy for a congressional player consists of the following: (i) a mapping from initial proposals into a binary vote, (ii) an amendment proposal, and (iii) a mapping from proposed amendments into binary votes. Throughout, we restrict attention to weakly undominated strategies, i.e., we assume congressmen always vote for their preferred option, regardless of whether they are pivotal. Furthermore, in the equilibrium analysis, we specialize the model to the case of $I = 3$.

### 3.1 Equilibrium Analysis with Three Players

Proceeding by backward induction, we first analyze the Senate bargaining subgame following the rejection of the House bill. At this stage, a senator is randomly selected an amender. When a bill $x$ coming from the House is introduced in the Senate, each congressional player $i$ compares her payoff from voting in favor of the bill $x_i$ to the expected gains from rejecting it. These gains are equal to the probability $p_i$ of a senator from her own group $i$ being selected as a proposer in the subsequent amending stage. We establish this in Proposition 1.
Proposition 1 (Senate Reservation Utilities)

Each group $i$ has a reservation utility in the Senate equal to its share of seats $p_i$.

Since no group holds a majority of the seats in the Senate, the bills passed by the House that are also approved by the Senate are those in which at least two groups receive more than their continuation values. At the same time, the bargaining process in the Senate may yield a different outcome from that of the House due to the different distributions of seats.

The next step is to analyze the game in the House following a rejection of the President’s proposal. A representative who is selected to propose holds all the bargaining power within the House. In effect, this amender chooses between two options: either propose an allocation that will be also approved by the Senate, or choose a proposal that will be amended in the Senate. The optimal choice in the former class consists of acquiring the support of the group with the lowest continuation value in the Senate to form a coalition. The best option in the latter class is to keep the entire amount of resources and let the Conference Committee determine the final bill. Under the maintained assumption that the Conference Committee assign equal weights to the two bills passed by the House and the Senate, Proposition 2 shows that the optimal strategy in the House is independently of the amender’s identity. In particular, the optimal strategy consists of building a coalition with another (the weakest) group in the Senate.

Proposition 2 (House Proposer Payoff)

1. For any distribution of seats, every group in the House proposes an amendment that is approved by the Senate.

2. The resulting payoff of proposer $i$ in the House is given by

$$\pi_i (p) \triangleq 1 - \min_{j \neq i} p_j.$$ 

Therefore, following a rejection of the President’s proposal, the group selected as an amender targets the group that holds the smallest share of seats in the Senate and offers its continuation value. This result allows for a straightforward characterization of the reservation utility of each group in the House.
Proposition 3 (House Reservation Utilities)
Let $q_i$ denote group $i$’s share of seats in the House and $p_i$ its share of seats in the Senate. Let $p_1 > p_2 > p_3$. The three groups’ reservation utilities in the House are given by:

\[
\begin{align*}
V_1 &= q_1 (1 - p_3) \\
V_2 &= q_2 (1 - p_3) + q_3 p_2 \\
V_3 &= (1 - q_3) p_3 + q_3 (1 - p_2)
\end{align*}
\]

Naturally, the allocations passing in the House are those that provide expected utility levels $\mathbb{E}(x_i) \geq V_i$ for at least two of the three groups. As an illustration, we can use the composition of Congress in 1932, dividing the country into three groups: the North, the West and the South. (This is the composition used in Section 4.) With this composition, the set of proposals that would be approved unchanged are shown in the following graph.

Figure 1: Bargaining Outcomes and Congressional Constraints

Figure 1 highlights the effects of the two-chamber structure of Congress. Given the equilibrium strategies in the Congressional bargaining subgame, there are two kinds of initial proposals that will be approved unchanged: (a) proposed allocations close to the edges of the simplex, that target two of the three groups and obtain their support in both chambers; and (b) more balanced allocations (in the two more central passing regions) that pass thanks to the support of different coalitions in the two chambers.

Finally, we turn to the president’s problem. Given the equilibrium play in Congress described in the previous results, the president must essentially choose between proposing an allocation that will either (i) pass untouched, (ii) be modified by the House, or (iii) be
modified by the Senate. In fact, Proposition 2 shows that the president’s proposal will not be modified by both chambers. We now show that an equilibrium exists, and that under additional conditions it is unique.

**Proposition 4 (Existence and Uniqueness)**

1. There exists an subgame perfect equilibrium of the game.

2. If the President’s utility function \( f(x) \) is strictly concave, the game has a unique equilibrium outcome.

The strict concavity of \( f(x) \) implies that the President is risk- and inequality- averse. This reflects the fact that the President is elected on a national basis. A particularly useful strengthening of inequality aversion is the Inada condition. If we assume that

\[
\lim_{x_i \to 0} \frac{\partial f(x)}{\partial x_i} = \infty \forall i,
\]

then we can establish the following additional result.

**Proposition 5 (Inequality Averse Principal)**

Suppose the President’s utility function satisfies the Inada condition.

1. The President’s initial proposal is always approved by the House.

2. The President’s proposed allocation assigns strictly positive resources to all groups.

3. The President’s proposal differs from all amendments proposed by congressional groups.

We will make the Inada assumption in the application section, and further discuss the specific functional form and its implications there. For now, we remark that our legislative model with an agenda setting President and a rich description of Congress yields very different results compared to simpler analyses of Congressional bargaining. We now discuss the role of each element of the legislature and of the president-congress interaction in determining the outcomes of major policy initiatives.

### 3.2 The Role of the Structure of Congress

The key feature of our congressional bargaining subgames are the presence of two chambers and the sequential nature of the process. These features have deep implications for the type of passing allocations that an inequality-averse President can propose, and for the equilibrium payoffs of different congressional players.
As we discussed earlier, the President can induce Congress to pass two kinds of proposals without amendment. The first kind is the more intuitive one. It consists of allocations that are supported by a two-player stable majority in both chambers, and consequently assign to the third player an amount of resources which is lower than their reservation utility. These are the only allocations that would pass untouched in a single-chamber structure. In contrast, a two-chamber structure introduces two new elements. On the one hand, the President is subject to more strict constraints, as he has to win the support of both chambers in order to avoid harmful amendments. On the other hand, the distributions of seats in the House and the Senate differ substantially due to the different electoral systems.

This discrepancy allows the President to pass a second kind of more balanced allocations, in which every group receives more than their reservation utility, at least in one chamber. For example, the President can more easily obtain the support of relatively densely populated regions in the Senate (where they hold a lower share of seats) than in the House. In consequence, in a two chamber structure, slightly different majorities can support the President’s bill in different stages of the legislative process. The heterogeneity in the two chamber can therefore help explain the approval of compromise bills which implement a balanced allocation of resources, which an inequality-averse President is inclined to propose.

The sequential nature of the legislative bargaining process introduces a role for the Senate as a potential source of balance between congressional groups of different size. To illustrate this point, we can contrast the reservation utilities derived in Proposition 3 with those coming from a simultaneous game, in which neither chamber can build alliances in the subsequent rounds, and in which no amender has “the last word.” In such a scenario (perhaps more realistic outside the case of spending bills) the President’s proposal would have to satisfy the congressional constraints in both chambers, which are given by shares \( p \) and \( q \).

The equilibrium reservation utilities of our model reflect in part the intuition that a very large group in the Senate will not be targeted at the amendments stage in the House, thus reducing its continuation payoff. Indeed, this is the basis for the payoff equivalence result of Baron and Ferejohn (1989) in an infinite-horizon, single-chamber bargaining model. We believe this balancing effect plays a role in times of major legislative initiative. At the same time, the implications for the constraints faced by the President, the set of passing allocations, and the equilibrium payoffs of congressional groups would not be realistic.

Furthermore, the difference in the players’ shares of seats across the two chambers allows us to elaborate on the balancing intuition and enriches the set of possible bargaining outcomes. In other words, the sequential bargaining element and the heterogeneity in the chambers’ composition interact in a perhaps unexplored way. We now examine the reservation utilities in the House, given the distribution of seats \( p \) in the Senate.
Proposition 6 (The Role of Two Chambers)

Let the groups’ shares of seats in the Senate be ordered as $p_1 > p_2 > p_3$.

1. The first group’s reservation utility is lower than its share of seats: $V_1 < q_1$, $\forall p, q$.

2. For the second and third groups, we have the following relations:
   
   $q_2 > V_2$ and $q_3 < V_3$ for $p_2/p_3 < q_2/q_3$,
   
   $q_2 < V_2$ and $q_3 < V_3$ for $q_2/q_3 < p_2/p_3 < (q_1 + q_2)/q_3$,
   
   $q_2 < V_2$ and $q_3 > V_3$ for $p_2/p_3 > (q_1 + q_2)/q_3$.

The relative sizes of the second and third largest groups (in the Senate) is the key variable determining which one of these groups gains and loses because of the two-chamber structure. Somewhat surprisingly, when $p_2$ is very high, the continuation value in the House is higher for the second largest group: this is because this group is always targeted by the third one to form a coalition. In this case, $p_2$ represents its outside option at this bargaining round. In particular, if the ordering of the seat shares in the two chambers were reversed (so that $q_1 < q_2 < q_3$), then the intermediate group unambiguously benefits from a two chamber structure. Conversely, if the ordering of the shares of seats is the same in both chambers, then the smallest group benefits (in the House) from a two chamber structure, provided its Senate share (and hence its outside option in the amendments round) is not too small.

Finally, we point out that the gains and losses in the payoffs of the various players introduced by the differences in their shares of seats have to be mediated by the President’s strategies. In particular, fixing the President’s preferences, it is reasonable to imagine that the group with the largest continuation value in the Congress subgame is not likely to be selected by the President as part of a supporting majority. This would in turn reduce the group’s equilibrium payoff. More structure on the President’s preferences is required in order to make predictions about different groups’ actual payoffs. We discuss some special cases in the following section, and go more in detail in the application where we consider particular functional forms.

3.3 The Role of the President

In our formal model, we have introduced the role of the President as a de facto agenda setter. We have placed particular emphasis on the fact that the President is elected nationally and his objectives cannot be identified with those of any Congressional group, or with a parliamentary government coalition. We now assess the importance of these novel elements.
We can contrast our role for the President, with one elected from one of the groups, or representing interests that are fully aligned with a congressional group’s. This alternative role is indeed more realistic in times of normal politics, when party interest is relatively more dominant, or when the President clearly sides with one position represented in Congress. Independent of the reasons why, if the President belonged to a particular group, then the initial proposed allocation would be a highly unequal allocation that targets only two out of the three groups. We define the group with the lowest continuation value as \( j^* \triangleq \arg \min_j \{ \max\{V_j, p_j\} \} \). We then obtain the following result.

**Proposition 7 (President from a Group)**

1. If the President is a member of group \( i \), the initial proposal can be of two kinds.
   
   (a) The President targets the group \( j^* \) with the lowest continuation value and proposes the allocation
   
   \[
   (x_i, x_{j^*}, x_j) = (1 - \max\{V_{j^*}, p_{j^*}\}, \max\{V_{j^*}, p_{j^*}\}, 0).
   \]

   This proposal passes unchanged in both chambers.

   (b) The President targets the group \( j' \) with the lowest continuation value in the House \( V_{j'} \), and proposes the allocation
   
   \[
   (x_i, x_{j'}, x_j) = (1 - V_{j'}, V_{j'}, 0).
   \]

   This proposal passes in the House but not in the Senate.

2. The President chooses a proposal that passes in both chambers if

   \[
   1 - \min_{j \neq i} \max \{V_j, p_j\} \geq \frac{1 - \min_{j \neq i} \{V_j\} + p_i}{2}.
   \]  

The main intuition for this result comes from the fact that it is not in the President’s best interest to form heterogeneous majorities to support his bill in the two chambers. Furthermore, it is always optimal for the President to propose an allocation that passes in the House. If in addition, the President proposes an allocation that passes through both chambers, he chooses the group that ensures its constant support for the lowest price. Within this logic, a large share of seats in either chamber would make a group \( j \) prohibitively expensive. However, the President can also choose to propose an allocation that does not pass in the Senate. This occurs when ensuring the support of the same group in both chambers is too costly, and when the President’s group can exert a strong influence on the Senate bargaining outcome (i.e. when \( p_i \) is high).
A similar case would be one in which the President is called upon to form a coalitional government. At a closer look, the outcome of the legislative bargaining process would be identical to one in which the President is a member of group \( i \). More formally, when the President is from group \( i \), he selects another group \( j \) to form a stable majority. This is exactly the case, by construction, of a coalitional government. In particular, the President, much like a large congressional player, will choose the overall weakest group, and will acquire its support by offering an allocation that ensures at least its reservation utility.

In conclusion, we point out that a common thread to alternative specifications of the President-Congress interaction, and to a one-chamber Congress structure, is that one player would consistently be excluded from the allocation of resources.

### 3.4 Extensions

While our model of Congress is admittedly stylized, it also allows for several extensions.

**More than Three Players** Modeling Congress as consisting of more than three players does not modify the Senate amendment stage. Instead, it complicates the amendment stage in the House, and the resulting decision of coalition formation. However, we could accommodate a fourth group if it is small enough (in the Senate), so that no larger group targets it in the House, and if the three larger groups in the Senate can build majorities through two-member coalitions.

**Different Bargaining Weights in the Conference Committee** Our result (Proposition 2) that House amendments will be approved by the Senate depends on congress members’ anticipation of the decisions of the Conference Committee. If the Committee were to assign a very high weight to the House bill, then each representative would ask for the entire amount of resources, thereby guaranteeing his group a favorable bill at the Conference Committee stage. This is not the case when both chambers have equal weight. More generally, we can construct a threshold level \( \sigma^* (p) \) that only depends on the shares of seats in the Senate such that if the Committee assigns at least weight \( \sigma \) to the Senate bill, then Proposition 2 still holds. Clearly, we have \( \sigma^* (p) < 1/2 \) for all \( p \).

**Veto Power** An inequality-averse president can impose minimum share requirements. This would not change amendments dramatically in the current model, but would interact with the amendment strategy, in particular when the weight given by the Committee to the Senate (\( \sigma \)) is fairly low. In that case, the amending strategy would change, as Senate-floor bargaining might not be able to grant the minimum shares required to the minority players.
4 Application: New Deal Spending

We leverage our theoretical model to analyze the role of the American legislative institutions analyzed above in shaping the outcome of one specific period of major political initiatives: the New Deal. Because our model is centered on the role of the president as the agenda setter, doing so requires first distinguishing the administration’s different possible motivations behind the New Deal spending. Using our theory in an empirical context involves some degree of arbitrariness. In particular, we are forced to make a number of simplifying assumptions that we discuss in what follows.

First, we allow for four different possible objectives of the Roosevelt administration: (i) relief and recovery, (ii) fundamental reform and development, (iii) political productivity/re-election probability, and (iv) rewarding Democrats. These four possible concerns cover the different objectives that the economic history literature on the New Deal has ascribed to the allocation of funds. In line with most previous work we label (i) and (ii) as “economic” and (iii) and (iv) as “political” objectives.

Second, we identify the congressional players in our model with three regions of the country: the South, the North and the West. In Appendix B, we display the assignment of states to regions (Figure 2), as well as the correlation between our classification and the political division of the country at that time (Figure 3). We also describe the three regions and explain how the characteristics of each region map into Roosevelt’s utility function. In short, the US was during the New Deal period divided in several ways that correlated with broad geographic regions. These regions differed significantly, both economically and politically, but the states were reasonably homogenous within each region. We summarize the description of the regions in Table 1. Note that the West (the North) is classified as being Hard-hit only as far as the agricultural (industrial) sector is concerned.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>South</th>
<th>West</th>
<th>North</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard-hit</td>
<td></td>
<td>✓&lt;sup&gt;a&lt;/sup&gt;</td>
<td>✓&lt;sup&gt;i&lt;/sup&gt;</td>
</tr>
<tr>
<td>Potential swing-state</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democratic in previous election</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

*Note: a = agricultural sector, i = industrial sector.*

Table 1: Regional Characteristics

Based on the characteristics in Table 1, we allow money spent in a region to serve one or more of the Presidential administration’s goals/motives. More importantly, we let the assignment of relief/recovery concerns to a given region depend on the type of program being considered. For example, if relief/recovery was the primary motivation behind the
New Deal, we would expect to see programs providing general relief to have been targeted at the Northern states. The assignment of goals to regions is summarized in Table 2.

<table>
<thead>
<tr>
<th>Administrations’ Concerns</th>
<th>South</th>
<th>West</th>
<th>North</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reform/Development</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Relief and Recovery</td>
<td>✓(^p)</td>
<td>✓(^p,f)</td>
<td>✓(^r,p)</td>
</tr>
<tr>
<td>Productivity/Reelection</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Partisanship/Rewarding</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

*Note: \(p\) = public works programs, \(f\) = farming, \(r\) = general relief*

Table 2: Goals and Regions

Note that we are agnostic about whether public works projects were used to provide relief/recovery, in addition to fundamental reform and long-run development, in the South. That is, we do include relief/recovery concerns for the South, in addition to the North and the West (who both experienced significant drops in different sectors).

We now introduce an explicit functional form for the President’s utility, i.e.,

\[
f(x, t) = \prod_{i \in I} x_i^{t_i}.
\]

That is, we assume the President’s preferences can be represented by a Cobb-Douglas utility function with preference parameter \(t_i\) on each region. Under this particular functional form, the President is averse to extremely unequal allocations, and receives a utility level of zero from any allocation that excludes any region from funding. This reflects the difference in criteria under which the President and Congress are elected, and the consequently different mandates they are given. It is unlikely that the President could have justified shutting down a large region of the country from receiving any federal aid. In addition, in 1933 FDR presented himself as a paternal, nationally uniting figure in a time of crisis. In this context, he would have wanted to target every region with at least some federal funds.

In order to relate the President’s taste parameters for each region to the various objectives he could pursue through the allocation of the funds, let \(\alpha, \gamma, \delta\) and \(\phi\) represent the weights that he assigns to the goals of political productivity, rewarding, relief/recovery and reform, respectively. The President’s preferences over the shares assigned to each group are given by \(t_i \triangleq c_iN_i\). We denote by \(N_i\) the population share of region \(i\), and by \(c_i\) the total weights pertaining to the each group’s characteristics. More specifically, if one lets \(1\) denote the indicator function, the parameters \(c_i\) can be expressed as:

\[
c_i = [1_{[i \in \text{Productive}]} \alpha + 1_{[i \in \text{Democrat}]} \gamma + 1_{[i \in \text{HardHit}]} \delta + 1_{[i \in \text{Poor}]} \phi].
\]
Therefore, the assignment of different weights to each of the regions reflects the classification in Table 1. Note that different regions are considered hard hit depending on the type of programs targeting them.

These assumptions on the President’s utility function imply that his ideal allocation in the absence of political constraints is given by:

\[ x_i^* = \frac{c_i N_i}{\sum_{j \in I} c_j N_j} \]  

(3)

In particular, if the President’s preference parameters \( c_i \) were identical for all regions, he would equalize per capita spending.

### 4.1 Description of the Data

The empirical part of this study uses data collected by Fishback, Kantor and Wallis (2003) on the distribution of spending for the New Deal programs implemented immediately after Roosevelt’s inauguration in 1933, during the so called “100 Days.” In some extensions, we also use data from all the years 1933 to 1937.\(^{10}\) Their original data, taken from the US Office of Government Reports (1940), is used for a more detailed (county-level) empirical study. We have aggregated their values, first to the state then to the regional level. The regional aggregation is done according to the assignment of states to regions shown in Figure 2.

In terms of direct/explicit relief, the two centerpieces of the Roosevelt administration’s reconstruction efforts were the Federal Emergency Relief Act (FERA) and the Works Progress Administration (WPA). FERA passed in 1933 and was enacted to provide immediate grants to states for relief projects. WPA passed two years later, in 1935 (under the Emergency Relief Appropriation Act), with the purpose of providing public employment for people who were out of work. Given our focus on the “100 Days”, we always include FERA (1933) in our estimations, whereas we only use WPA in some robustness checks.

In addition to FERA and WPA, in most but not all of our estimations we include in the general relief category loans from the Home Owners Loan Corporation (HOLC), set up in 1933 under the Home Owners Refinancing Act with the stated objective of lending to homeowners who were facing significant risk of defaulting on their mortgage, and insured

\(^{10}\) An alternative approach would be to include all of the New Deal programs directly in the baseline model. However, as the political and economic situations changed over time, we do not believe it would be appropriate to use a single model to describe all of the different subperiods simultaneously. Hence, we limit the main empirical work to the first “100 days,” which is the part of the New Deal for which our model should have the greatest explanatory power, as this initial period most closely fit our intention of studying major initiatives following times of crises or sense of political urgency.
loans given by the Federal Housing Administration (INS/FHA).\textsuperscript{11}

Besides direct relief programs, the government used public works projects to provide relief through employment as well as through stimulation to the economy. Most importantly, the Public Works Administration (PWA) was set up in 1933, under the National Industrial Recovery Act. The PWA funded such diverse projects as airports, schools, hospital, warships, dams and bridges. Following Fishback, Kantor and Wallis, we distinguish these from general relief programs and classify them in separate category of “public works.”\textsuperscript{12}

In addition to general relief and public works programs, we consider the farm programs enacted during the New Deal period as a separate category. These programs are sufficiently distinct from all the others to justify a separation. In this category, the two largest programs were the Agricultural Adjustment Act (AAA) and the Farm Credit Act (FCA), both passed in 1933. The former was enacted with the stated objective of providing immediate relief to farmers and paying subsidies to farmers for curtailing production of certain crops. The latter was intended to provide operating loans to farmers on a short-term credit basis. In addition to these two programs, a number of agencies with smaller funds, such as the Farm Security Administration and the Rural Electrification Administration, were established. As these were too small from a fiscal distributive point of view, they are also omitted here.

The distributions of funds over the three regions, for the nine different programs described above, are reported in Table 3.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|l|l|l|l|l|}
\hline
Program Name & Program Type & Year & Total Funds & North & South & West \\
\hline
FERA & General Relief & 1933 & 2.7 & .50 & .20 & .30 \\
WPA & General Relief & 1935 & 6.2 & .54 & .19 & .28 \\
HOLC & General Relief & 1933 & 3.1 & .54 & .19 & .28 \\
INS/FHA & General Relief & 1934 & 2.7 & .45 & .20 & .35 \\
PWA, Federal & Public Works & 1933 & 0.8 & .41 & .24 & .35 \\
PWA, Match 1 & Public Works & 1933 & 0.6 & .41 & .34 & .23 \\
PWA, Match 2 & Public Works & 1933 & 1.4 & .44 & .25 & .32 \\
AAA & Farming & 1933 & 2.0 & .03 & .43 & .49 \\
FCA & Farming & 1933 & 1.3 & .12 & .32 & .56 \\
\hline
\end{tabular}
\caption{Program Details}
\end{table}

Note: Total Funds are in billions of dollars (1932).

\textsuperscript{11}In addition to these programs/agencies, the Civil Works Administration (CWA) falls in the category of "general relief." The distribution of funds of this administration were, however, small in comparison with the other programs. We did try to include CWA funds. As it had no no effect on the estimation results we have chosen not to include it here.

\textsuperscript{12}Note that the activities of the PWA were divided into two different kinds of programs: federal programs and state-programs (and loans). The latter were matched with federal money but on the initiative of local authorities. We do not, however, separate these two programs in our empirical work.
4.2 Estimating FDR’s Preferences

This section identifies the parameter values of the President’s objective function that provide the best fit of the model’s predicted allocations to the observed data. The limited number of data points does not allow us to use the techniques from standard econometrics to obtain standard errors and perform hypotheses testing. Instead, our approach can be viewed as an intuitive minimum distance procedure that provides a characterization of the motives behind the spending allocations.

We define the theoretical allocations $x_k^{\text{THEORY}}$ as our model’s predicted allocations, a function of the President’s preferences and the outcome of the President-Congress bargaining game. The parameter estimates are then given by the solution to the following problem:

$$\min_{\alpha, \gamma, \delta, \phi} \sum_{k=1}^{K} w_k \| x_k^{\text{OBS}} - x_k^{\text{THEORY}} \|^2$$

s.t. \( (\alpha, \gamma, \delta, \phi) \in \Delta^3 \),

where $w \in \mathbb{R}^K$ is a vector of weights containing the total size of each of the programs.

In order to compute the theoretical allocation $x_k^{\text{THEORY}}$ for each program $k$ separately, we need to know which congressional constraints were binding, if any. Under the Cobb-Douglas utility function assumption, the equilibria of our model can lead to three different types of outcomes: (i) the immediate approval of bills that implement FDR’s ideal allocation, (ii) the immediate approval of bills that implement a Congress-constrained allocation different from FDR’s ideal allocation, (iii) the approval of bills that pass untouched through the House but are amended in the Senate. We exploit the historical fact that during the “100 Days” Congress did not amend FDR’s proposals substantially.\(^\footnote{For instance, according to Patterson (1967, page 3): “the passage of eleven key bills in 1933 took only a total of forty hours of debate in the House. The legislative process in the Senate was a bit more careful but still not slow.”} \) This rules out type (iii) outcomes. For type (ii) outcomes, the allocation predicted by our theory depends on which congressional constraints were binding. For type (i) outcomes, the predicted allocation is given by (3).

Determining the relevant binding constraints is the hardest task in this approach. Following the procedure described in Appendix C, we identify a single combination of binding constraints that passes an internal consistency test. Specifically, we require the President’s ideal allocation (3) for the parameter estimates solving (4) to be aligned with the assumptions on which the theoretical allocation $x_k^{\text{THEORY}}$ is computed upon. This unique scenario is one in which FDR’s distribution of general relief funds is constrained by the West in the
Senate whereas both the allocations of farming and of public works funds are constrained by the South in the House. In particular, we can falsify any conjecture of an unconstrained allocation (i.e., a type (i) outcome).

The parameter estimates delivered by this procedure are reported in Table 4.

<table>
<thead>
<tr>
<th>Politics</th>
<th>Economics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity ($\alpha$)</td>
<td>Rewarding ($\gamma$)</td>
</tr>
<tr>
<td>0.1120</td>
<td>0.0920</td>
</tr>
</tbody>
</table>

Table 4: Baseline Parameter Estimates

4.3 Implications

The estimated parameters allow us to compute FDR’s ideal allocations. The ideal allocations can be viewed as a counterfactual experiment, in which the following question is asked: How different would the distribution of funds have looked if the executive branch (FDR) had been unconstrained in the implementation of new government programs? Note, for instance, the implication that FDR would have liked to give a greater share of the general relief programs to the North, had he not been constrained by the West.

We can also derive the predicted allocations that follow from our estimated parameters, but with Roosevelt constrained. These allocations are qualitatively similar to the observations in Figure 7 (Appendix C). The ideal allocations and the predictions of the constrained model are reported in Table 5.

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Ideal Allocations</th>
<th>Predicted Allocations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>North</td>
<td>South</td>
</tr>
<tr>
<td>Relief</td>
<td>0.6739</td>
<td>0.2055</td>
</tr>
<tr>
<td>Farming</td>
<td>0.1339</td>
<td>0.2607</td>
</tr>
<tr>
<td>Pub.Works</td>
<td>0.3762</td>
<td>0.3574</td>
</tr>
</tbody>
</table>

Table 5: Ideal and Predicted Allocations

In Appendix D, we perform a number of robustness checks. Specifically, we (i) estimate the model including all the nine programs, (ii) test for congressional logrolling, (iii) estimate the parameters assigning equal weights to all of the nine baseline program programs, and (iv) try an alternative interpretation to the structural error. Table 7 contains the percentage weights on each of the four possible objectives for the baseline and all robustness estimations. Using the bounds from these estimates suggests that economic concerns, in particular the provision of relief/recovery, were the primary motives behind the New Deal. Political motives were existent, though appear somewhat less important.
We can now link our estimates with the qualitative implications of our theoretical model. We concentrate on the role of the balance of powers and of the structure of Congress. In particular, we run two counterfactual exercises that provide insights into the empirical implications of Propositions 6 and 7. In the first counterfactual, we use the baseline parameter estimates of Table 4 to illustrate the role of sequential voting. In the second counterfactual, we attempt to predict the shape of the New Deal funds allocation under the alternative hypothesis of a re-election oriented administration.

**The Role of the Structure of Congress**  
We start by investigating the role of the sequential nature of the legislative process. As highlighted in Proposition 6, sequential rationality of the congressional players implies a rebalancing of the various groups’ continuation values and reservation utilities, compared to the proportion of seats held by each. In particular, the rebalancing process goes towards a more equal allocation of continuation values, based on the potential for coalition formation in the (off-path) amendment stages.

In Table 6 below, we now compare the predicted allocations under the two scenarios of sequential (as in Table 5) and simultaneous votes.

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Simultaneous Votes</th>
<th>Sequential Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>North</td>
<td>South</td>
</tr>
<tr>
<td>Relief</td>
<td>0.5790</td>
<td>0.3200</td>
</tr>
<tr>
<td>Farming</td>
<td>0.1818</td>
<td>0.3200</td>
</tr>
<tr>
<td>Pub.Works</td>
<td>0.3762</td>
<td>0.3574</td>
</tr>
</tbody>
</table>

Table 6: Predicted Allocations

As shown in Table 6, the President would still target the South representatives to pass a farming program heavily skewed towards the west. In the case of public works programs, the President would have been able to implement his ideal allocation. For both farming and public works programs, the South could have demanded more in the case of sequential voting, since it would have been often targeted for coalition-formation at a subsequent amendments stage. Finally, for general relief programs, the lower reservation utility of the South representatives would actually turn in their favor, as the President would find it optimal to target them instead of the West senators.

**The Role of the President**  
In this second counterfactual, we restore the sequential voting procedure, and we explore the role of a nationally-elected President. In line with Proposition 7, we now examine the scenario in which the President seeks to maximize the share of resources going to a given region. In particular, we focus on the North, though the
analysis is easily extended to the other two regions. Considering the President as elected from
the North is meant to capture the alternative hypothesis that the Roosevelt administration
followed a mostly political agenda, targeted at gaining consensus and winning reelection.

We compare the two potentially optimal proposals by the President. If he wanted to
secure the support of the South in both chambers, he would have to guarantee a share of
\( V_S = 0.36 \) to that region. This would yield a payoff of

\[ 1 - V_S = 0.64. \]

Alternatively, the President could target the West in the House, and offer just \( V_W = 0.18 \).
He would then face a round of amendments in the Senate. This would yield an expected
payoff of

\[ \frac{1 - 0.18 + p_N}{2} = .555. \]

The President would therefore target the South in both chambers, and the allocation would
be skewed away from the West.

5 Conclusion

In this paper, we develop a formal model of bargaining over new and major public spending
decisions. The distribution of government funds over regions of the country is the outcome of
a bargaining game, in which the President acts as the agenda-setter (proposer) and Congress
bargains over the final shape of the spending bill. We take into account the two-chamber
structure of the Congress, and explicitly model the sequential nature of the legislative process,
with the House of Representatives acting before the Senate. Furthermore, we assume that
both the Congress members and the President are sequentially rational. For any given set
of preference parameters (in the President’s utility function) and any given distribution of
seats in the Congress, we can solve the model for a unique predicted outcome, i.e. a unique
predicted distribution of funds across regions.

Our model highlights the importance of the American president being independently
elected. This independence means that his proposals will be different from the proposals
of any of the groups in Congress. When the president functions as the *de facto* agenda-
setter, we can expect a more balanced geographical distribution of spending, with all regions
receiving some share of the outlays, than if the president was removed from the model and
proposal power was allocated to some member of Congress. In addition, we use our model
to demonstrate the importance of the institutional rules within Congress, in particular its
bicameral structure and the sequentiality of the legislative process.
The fact that we can solve the model for a unique predicted distribution of funds across regions allows us to apply it in real-world settings. In the application part of the paper, we use the actual distributions of New Deal funds to estimate the preference parameters of the Roosevelt administration. We link theory to data and estimate the model’s parameters using a simple minimum distance approach. The baseline parameter estimates indicate that the motivation behind the New Deal was primarily economic, but that political concerns do seem to have existed as well. All of the robustness checks give a similar and reasonably coherent picture.

We believe that our analysis suggests a framework to analyze President-Congress interactions during periods of crisis or urgency. Developing a more general theory would require extending this paper in several ways. In particular, although we do perform a number of robustness checks in the application section, we do not explicitly model how funds from one program could be used by the President to relax constraints for a different program. Doing so would require introducing additional dynamic features to account for the sequential nature of multiple bills, and issues of credibility would become central. Overall, this extension would provide a general model that could be used to analyze political logrolling. However, it would also introduce significant additional modeling complexity, and would necessarily shift the focus away from the applied and historical aspects of this research project.
Appendix

A Proofs of Propositions

Proof of Proposition 1. Denote the bill that comes into the Senate by \( x \). If the Senate modifies the bill to \( x' \), the outcome will be \( (x + x')/2 \), while it will be equal to \( (x + x)/2 \) if it doesn’t. Therefore, at the amending stage, senators only care about the outcome of the Senate bargaining process. Since the Senator recognized to amend can make a take-it-or-leave it offer to the rest of the chamber, she can propose an allocation in which her group keeps the entire amount of resources. In this case group \( i \) obtains a payoff of 1, while it obtains a payoff of zero otherwise. The probability of being recognized is equal to the group’s share of seats in the Senate \( p_i \), which completes the proof.

Proof of Proposition 2. (1.) Let \( i \) be the representative chosen to amend the President’s proposal. The maximum value group \( i \) can achieve by proposing an amendment that will be approved by the Senate is \( 1 - \min_{j \neq i} p_j \). In fact, all representatives will vote in favor of the amendment, while senators from groups \( j \neq i \) will vote in favor only if \( x_j \geq p_j \). Group \( i \) then finds it optimal to acquire the support of the group with smallest senate delegation.

If group \( i \) proposes an amendment that will not be approved by the Senate, the bill approved in the Senate is independent of what happens in the House. Let \( x \) denote the proposed amendment. Therefore, group \( i \) has an expected payoff of \( p_i \) at the Senate stage and of \( x_i \) at the House. The outcome of the Conference committee is simply \( (x + p)/2 \). Hence, the amending representative will propose a bill \( x \) which gives him the entire amount of resources in the house, thereby obtaining a payoff of \( ((x_i = 1) + (x_i = p_i))/2 \). This can be shown by letting the proposer be a member of group \( i \) and defining

\[
p_H \triangleq \max_{j \neq i} p_j, \quad p_L \triangleq \min_{j \neq i} p_j.
\]

The following inequality can then be established:

\[
1 - \min_{j \neq i} p_j - (1 + p_i)/2 = p_i + p_H - (1 + p_i)/2 \\
= (p_H + (1 - p_L - p_i) - 1 + p_i)/2 \\
= (p_H - p_L)/2 > 0.
\]

(2.) It follows that each group proposes an amendment that will be approved by the Senate, and obtains a payoff of \( \pi_i (p) = 1 - \min_{j \neq i} p_j \).
Proof of Proposition 3. Each group receives a payoff of \(1 - \min_{j \neq i} p_j\) when selected as an amender and \(p_i\) when targeted by another group to form a coalition. Given the ordering of seats in the Senate, groups 1 and 2 target group 3, while group 3 targets group 2. Therefore, group 1 obtains a payoff of \((1 - p_3)\) with probability \(q_1\) and the reservation utilities of the other groups follow analogously. \(\square\)

Proof of Proposition 4. (1.) Let \(x\) denote the President’s proposal. Let the vectors

\[
e_i \triangleq x \in \mathbb{R}_+^I : x_i = 1, \ x_{j \neq i} = 0
\]

\(i \in \{1, 2, 3\}\),

represent the allocations assigning the entire amount of resources to region \(i\). Denote by \(s(x)\) the expected outcome following amendment of \(x\) by the Senate and the Conference Committee. As described by Proposition 1, \(s(x)\) represents a lottery among the outcomes \(\{(x + e_1)/2, (x + e_2)/2, (x + e_3)/2\}\) with probabilities given by \(\{p_1, p_2, p_3\}\) respectively. Finally, denote by \(h(x)\) the expected amendment of proposal \(x\) by the House. As described by Proposition 2, \(h(x)\) is a lottery among the outcomes \(\{(1 - p_3, 0, p_3), (0, 1 - p_3, p_3), (0, p_2, 1 - p_2)\}\) with probabilities \(\{q_1, q_2, q_3\}\), independently of the original proposal \(x\). Let \(y(x)\) represent the (possibly random) outcome of the congressional bargaining game, as a function of the President’s proposal. The function \(y(x)\) is defined over three regions as

\[
y(x) = \begin{cases} 
x & \text{if } x \text{ lies in a Passing region} \\
s(x) & \text{if } x \text{ is modified in the Senate} \\
h(x) & \text{if } x \text{ is modified in the House.} 
\end{cases}
\]

Existence of an equilibrium of this game is equivalent to the existence of a solution to the President’s constrained optimization problem \(\max_x \mathbb{E}[f(y(x))]\). The President’s utility function is continuous, so it attains a maximum over a compact set. Since the passing and non-passing regions are defined by linear functions, we must only ensure that the President selects an outcome from a closed set. The passing regions (the non-passing regions) are closed sets if and only if congress members vote in favor of (against) the President’s proposal when indifferent. Therefore, let indifferent Congress members vote in favor of \(x\) if and only if the following holds:

\[
\sup_{x \in \text{Passing}} f(x) \geq \max \left\{ \sup_{x \in \text{M-Senate}} \mathbb{E}[f(s(x))], \mathbb{E}[f(h)] \right\}.
\] (5)

This specification for Congress members’ voting behavior determines the following equilib-
rium strategy profile whenever (5) is satisfied:

\[ x^* = \arg \max_{x \in \text{Passing}} f(x), \]

Congress members vote in favor of \( x \) if indifferent.

Whenever (5) is not satisfied, the equilibrium strategy profile is given by

\[ x^* = \begin{cases} 
\arg \max_{x \in \text{M-Senate}} E[f(s(x))] & \text{if } \sup_{x \in \text{M-Senate}} E[f(s(x))] > E[f(h)] \\
\arg \max_{x \in \text{M-House}} & \text{if } \sup_{x \in \text{M-Senate}} E[f(s(x))] < E[f(h)], 
\end{cases} \]

Congress members vote against \( x \) if indifferent.

In the former case, the President prefers to propose an allocation that would not be modified. In this case the passing regions are closed (hence compact) so that \( f \) attains a maximum there. In the latter case, the President prefers to propose an allocation that would be modified, either in the House or in the Senate. In this case, the non-passing regions are closed. In both cases, continuity of the utility function and condition (5) ensure that the President has no profitable deviations. This completes the proof.

(2.) Under strict concavity, \( x^* \) is unique both in the Passing and the M-Senate regions. The subgame perfect equilibrium outcome of the game (but not the equilibrium strategy profile) is therefore unique. Strict concavity is required, as opposed to strict quasi-concavity, because the outcome of the bargaining in Congress is potentially random and the quasi concavity property does not extend to lotteries.

Proof of Proposition 5. (1.) The President can always improve his payoff by increasing any region’s allocation \( x_i \) from 0 to \( \varepsilon > 0 \), regardless of the amounts received by the other regions. Any amender in the House forms a coalition with another region in the House and in the Senate, and allocates zero resources to the third region. Therefore, the President profitably trades off a more favorable allocation with one that passes unchanged, with \( x_i > 0 \) for all \( i \).

(2.) This statement follows immediately from the previous one. Within the set of passing proposals, any allocation with \( x_i = 0 \) for some \( i \) cannot be optimal for the President.

(3.) Each House amender forms a two-region coalition, and each Senate amender demands the entire amount of resources. Both kinds of amendments therefore differ from the President’s proposal.
Proof of Proposition 6. These results follow immediately by comparing the vector of seats in the House \( q \) with the equilibrium continuation values \( V \) derived in Proposition 3.

Proof of Proposition 7. We first establish that it is always optimal for a President from group \( i \) to propose an allocation that passes in the House. The President’s expected payoff from an amended proposal in both chambers is \( (V_i + p_i)/2 \). By targeting a group in the House with its continuation value, group \( i \) obtains either \( 1 - V_j \) or \( (1 - V_j + p_i)/2 \), depending on whether the proposal passes in the Senate. Since \( p_j, V_j \leq 1/2 \) for all \( j \), both payoffs are higher than \( (V_i + p_i)/2 \). Therefore, the President targets one group in the House. If he chooses a passing proposal (type 1), he obtains a payoff of

\[
1 - \min_{j \neq i} \max \{V_j, p_j\}.
\]

If he chooses a proposal that will be amended in the Senate, he obtains

\[
1 - \frac{\min_{j \neq i} \{V_j + p_i\}}{2}.
\]

Comparing the President’s expected payoff under both types of proposals, we obtain condition (1) in the text.
B Regional Classification

We now proceed to first describe the three regions, then to explain how the characteristics of each region map into Roosevelt’s utility function.

Figure 2: Regional Classification

The first of the regions, the South, was the poorest region in the country during the period of the New Deal. This is best seen by looking at the level of economic activity, as reflected in retail sales (see the left panel of Figure 4 below). Furthermore, the South was
the least developed region of the country according to more general criteria, such as the illiteracy rate (see the right panel of Figure 4). Hence, if fundamental reform and long-run development were the only considerations that went into the shaping of the New Deal, this region would have been the primary target of New Deal means.

Figure 4: Retail Sales and Illiteracy Rate

In addition to being poor, all of the states in this region were Democratic and had voted largely in support of Roosevelt in the 1932 election. Furthermore, their support had been solid over the previous decades. Hence, one would expect that a partisan executive branch, with the objective of rewarding states in which it had received support, would have yet another reason (in addition to their economic/reform needs) to target the states in the South. However, these states were also so solid in their support for the Democratic party that any reelection motive behind the allocation of New Deal funds would have had to be to their disadvantage. Finally, given the lower level of manufacturing development, their actual drop in economic performance during the Great Depression was not as marked as the drop of the other regions. Hence, if the primary motive behind the New Deal was to provide short-term relief and/or recovery, this should also have shown up as a spending disadvantage for the Southern states.

The second of the regions, the West, was also a largely Democratic region during the period of the New Deal implementation. Roosevelt won 58% of the popular vote in the West, and only four states had a significant Republican representation in their congressional delegation. On the other hand, the states in the West were not nearly as solidly grounded in the Democratic camp as the states in the South. In fact, over the previous decades, support for the Democratic party in western states had been more volatile than anywhere else (see Figure 5). Hence, if the Roosevelt administration had political motives in mind when implementing the New Deal programs, one would expect the President to include the Western states both in attempts to reward its own base (and the Congress members from its party) and in attempts to secure electoral votes for coming elections. However, the states in the West were significantly richer and more developed than the states in the South, which implies
Figure 5: Democratic Vote

that a New Deal that was primarily motivated by fundamental economic reform would not have paid particular attention to these states. Finally, we emphasize that whether programs aiming at immediate relief and recovery would have been to the advantage of the West or not depends on what kind of program we are focusing on. Though the West was not hit as hard as the Northeast in terms of manufacturing output, it did suffer a severe drop in agricultural output. This is illustrated in Figure 6 below, which shows the percentage of failing farmland in the different regions. Hence, spending on farming programs, would have provided relief and recovery in this region of the country. Furthermore, the West was in many ways a suitable target for public works programs, due to its low level of existing infrastructure and its availability of natural resources. (However, as described later, in the baseline estimations we are agnostic about the suitability of public works programs.) On the other hand, more general relief programs, targeted at parts of the country in which the manufacturing sector was hard-hit, were unlikely to have the states in the West as targets for provision of relief and recovery, given the lower level of manufacturing development compared to the Northern part of the country.

As Figures 4 shows, the third of the regions, the North, was also significantly richer and more developed than the South. Hence, in terms of need for fundamental reform and long-run development, one would not expect the New Deal programs to target the North. In addition, the North was largely Republican, so partisan concerns (i.e. a focus on Democratic states) would have added to the disadvantage of these states, in the sense of not being recognized and targeted for spending by the Presidential administration.

The Northern states did, however, have two characteristics that should have worked to their favor in the determination of the spending allocation. First of all, they were not solidly Republican; FDR narrowly lost many of these states and in addition their support for the Democratic presidential contender in the recent history had been very low. Hence a reelection-motivated FDR would have had incentives to target these states with the objective of building popularity for coming elections. In addition, the industrial North was particularly
hard-hit by the drop in the manufacturing sector. This is reflected, for instance, in some early statistics, such as the 1930 unemployment rate (right panel of Figure 6). Hence, if relief / recovery was the primary motivation behind the New Deal, we would expect to see programs providing general relief to have been targeted at the Northern states.

Figure 6: Failing Farmland and Unemployment
C Empirical Strategy

Discerning between the three types of outcomes in the data is a key step. We start by plotting the allocations in the simplex representing the outcomes of the bargaining game. This is shown in Figure 7.

![Figure 7: Observed Allocations](image)

We assume that the set of binding constraints was identical for all programs in the same group (i.e., General Relief, Public Works and Farming). (Note that only one of the individual programs lies in a “passing region” that would lead to a type (i) outcome.) Assuming we know which constraints were binding for each program, we can compute the theoretical allocation $x_{k}^{\text{THEORY}}$ for each program $k$ separately. In particular, suppose that region $i$ constrains the President’s choice in a single chamber. We then set $x_{i}^{\text{THEORY}}$ equal to the appropriate reservation utility, $x_{i}^{\text{THEORY}} \in \{V_{i}, p_{i}\}$, depending on which chamber the President is constrained in, and we define

$$
x_{-i}^{\text{THEORY}} \triangleq \arg \max_{x_{-i}} f\left(x_{i}^{\text{THEORY}}, x_{-i}, t\right)
$$

s.t. $\sum_{j \neq i} x_{j} = 1 - x_{i}^{\text{THEORY}}$.

We attribute any differences between the observed and the theoretical allocations to execution error by the federal agencies through which the funds were distributed.\textsuperscript{14} We

\textsuperscript{14}By these means we allow—and indeed we find—these “errors” not to have a zero mean. Not surprisingly, the observed allocations are often closer to FDR’s estimated ideal points. Note that this does not affect
then proceed to the derivation of the model’s parameters. This is done with a nonlinear least squares approach. The parameter estimates are given by the solution to the following minimization problem:

$$\min_{\alpha, \gamma, \delta, \phi} \sum_{k=1}^{K} w_k \left\| x_k^{OBS} - x_k^{THEORY} \right\|^2$$

s.t. $(\alpha, \gamma, \delta, \phi) \in \Delta^3$,

where $w \in \mathbb{R}^K$ is a vector of weights containing the total size of each program considered.

We adopt the following iterative procedure to identify the correct binding constraints:

1. For each group of programs, conjecture a set of binding constraints.
2. Construct the corresponding theoretical allocations.
3. Estimate the parameters of the model under this conjecture.
4. Given the estimated parameter values, compute Roosevelt’s ideal allocations.
5. If any of these allocations lies in a passing region, the conjecture on the binding constraints is falsified by the data.

For each conjectured combination of binding vs. slack constraints, we can at most use this consistency test to conclude that the data does not falsify the model. This does not mean that the test will necessarily reject a false model. Nevertheless, when we try a number of alternative assumptions about which constraints (if any) were actually binding, there turns out to be a unique conjecture passing our consistency test.

the Congressional bargaining game described above. It simply means that FDR, or agencies with similar objectives as FDR, probably had some ex-post influence over the spending.
D Empirical Robustness Checks

Our baseline specification (reprinted as BASE in Table 7 below) considers the levels of the seven observed allocations separately. We now present a series of robustness checks by means of estimating our parameters under several different specifications of the President-Congress bargaining game. First, we estimate the model including all the nine programs (L9). We then test for congressional logrolling. Specifically, this means that we treat all allocations from any given type of program passed in the same year as a unique bill, which leaves us with five observations. The result of this estimation is displayed in the row labeled L5. In addition, instead of assigning different weights to different programs based on their size (in total spending), we estimate the parameters assigning equal weights to all of the nine baseline program programs. The results of this robustness exercise are labeled L9uw in Table 7.

In the next three robustness checks (R9, R5, R9UW), we give a different interpretation to our structural error. Here, we acknowledge that our model’s constraints can only represent with approximation the bargaining powers in place in Congress during the New Deal. Moreover, by requiring the President to obtain the support of two large congressional players, we are de facto ruling out the possibility of building smaller majority coalitions. In reality, by targeting only part of the states in a given region, FDR could potentially tend less to that region’s interest and propose an allocation that is closer to his ideal point. Certainly, the historical evidence does suggest that FDR’s proposals passed with large support. However, it is still possible that some of the bills’ crafting and actual bargaining took place outside of the formal sessions of the Congress, implying that the voting record in Congress do not fully capture the shape of the real coalitions behind the bills. Hence, we believe that an alternative specification, with a less precise interpretation of the constraints, is a useful exercise.

While maintaining the same conjecture regarding which constraints were binding, we now assume that the politically constraining regions received exactly what was necessary in each session to win their support. More specifically, for type (ii) outcomes, under a constraint from region $i$, we define theoretical allocations as

$$x_{-i}^{\text{THEORY}} \triangleq \arg \max_{x_{-i}} f \left( x_{i}^{\text{OBS}}, x_{-i}, t \right)$$

s.t. $\sum_{j \neq i} x_{j} = 1 - x_{i}^{\text{OBS}}$.

This is equivalent to assuming that, for each program, the congressmen from the constraining region were able to correctly predict the final allocation and required exactly what they eventually received in order to vote in favor of the program.

With this approach, the ratio between the shares of any two regions is independent of
the share received by the third one (a consequence of the Cobb-Douglas assumption imposed on the President’s preferences). Together with the assumption that the observed allocations directly deliver the binding constraint for each program, this implies that we are able to estimate FDR’s preference parameters on the basis only of the ratios of the allocations received by the non-constraining regions.

We carry out this estimation approach for all programs separately and also under our logrolling specification (R5 in Table 7). Finally, we perform the estimation placing equal weights on all nine programs (R9UW). The resulting parameter estimates are very similar to the case of varying weights. This works as a confirmation of the relative homogeneity of approved allocations across the three types of programs, which is already evident from the data.

To summarize the results of different empirical procedures, we are quite confident that our estimates lie within the bounds reported in Table 7. These preliminary estimates indicate that economic concerns, in particular providing relief/recovery, were the primary motives behind the New Deal. Political motives were also existent, but less important.

<table>
<thead>
<tr>
<th>Goals</th>
<th>Percentage Weight Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
</tr>
<tr>
<td>Rewarding</td>
<td>9.20</td>
</tr>
<tr>
<td>Recovery</td>
<td>60.29</td>
</tr>
</tbody>
</table>

| Total         | 7    | 9   | 9   | 9    | 7    | 9   | 9  | 9  | 9  |
| Criterion     | L    | L   | L   | L    | R    | R   | R  | R  | R  |
| Weights       | YES  | YES | YES | NO   | YES  | YES | YES| NO |

*Note:* L=Levels of allocations ; R=Program-Specific Bargaining Powers

Table 7: Estimation Results
References


