Fiscal Policy with Multiple Policymakers: **Veto Actors and Deadlock; Collective Action and Common Pools; Bargaining and Compromise**

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ABSTRACT: When considering the implications for fiscal-policy outcomes (especially deficits and debts) of the dispersion of policymaking authority across multiple actors, recent veto-actor scholarship has emphasized its potential to privilege the status quo and thus retard policy-adjustment rates. In similar contexts, however, others have stressed collective-action and common-pool issues that arise when multiple policymakers share authority over policies. Still others have highlighted the bargaining and compromise aspects of policymaking with multiple actors. This paper offers a synthetic discussion of these *multifarious* effects of the number and diversity of policymaking actors, thereby placing veto-actor considerations in broader theoretical context, and it offers an empirical approach to modeling these manifold effects distinctly and effectively. It then offers an initial exploration of this synthetic-theoretical and structured-empirical approach in a substantively important policy context: the evolution of fiscal policy in developed democracies from the 1950s through the 1990s.

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I. Veto-Actor, Collective-Action, and Bargaining Effects: A Theoretical Synthesis

A. Veto Actors: Deadlock, Delayed Stabilization, and Policy-Adjustment Retardation

In a *tour de force* of modern political-science theory, George Tsebelis introduced and theoretically elaborated (see, esp., 1995b, 1999, 2000, 2002) a powerful *veto actor* (*veto player*[1]) approach to the study of comparative politics and policymaking. He and co-authors have substantively explored and empirically substantiated this approach[2] extensively, especially in the contexts of Bicameral and European Union policymaking (Tsebelis 1994, 1995a, 1996; with Money 1995ab, 1997; with Garrett 1996ab, 1997ab, 1999ab, 2000, 2001abc; with Kreppel 1998, 1999; with Jensen, Kalandrakis, & Kreppel 2001; with Yataganas 2002; Heller 1997, 2001). Two recent studies consider referendum politics (with Hug 2002) and fiscal policy in developed democracies (with Chang 2004), finding further support. The essential argument in veto-actor theory is that the number and/or interest-ideological polarization of *policymaking actors whose approval is required to alter the policy status quo*—i.e., the number and/or polarization of *veto actors*—reduces the probability of (agreement upon enacting) policy change and/or the (maximum possible) magnitude of policy change. That is, as the size of the winset of the *status quo*, *W(SQ)*, shrinks, which it generally does as the number and/or polarization of veto actors increases (see below, and, for

[1] These terms are synonyms; I prefer *actors*. *Veto points*, places or points in the policymaking process wherefrom a veto may be cast, are different; *veto points*, then, are essentially placeholders for potential *veto actors*.

[2] Some of these studies also explore *conditional agenda-setters*, the theoretical contrapositive of *veto actors*. Agenda-setting power depends on (1) the size of the winset of the *status quo*, *W(SQ)*, which is inversely related to the number and/or polarization of veto actors, (2) the centrality of the agenda-setter's ideal point within those of the veto actors, and (3) the institutional provisions that permit some to make proposals and prevents others from amending them (see Tsebelis and Aleman 2004).

fuller elaboration, Tsebelis 2002), the range of possible policy-movements from the *status quo* shrinks. This produces an empirical prediction of a form illustrated in Figure 1 (Tsebelis 2002, p. 33, Figure 1.7; used with permission). Thus, as the winset of the *status quo* expands (i.e., the number and/or polarization of veto actors shrinks), the theory predicts a greater range of possible policy-changes, suggesting[3] both that the mean or expected policy-change increases and perhaps also that the variance of policy and policy-change grows. Conversely, as the winset shrinks (i.e., the number and/or polarization of veto actors expands), the theory offers an increasingly deterministic prediction of less policy-change.

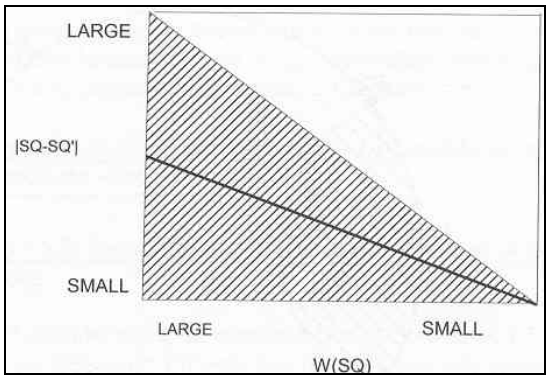

Figure 1: *Distance of New Policy from Status Quo as a Function of the Size of W(SQ)*

Applying these arguments to fiscal policymaking, the dispersion of authority across multiple actors: (a) privileges the *status quo* and thus retards policy-adjustment rates and (b) reduces the range of possible policy-changes (first- and second-order implications, respectively, as Figure 1 illustrates). The reduction in the range of possible policy-changes may also imply smaller expected policy-change and/or variance of policy change (see note 3). Regarding deficits and debts, e.g., Roubini and Sachs (1989ab) argue and find some evidence that more fractionalized and polarized governments would respond less and/or less rapidly to macroeconomic shocks that require fiscal adjustment. Alesina and Drazen (1991) and Drazen

[3] Only "*suggesting* greater mean and, possibly, variance of policy" because the theory does not predict where within the winset policy will actually fall, only that it will lie within the winset. Deriving mean and variance predictions requires knowledge of the identity and location of the agenda setter(s), and those with amendment power, among the veto players, and of the *status quo* position relative to all the veto actors' ideals. Predictions regarding the mean and variance of policy-change only emerge if one assumes that a large number of cases without information on these conditions average across all possible values for these conditions in some manner so that, without further information, each case can be taken as a random draw from those possible conditions. If one further assumes symmetry in the distributions from which these conditions are drawn, then the mean policy-change prediction is in fact the mean of the bounds set by *W(SQ)* as the example in Figure 1 illustrates. Variance predictions likewise require further, more-restrictive assumptions about the distribution of these other conditions, although symmetry specifically is not required. (See note 21 about modeling these further possible implications.)

and Grilli (1993) formalize and generalize this intuition to *delayed stabilization* of economic policies. Spolaore (2004) provides fuller theoretical consideration, evaluating the relative policy-responsiveness of single-party governments, which tend to respond too much, too quickly, and too often, against multiparty-coalition governments, which require internal consensus, or systems of institutionally divided policymakers with checks and balances, which tend to respond too little, too late, and too rarely.

Empirical support for these propositions regarding public deficits and debts was initially quite mixed (Roubini and Sachs 1989ab; Grilli *et al.* 1991; Edin and Ohlsson 1991; DeHaan and Sturm 1994, 1997; Alesina and Perotti 1995; Borelli and Royed 1995; Heller 1997, 2001; DeHaan, Sturm, and Beekhuis 1999).[4] Most of these empirical studies failed to model the core theoretical insight of the veto-actor argument precisely correctly, however. The empirical models include government fragmentation and/or polarization measures simply as one in a set of *linear-additive* determinants of deficits or debts rather than as measures of political conditions that modify (specifically: that *dampen*) adjustment-rates and, perhaps, reduce the magnitude of policy-responses to other factors and/or reduce policy variance.

In this specific policy context of fiscal deficits and debts, Franzese (2002b) found that model specifications adequately reflecting such delayed-stabilization/adjustment-retardation implications yield strong empirical support not only that (a) government fragmentation/polarization retards policy-adjustment rates (i.e., produces delayed fiscal stabilization in this case), but also (b) empirical measures of fragmentation/polarization that apply Tsebelis' veto-actor framework and so count raw numbers, rather than effective (i.e., size-weighted) numbers, of policymakers and gauge the maximum range, rather than the variance or standard deviation (also size-weighted measures), of those veto actors' preferences statistically dominated these alternative measures, which are based on *weighted-influence* rather than *veto-actor* notions of policy adjustment. Likewise, in broader fiscal- or monetary-policy contexts, Alt

[4] Roubini and Sachs (1989ab) find *government fragmentation* increases debt, but measured fragmentation crudely by an ordered index ranking governments as single- or multi-party majority then single- or multi-party minority. Edin and Ohlsson (1991) break Roubini and Sachs' index into separate indicators and find deficits correlate with minority governments only. De Haan and Sturm (1994, 1997), Borrelli and Royed (1995), and DeHaan et al. (1998) find not even this, but Heller (1997) finds bicameralism, especially with different partisan control of the houses, increases deficits, and Alesina and Perotti (1995) conclude from their case studies that coalitions implement fiscal adjustment less successfully than single-party governments.

and Lowry (1994, 2000, 2003), Lowry, Alt, and Ferree (1998), Treisman (2000), Lowry and Alt (2001), Hallerberg (2002), Basinger and Hallerberg (2004), Tsebelis and Chang (2004), and others all find strong support for the core veto-actor proposition (as illustrated in Figure 1) in empirical models correctly constructed to reflect its actual prediction that greater numbers and/or polarization of veto actors retard policy-adjustment, delay stabilization, and reduce the magnitude and/or frequency of policy change.

In summary, the veto-actor approach makes no prediction about the *levels* of policies (much less of outcomes); such predictions require information about *agenda-setter* (more generally: *proposer* and *amender*) powers and preferences and *status-quo* locations in specific policymaking instances, across which conditions veto-actor theory aims to generalize. Rather, *veto-actor* predictions regard the *pace* and *magnitude* of policy *change*. Greater numbers and/or polarization of veto actors thus retard policy-adjustment, delay stabilization, and reduce the magnitude and/or frequency of policy change. Empirical models specified correctly to reflect these predictions, rather than incorrectly relating policymaker fractionalization and/or polarization to policy *levels*, generally find strong support in fiscal-policy and other policymaking contexts. Moreover, the veto-actor view of policymaking with multiple policymakers rests explicitly and emphatically on unanimity and so rejects weighted-influence notions of policymaking. By definition, *veto actors* are agents whose agreement is essential to change policy, so *all* veto actors must agree to change policy for it to change from the *status quo*. Accordingly, appropriate empirical measures of policymaker fractionalization from this view are *raw*, and ***not*** *effective* (i.e., size-weighted), numbers of veto actors; and appropriate measures of policymaker polarization are absolute maximum *ranges* between the extremes, and ***not*** *variances* or *standard deviations* (also size-weighted measures), of those veto actors' preferences.

B. Collective Action and Common Pools in Fiscal Policy with Multiple Policymakers

Others, however, have stressed various collective-action and common-pool issues that may arise when multiple actors share fiscal policymaking authority. For example, Weingast, Shepsle, and Johnsen (1981: *WSJ*) ask why representative legislatures routinely pass budgets that manifestly over-emphasize distributive, or pork-barrel spending, projects. Their answer stresses the division of democratic polities

into electoral districts, noting that representation everywhere is based on "a districting mechanism that divides the economy into n disjoint political units called districts" (p. 643), and defining "distributive policy [as] a political decision that concentrates benefits in a specific geographic constituency and finances expenditures through generalized taxation" (p. 644). Given these definitions, and assuming legislators follow some log-rolling or universalistic norm, *WSJ* show that overemphasis on distributive policies, i.e., overspending on pork-barrel projects, is an increasing function of the number of electoral districts. Formal analytically, first, index the n electoral districts. Then, assume benefits, B, of a pork-barrel project concentrate in district i (for analytic clarity: entirely so) and increase with project size or cost, $B_i=f(C)$, which, with diminishing returns, gives $f'>0$ and $f''<0$. By definition of a distributive policy, costs accrue more uniformly across all n districts (for analytic clarity: entirely so): $C_i=C/n$. The individual district then faces a utility-maximization problem, $Max_C f(C)-C/n$, for which the solution is just $f'(C)=1/n$. The optimal project-size from the individual district's view thus increases in the number of districts.

Individual legislators do not pass policies, however; legislatures do. *WSJ* argue that legislators adopt universalistic norms where all legislators vote for all distributive bills ("I'll vote for yours; you vote for mine"), which implies that legislatures always pass the district-by-district optimal, yielding pork-barrel spending proportional to the number of districts. Under universalism, in other words, total public revenue is a *common pool* for the n representatives (policymakers), which they overuse proportionally to n in distributing benefits. If, however, legislatures decide democratically, without log-rolling, universalistic norms, or side-payments, then all pork-barrel projects would *lose* legislative votes by a margin of $(n-1)$ to 1 because only receiving districts derive net benefits, $f(C)-C/n$, whereas all others only pay costs, C/n. Only projects that inherently, i.e. without sidepayments, produced net benefits for at least a majority of legislators would pass, yielding far less overspending, perhaps even underspending, and not necessarily proportional to n.[5] As Riker (1962) shows, though, coalition-building strategies for distributive policy in

[5] Without side-payments or log-rolling, all projects passed must *inherently* provide net benefits to at least one-half-plus-one districts, rather than just to one district as under universalism, and rather than just to generate sufficient total net benefit to pay one-half-plus-one legislators, as under *MWC* majoritarianism (see below). Accordingly, many projects that could have

majority-rule legislatures will (optimally, opportunistically) involve side-payments sufficient to induce bare-majority support (minimum-winning coalitions: *MWC*), meaning *(n-1)/2* other legislators must receive $C/n+\varepsilon$. This also implies overemphasis on pork proportional to the number of districts, albeit more much marginally so. Specifically, under universalism, legislatures pass all projects with $B>C/n$, whereas under majority-rule with side-payments, legislatures pass only projects with $B>[(n+1)/2n]\cdot C$.[6] Under universalism, total revenue is a common-pool for the whole *n*-member legislature that each legislator may exploit unilaterally, so project benefits need only exceed *1/n* of costs to pass. Under *MWC* majoritarianism, project benefits must suffice to provide *1/n* to the agenda setter *and* to the *(n-1)/2* other legislators receiving side-payments, so the pool of revenues is effectively common to one-half-plus-one of legislators. As Figure 2 illustrates, therefore, common-pool problems manifest under *MWC* decision-making as under universalistic and they worsen with *n* in both cases, but only insofar as *(n+1)/2n*, rather than *1/n*, declines with *n* under *MWC*.

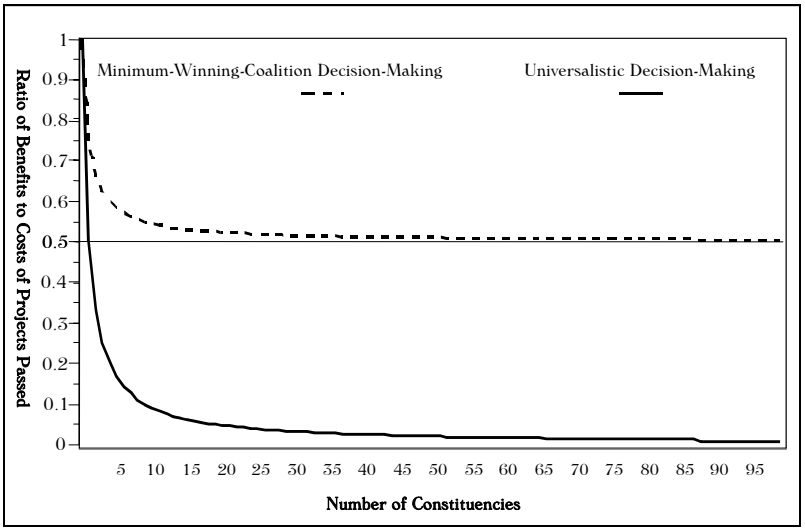

Figure 2: *Ratio of Benefits to Costs of Minimally Passable Distributive Projects under Universalism vs. MWC-Majoritarianism*

surpassed *(n+1)/2n* times costs in total benefits (the *MWC* minimum; the lower universalistic one is *1/n*) would fail because positive net benefits did not accrue across enough districts. This implies less overspending than by the other rules. Indeed, projects with total benefits exceeding costs, the utilitarian-optimal criterion, may nonetheless fail, and so underspending occur, if those benefits are too concentrated. Finally, whether spending remained proportional to *n* at all under these conditions would depend on the distributions (across districts) from which potential projects' benefits and costs are drawn.

[6] Some may doubt that *MWC* majoritarianism implies overspending proportional to *n* at all since, regardless of *n*, *(n-1)/2* will receive side-payments infinitesimally greater than their *1/n* tax burdens and the proposer herself need receive only that much also to favor passing the bill, meaning that ½ of *n* must get at least *1/n*, so, to pass, projects seem always to require benefits at least ½ of costs. This is true; however, it ignores that *n* must be an integer, so the minimum amount by which benefits must exceed ½ costs is declining in *n* because, for example, obtaining support from 3 out of 5 policymakers is more costly than 4 out of 7. Essentially, the "plus one" of the "one half plus one" becomes cheaper to buy as *n* increases (see also Ehrlich 2004).

Actual democratic policymaking likely operates somewhere between pure universalism and pure-MWC-majoritarianism; indeed, later scholarship deduced several reasons such *super-majoritarianism* may govern legislative decision-making. Shepsle and Weingast (1981) note that, with uncertainty over future minimum-winning-coalitions' memberships, super-majoritarian legislative norms (to insure against being too-often omitted from the winners) may be strategically sustainable. Luebbert (1986) and Strom (1990) argue similarly regarding parliamentary government formation that, with uncertainty over legislative support, which, e.g., secret balloting or lack of party discipline may induce, coalition builders would seek super majorities (oversized coalitions). Others stress legislative procedures. Carruba and Volden (2000) show that, in fact, all coalitions from minimum-winning to universal may form, depending on amendment openness and other procedural rules. For example, Baron (1991) finds that universalism on distributive bills is unlikely, yet over-provision that increases in n still prevails, albeit to a degree mitigated (toward the *MWC* minimum illustrated in Figure 2) by procedural openness. McCarty (2000a) and Bradbury and Crain (2001) argue that presidents and second chambers, respectively, dampen the $1/n$ effect (again toward the *MWC* minimum), by—I infer—adding a legislative step in which veto or amendment may occur. Franzese and Nooruddin (2003) add that, if voters are rationally ignorant, C/n may be too small for non-receiving-district voters to notice even while receiving-district voters readily appreciate their much larger net benefit, $f(C)-C/n$. Thus, with rationally ignorant voters, legislators could more easily sustain universalistic log-rolls or other super-majoritarian agreements to support each other's pork-barrel requests by cooperative solutions to their iterated-prisoners-dilemma game.[7] Furthermore, voters' rational ignorance also facilitates side-payments to build super-majorities behind distributive policies because legislators will demand smaller payments to support others' distributive proposals the greater is their voters' ignorance. In the limit, rational ignorance revives universalistic scenarios wherein distributive projects maximize pork-barrel benefits district-by-district.[8]

[7] Such cooperation is especially likely because legislators number relatively few, have relatively homogenous interests in this regard, and interact repeatedly and indefinitely (Axelrod 1984).

[8] Moreover, the total size of distributive inefficiencies or side-payment excesses about which voters may rationally remain

In summary, distributive politics generally and pork-barrel spending specifically increase with the number of districts, more strongly so as legislative behavior tends more universalistic and less minimum-winning, which tendency, in turn, heightens as rational ignorance, winning-coalition uncertainty, or legislative-rule closure to amendment or veto rises. Thus, as the numbers of policymaking players increase, not only does the potential for deadlock increase and policy-adjustment rates decrease, as the veto-actor approach would emphasize, but collective-action and common-pool problems also increase and, with them, the bite of the *law of 1/n*, as it is sometimes called.

Such collective-action and common-pool issues manifest myriad ways in multi-actor policymaking. For example, and critically for the empirics considered below, Velasco (1998, 1999, 2000) shows that a common-property issue arises with respect to the inter-temporal totality of public revenues, meaning that policymakers' incentives regarding deficits and debts, too, follow the *law of 1/n*, with over-drawing (i.e., over-borrowing or excessive deficits) proportional to *n* for *equal-sized* actors:

> Two distortions are present if *n* agents share the stock of the resource. First, each agent uses the whole stock and not one-*n*th of it as the basis for consumption and spending decisions. Second, the return on savings as perceived by one agent is the […total…] rate of return…minus what the other *n-1* agents take out. Hence…each agent undersaves (overspends in the case of fiscal policy, overexploits in the case of natural resources). This means that deficits are incurred and debts accumulated even when there is no [economic-welfare] incentive... In short, the model exhibits a "deficit bias" (p. 5, NBER #6336 version).

Similarly, Peterson and co-authors (with Rabe and Wong 1986; with Rom 1991, 1995) and Treisman (1999ab) show, in very different substantive contexts and with somewhat different emphases, how federalism, by endowing multiple actors with taxation authority, creates several *common-pool* problems. For example, inter-jurisdictional competition (with high factor mobility) makes a common pool of investment resources, and so induces over-fishing: here, excessively *low* taxes. Meanwhile, a national government that explicitly promises or is implicitly held to serve as lender-of-last-resort for subnational jurisdictions creates another common pool—of the federal guarantee and the funds backing it—that induces excessive borrowing by the subnational units. Others have emphasized these and related issues in the European Union context also, especially regarding European Monetary Union and the *Euro* (see,

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ignorant also rises with the number of districts over which such costs distribute.

e.g., Calmfors 1998; Ozkan, Sibert, and Sutherland 1998; Sibert 1998; Sibert and Sutherland 1999).

The severity of fiscal common-property problems, as always the case in the ubiquitous collective-action/common-pool scenarios of which they are an example, increases in the number of policymakers *but diminishes* as some (one or more) of these policymakers become larger-than-equal shares of the whole, i.e., as some actor(s) become(s) more *encompassing* in the Olsonian (1965) sense. Notice at one limit of Figure 2, for example, that, with only one policymaker, that single, wholly encompassing, policymaker internalizes all of any project's costs, so the ratio of benefits to costs must exceed one for proposals to pass. In this fashion, policymakers representing constituencies comprising greater shares of the nations' fisc will internalize more of the common pool than will those representing lesser shares: Olson's *Implication 5*, of the logic of collective action (1982, pp. 47-53).[9] Fiscal policymakers representing, e.g., constituencies comprising 49%, 49%, and 2% of the fisc are much closer to $n=2$ than to $n=3$ in terms of counting actors to gauge the severity of common-pool/collective-action problems. In other words, the n in the quote above, in the *law of 1/n*, and in which collective action and common pools worsen, *is* the *size-weighted* or *effective* number of policymakers (unlike the n in veto-actor theory, which is unweighted).

Collective-action and common-pool effects are as endemic to situations of multiple policymakers as are veto-actor effects, and, like the policy inaction of the latter, collective-action/common-pool *problems* need not always harm, and can even benefit, society. In other words, collective-action problems among policymakers can be boons for citizens. Goodhart (2002), for example, explains how incumbents suffer a collective-action problem in responding to their shared incentives to *electioneer* (i.e., to manipulate economic policies for opportunistic, electoral effect; see Franzese 2002a). The greater the number of policymakers with a hand in policymaking, the more voters must divide credit (blame) for anything delivering benefits (costs) among those incumbents. As the *size-weighted* number (i.e., effective number)

[9] This statement and the next are purposefully very careful to use the generic term, *fisc*, because for the specific common-pool problem in fiscal policy emphasized by *WSJ* and Velasco to emerge in the precise form argued there and described here, these unequally sized hypothetical constituencies must each comprise its same share on the revenue and expenditure side of the fisc. Mismatch between constituency representation on the expenditure and the revenue sides of fiscal policymaking can exacerbate these over-spending/over-borrowing problems, mitigate them, or even over-compensate for them to induce problems of excessively (suboptimally) low spending or borrowing. See also Primo and Snyder (2005).

of incumbents grows, (the sum of) their incentives to *electioneer* diminishes, and so opportunistic policy-manipulation to the electoral calendar (Tufte 1978) fades.

Thus, three aspects of the collective-action/common-pool effects of the dispersion of policymaking authority may help distinguish them theoretically and empirically from the veto-actor effects of the same dispersion. First, common-pool effects regard policy *levels*, whereas veto-actor effects relate to policy-adjustment (policy-*change*) *rates*, *magnitudes*, and *variability*. I.e., as policymakers' common-pool problems worsen, the *levels* of distributive spending, or of borrowing, etc., increase, and the *levels* of electioneering diminish. As the numbers (and polarization) of veto actors increase, the *rate*, *probability*, and/or *magnitude* of policy *adjustment* or *change* diminishes, and policy *volatility* or *variance* may increase. Thus, the predicted common-pool effects of government fractionalization include a policy *direction*, a positive or negative sign for the predicted *level*; the predicted veto-actor effects of fractionalization (and of polarization) do not. Second, whereas veto-actor effects arise from government fractionalization and polarization both, i.e., numbers of and dissension among policymakers, common-pool effects tend to derive solely from fractionalization.[10] Third, collective-action/common-pool effects increase with *size-weighted* numbers of policymakers, whereas veto-actor effects increase with *raw numbers* and *total ideological/interest spread*—i.e., absolute distance between furthest extremes—of policymakers. Size-weighted numbers are *effective* numbers; size-weighted polarization measures include standard deviations or variances; raw numbers are counts; and the total ideological/interest spread is called the *(maximum, absolute) range* (Franzese 2002b).[11]

C. Delegation, Bargaining, and Compromise in Fiscal Policy with Multiple Policymakers

Others have highlighted the delegation, bargaining, and compromise aspects of policymaking with multiple actors. Much of the best theoretical and empirical research in this area analyzes extensive-form games designed to illuminate specific substantive contexts, like the U.S. Congress. For these research

[10] Interest heterogeneity can complicate collective action, but this is different from exacerbating collective-action/common-pool problems. The former statement implies delays or difficulties in taking collective action, and so refers more to a veto-actor effects; the latter implies over-fishing or under-investment effects on collectively implemented action, i.e. a level effect.
[11] In one dimension, *range* is the distance (length) farthest-left-to-right among policymakers; in multiple dimensions, *range* is the area or (hyper-)volume within the upper-contour set (i.e., of the figure drawn by connecting the outermost) of the policymakers' ideal points.

goals and strategies, the extensive-forms not only the specific institutions and rules governing strategic policymaker relations in these particular contexts, but, indeed, these tend to receive central emphasis. McCarty and Poole (1995) and McCarty (2000b), for example, give such explicit, extensive-form models of US legislative and legislative-executive bargaining games,[12] as do Huber and Lupia (2001) and Huber and McCarty (2001), e.g., of parliamentary bargaining;[13] the former estimating empirical models of their extensive-form games. Alt and Lowry (1994, 2000, 2003), Lowry, Alt, and Ferree (1998), Lowry and Alt (2001), likewise, offer extensive-form theoretical models of US-state legislature-executive bargaining, with empirical specifications that closely match. Snyder et al. (2004) follow a similar approach to analyze bargaining in weighted-voting scenarios, with substantive application to government-formation and subsequent policymaking in parliamentary systems. Similarly, Kiewet and McCubbins (1991), Bawn (1995), Epstein and O'Halloryn (1999), and Huber and Shipan (2002) analyze extensive-form theoretical models of specific bureaucratic-delegation scenarios,[14] some with matching empirical evaluations.

Franzese (1999, 2002b, 2003) follows a less context-specific strategy, one that, in other words, relies less on the specifics of any particular extensive-form game. For comparativists especially, the approach may offer crucial analytical benefits, although it does necessitate greater abstractions and simplifications, and thereby sacrifice some of the analytic and empirical precision and power of a specific-extensive-forms approach. The aim here is to offer a simple, context-independent model of bargaining that might more easily *travel*, so to speak, across the many specific contexts across which the comparativist wishes to generalize theoretically and from which the comparativist seeks to infer empirically. Luckily, the conclusions of most extensive-form models of bargaining, including those applied in the works cited in the preceding paragraph, share some important and useful common features. Essentially, if a set of policymakers with different preferences over policies and outcomes must agree to produce some policy,

[12] Baron and Ferejohn (1989) and Romer and Rosenthal (1978), respectively, are perhaps the foundational works in these traditions; Cameron and McCarty (2004) provide an excellent review of the legislative-executive bargaining models.
[13] Lupia and Strom (2004) is a very accessible survey of models of parliamentary bargaining in government formation; Huber and McCarty (2001) consider the implications of multiple alternative coalition decision rules for their extensive-form game.
[14] McCubbins, Noll, & Weingast (1987) is perhaps the foundational work in this bureaucratic-delegation tradition.

then, in virtually any bargaining game, the agreed policy will be some *convex combination*[15] of those actors' preferences.[16] It will, in other words, lie somewhere within the set whose outer reaches are defined by the ideal points of the policymakers.[17] For two actors, for example, the set of possible outcomes is the line segment connecting their ideal points. In more than one dimension with more than two actors, this possible line-segment becomes a possible plane (area), then volume, then hypervolume.[18] In cooperative game theory, this *upper-contour set* of the policymakers' ideal points is called the *core*. As Osborne and Rubinstein (1994) review, a fairly wide class of non-cooperative bargaining games has equilibria within this *core*. This core is also central to Tsebelis' veto-actor theory (see Tsebelis 2002, especially).

However, the bargaining approach suggested in Franzese (1999, 2002, 2003), which, as empirically implemented, is essentially *Nash Bargaining*,[19] takes one (more-restrictive) step than veto-actor theory, yet also one less step than extensive-form bargaining. In Nash Bargaining, the policy enacted by n players is a (geometrically) weighted-average of their ideal points, with weights reflecting the "relative bargaining strengths" of the players. Rubinstein (1982) has shown that, although Nash Bargaining is a cooperative-game-theory concept, its equilibria are equivalent to those of several kinds of extensive-form, non-cooperative games of offers and counter-offers. In the non-cooperative, extensive-form models of delegation, veto-bargaining, and legislative-bargaining cited above, for example, the predicted outcome is

[15] A *convex combination* is a linear-additive function with coefficients, π_i, such that $0 \leq \pi_i \leq 1$ and $\sum \pi_i = 1$; (at least rough) synonyms include *weighted average* and *affine combination*.

[16] In bargaining models with full information (no uncertainty), in fact, we could dispense with the *virtually*. With uncertainty or imperfect information, bargains can settle outside the extremes of the bargainers' preferences, but even in this case, the bargaining settlement would, under most reasonable conditions, lie within the bargainers' ideal *in expectation*, which is more the concern for the kind of empirical modeling being offered here. To illustrate, for example, some hard-bargainer with somewhat extreme preferences relative to the other bargainers, expecting certain things about the other bargainer(s) preference(s) or other unknowns or uncertainties, could take an even more extreme position than she truly has in an attempt to produce a settlement within the bounds closer to her ideal. These unknowns or uncertainties could, however, sometimes resolve themselves such that the outcome is more extreme than the hard-bargainer actually wanted and, indeed, outside the range of the bargainers' ideals. Even in this case, though, the hard-bargainer would not have adopted a strategy that produced an *expected* policy more extreme than her ideal unless, perhaps, her utility function were considerably and oddly asymmetric.

[17] This set is called the *upper-contour set;* (at least rough) synonyms include *convex set, affine set*, or *convex hull*.

[18] Again (see note 16), this assumes full information; more generally, the settlement could conceivably lie anywhere within the union of the bargainers indifference curves through the status quo depending on the exact assumptions of the specific bargaining game. Similar considerations to those discussed in note 16, however, imply that most reasonable bargaining models will predict settlements within or reasonably near these lines, planes, volumes or hypervolumes.

[19] *Nash Bargaining*, from cooperative game theory, should not be confused with the *Nash Equilibria*, the concept at the very foundation of all non-cooperative game theory, of non-cooperative bargaining games.

indeed bounded between, i.e. some convex-combination of, the ideal points of the bargainers.[20] In other words, adding one of the simplest and most-general possible conceptions of bargaining to policymaking games between multiple players will tend, across a wide array of very specific circumstances, to produce policies at or quite close to a (geometrically) weighted-average of the ideal policies of policymakers, with the weights given by their bargaining powers (or some appropriate model thereof). Furthermore, the contributions to Thomson et al. (forthcoming), in expositions and comparisons of several bargaining-models of European-Union decision-making, the most thorough-going comparison of its kind to date, collectively demonstrate the empirical comparability, or, more-usually, *superiority*, of such simple Nash-bargaining-style, weighted-compromise models with/over specific extensive-form alternatives. Thus, in addition to the distinct and distinctly *model-able* veto-actor effects (policy-adjustment retardation, etc.) and common-pool effects (over-fishing/under-investment, etc.), multiple policymakers have distinct and distinctly *model-able* bargaining effects (inducing compromise/weighted-average outcomes) as well.

Specifically regarding the fiscal policies related to deficits and debt, Cusack (1999, 2001; but, cf., Clark 2003) offers one interesting set of theoretical propositions that may offer some purchase for this bargaining conception. He argues that the desired fiscal policies of left and right parties differ not so much by the size of deficits and debts *per se* as by the (Keynesian) activism with which they respond (counter-cyclically) to economic conditions. As Hibbs (1987ab) demonstrated quite clearly, the natural constituency of the right and of the left, the "higher" and "lower" ends of socio-economic hierarchies, have strongly differing objective and subjective relative distastes for unemployment and inflation (i.e., for real and nominal macroeconomic "bads"), with the lower/left weighing unemployment more relative to inflation than do the higher/right. Thus, responsive left-party policymakers will have ideal policies reflecting greater Keynesian activism than that of right-party policymakers. Fiscal policy under the left will respond more aggressively counter-cyclically to economic conditions than will fiscal policy under the right; the right may even be pro-cyclical. When multiple parties share fiscal-policymaking control, as, for

[20] However, many of these particular extensive-form, non-cooperative games seem to predict the bounds themselves more-frequently than do cooperative-game bargaining models like Nash Bargaining and its non-cooperative analogues.

example, in coalition- and divided-government contexts, bargaining models would suggest that the degree of activism of the resulting government policy should be some (geometrically) weighted average of the ideal policies of those government members. A simple Nash-Bargaining model might, for example, suggest that a coalition's activism would be some function of the cabinet-seat shares of the coalition's parties; the empirical specification offered below reflects this simple conjecture.

II. An Empirical Model of the Theoretical Synthesis

A. Specification of the Empirical Model

This paper next extends the empirical model of public debt from Franzese (2002b, ch. 3), specifically the form of that model including country fixed-effects as published in Franzese (2000), to reflect (1) the different aspects of multiple policymakers' fragmentation, partisanship, and polarization that relate (a) to veto-actor effects: their raw numbers and ideological ranges, (b) to common-pool/collective-action effects: their effective numbers and ideological standard-deviations (or variances), and (c) to bargaining effects: weighted means of their ideologies; and to reflect (2) the different ways in which these three distinct effects manifest in policies (such as public debt): (a) veto-actors (primarily[21]) slow policy-adjustment/delay fiscal-stabilization; (b) collective-action/common-pools induce over-drawing of public resources and from the future (larger deficits) and under-investing in policymakers' common properties (less electioneering); and (c) inter-partisan bargaining induces some convex-combinatorial, i.e., roughly,

[21] As noted in that section, veto actors also reduce the maximum-possible policy-change and therefore perhaps the average policy-change, and they may also reduce policy volatility (variance). Ghandi and Przeworski (2004) show how to combine the average-policy-change effects with the policy-adjustment-retardation effects emphasized here. Specifically, if policymakers target some level $Y_t^*=k-cX_t$ for outcome Y_t, with X_t some factor that shifts their desired policy, such as their ideology, and if the number of policymaking veto-actors, V_t, retards their pursuit of that goal at (linear) rate, a, then the change in policy will be $\Delta Y_t=(Y_t^*-Y_{t-1})/aV_t=(k-cX_t-Y_{t-1})/aV_t=(k/a)(1/V_t)-(c/a)(X_t/V_t)-(1/a)Y_{t-1}$. They find empirical support for this model where X is a measure of government ideology and Y the Gini-index of inequality. *Inter alia*, they conclude that, because veto actors dampen both the enactment-rate and the size of policy-change (although the implied *equally* is only an assumption), veto actors alter the time-path of outcome responses to explanatory factors but not the final level of the outcome-response. This conclusion does not hold, however, for all sorts of explanatory factors but only for those that reflect the effects of policy actions targeted in this fashion. Some explanatory factors, such as unemployment and growth in the public-debt empirical analysis below, affect the outcome *unless or until government policies adjust to them*. For these factors, as Franzese (2002, ch. 3) emphasized, veto-actor effects manifest only in the retardation of adjustment-rates, and so veto actors affect the long-run levels of the dependent variable as well, greatly magnifying the long-run impact of such explanatory factors. Future research will combine the Ghandi-Przeworski (2004) empirical-modeling strategy, modified (a) to apply only to explanatory factors whose impact occurs through intentional target-seeking of the dependent variable by policymakers, (b) to apply the Franzese (2002) strategy to those whose effects do not involve target-seeking policymaking, and (c) to estimate the resulting model by non-linear least-squares, which will enable recovery of the a and c effects of veto actors (and of other factors) separately.

some compromise policies (left-activist/right-conservative Keynesian-countercyclical/conservative-procyclical fiscal-policy in proportion to left/right bargaining powers). That is, the empirical model of fiscal policy should reflect the three distinct natures of partisanship, fragmentation, and polarization that can affect fiscal-policy outcomes and the three distinct causal pathways by which the dispersion of fiscal policymaking authority across multiple actors affect those outcomes. Absolute numbers of *veto actors* and their (maximum) ideological range should modify policy-adjustment rates (primarily, see note 21); effective numbers of *incumbent policymakers* and, possibly, standard deviations of ideological positions should affect the intensities of their *common-pool* problems with respect to debt levels and in exploiting their opportunistic incentives to electioneer; and some *bargaining* process among these partisan policymakers (e.g., a Nash-Bargaining process implies a simple weighted-influence conception) should determine what combination of their ideological interests is reflected in the overall government's policy responsiveness to macroeconomic conditions (i.e., the degree of Keynesian activism).

Expressing these propositions as a (nonlinear) regression equation gives:

$$\begin{aligned} D_{it} = \alpha_i &+ \left(1 + \rho_n NoP_{it} + \rho_{ar} ARwiG_{it}\right) \cdot \left(\rho_1 D_{i,t-1} + \rho_2 D_{i,t-2} + \rho_3 D_{i,t-3}\right) + \\ &\left(\beta_{\Delta Y} \Delta Y_{i,t} + \beta_{\Delta U} \Delta U_{i,t} + \beta_{\Delta P} \Delta P_{i,t}\right) \cdot \left(1 + \beta_{cg} CoG_{it}\right) + \mathbf{X}_{it}\mathbf{B} \\ &\left(\gamma_{e1} E_{it} + \gamma_{e2} E_{i,t-1}\right) \cdot \left(1 + \gamma_{en} ENoP_{it} + \gamma_{sd} SDwiG_{it}\right) + \mathbf{Z}_{it}\mathbf{\Gamma} + \varepsilon_{it} \end{aligned} \qquad \textbf{(1)}$$

where D_{it} is the debt (to be precise, gross debt of consolidated central government as a percent of GDP) in country *i* and year *t*. All data are from Franzese (2002b) and defined as therein.[22]

NoP and *ARwiG* are, respectively, the raw *N*umber *o*f *P*arties in government and the *A*bsolute *R*ange *wi*th*i*n *G*overnment, from farthest-left to farthest-right party. These government fragmentation and polarization measures relate to the veto-actor conception of the effects of multiple fiscal policymakers and so enter the model enter multiplicatively/interactively with the lagged dependent variables, thereby modifying the dynamics: i.e., the pace of policy adjustment. Greater fractionalization and polarization

[22] The variable *dxrig*, the difference between the expected real-interest and real-growth rates, is the only exception. The variable now calculates expected growth-rates using country fixed-effects, two lags of growth, and one lag of real GDP per capita, *oy*, *open*, *ToT*, and *open·tot* (the last three being defined below). These changes enhance the expected-growth model and facilitate interpretation of these other variables in the model, ensuring that their coefficients reflect their effects on debt exclusive of a causal pathway running through expected future growth.

should, by the veto-actor theory, slow policy adjustment, so we expect the coefficients ρ_n and ρ_{ar} to be positive. Since this adjustment-rate retardation should be proportionate across the first-, second-, and third-order lags empirically required in this model,[23] trying to estimate a separate coefficient for each interaction of *NoP* or *ARwiG* with each of these three lags would be unnecessary and highly inefficient.[24]

ΔY is real GDP growth; ΔU is the change in the unemployment rate; and ΔP is the inflation rate. Certainly, we expect debt to respond to economic conditions: negatively, indicating fiscal improvement, with ΔY and ΔP, positively (fiscal deterioration) with ΔU. Government members from more-left parties should push to magnify these automatically counter-cyclical fiscal responses, whereas members from more-right parties should push less hard or even pro-cyclically. Thus, given that the variable *CoG*, the government's partisan *C*enter *o*f *G*ravity,[25] gauges parties from left to right, 0-10, negative β_{cg} would reflect lesser Keynesian counter-cyclicality, perhaps even classical pro-cyclicality, from the right. Again, without strong reason to believe otherwise, assuming partisanship will dampen or enhance this counter-cyclicality equally with respect to each macro-economic indicator greatly enhances efficiency.

The term **XB** refers to a set of political-economic conditions (controls)—*dxrig*: the difference between expected real-interest and expected real-growth rates; terms-of-trade shocks (*ToT*: terms of trade, *open*: trade exposure, and their product); and *oy*: the ratio of the over-65 to under-16 populations—the fiscal-policy response to which is not expected to be strongly partisan-differentiated.[26]

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[23] Lagrange-multiplier tests do indicate some remaining first-order residual correlation; Ljeung-Box Q-tests of partial-correlation plots do not, although they do reveal some (inexplicable) seventh-order correlation. Technically, remaining residual correlation implies least-squares estimation of lagged-dependent-variable (LDV) models is biased. However, these residual correlations, and so the biases, are small; and no simple ARIMA specification fully removed these correlations consistently across the two specifications considered. Thus, the LDV results are reported to simplify exposition; (ARIMA results available upon request; a model with two lags of the dependent variable and AR(1) in residuals performs best.)

[24] Attempting separate interactions of *NoP* and *ARwiG* with each lag would be *highly inefficient* because the unnecessary extra coefficients to be estimated would be upon highly correlated regressors.

If one retains Ghandi and Przeworski's (2004) assumption that the rate at which veto actors dampen policy-adjustment is equal to that at which they reduce the magnitude of policy change in response to explanatory factors of the sort described in note 21, then one would simply also divide each such factor in this model by the term $(1+\rho_n+\rho_{ar})$. If one wished to allow these two types of dampening rates to differ, one could still assume them equal within each type to gain empirical leverage. If one insisted on allowing these dampening rates to differ arbitrarily within and across types of dampening rates, then the ρ and β terms in this model might not be separately identified (as parameters a, c, and k are not in Ghandi and Przeworski 2004).

[25] *Center of Gravity* and *CoG* are Cusack's term and mnemonic; the measure used here is Franzese's.

[26] Such factors are likely candidates regarding which to expect Franzese (2002) but not Ghandi and Przeworski (2004) type

ENoP and *SDwiG* are, respectively, the *E*ffective *N*umber *o*f *P*arties in government and the *S*tandard *D*eviation *wi*th*i*n *G*overnment, i.e., the standard deviation of the government members' party left-right scores. These fragmentation and polarization measures relate to the *weighted-influence* conception of the common-pool effects of multiple fiscal policymakers. Accordingly, these factors enter the model in a manner that affects the level of the deficit and that modifies the expected electioneering of government, i.e., they enter multiplicatively with the variables E_t and E_{t-1}, which are, respectively, a pre-election-year and post-election-year indicator.[27] Greater fractionalization and polarization should, by the collective-action/common-pool theory regarding the policymakers' incentives to electioneer, dampen electoral cycles, so we expect negative γ_{en} and γ_{sd} coefficients. Since this dampening should be proportionate for both the pre- and post-electoral surge, trying to estimate a separate coefficient for each interaction of *ENoP* or *SDwiG* with each E_t and E_{t-1} would once again be unnecessary and highly inefficient.

The term $\mathbf{Z\Gamma}$, finally, refers to the set of constituent terms involved in the previously mentioned interactions: *CoG*, *ENoP*, *SDwiG*, *NoP*, and *ARwiG*. The substantively critical example therein is the coefficients on *ENoP* and *SDwiG*, which *may* be positive to reflect the common-pool effect on the debt level. However, as Velasco (1998, 1999, 2000) expounds most fully and clearly, the present government's share of the present value of all current and future revenues—a sort of *temporal fractionalization*—is much more relevant in this regard than is any partisan fractionalization within the current government.[28]

B. Estimation and Discussion of the Empirical Model and Results

Table 1 gives the results of nonlinear-least-squares estimation of this model, with heteroskedasticity-consistent standard errors, using data from 21 OECD countries from 1956± through 1995± (non-democratic country-years excluded), country fixed-effects,[29] and the full set of constituent terms, **Z**.

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veto-actor effects (see notes 21 and 24).

[27] Franzese (1999, 2002, 2003) has found repeatedly that electioneering is at least as strong and statistically significant in post- as in pre-election years.

[28] I.e., ideal measures for this effect are party-by-party estimates of its own expected lifetime share of policymaking authority.

[29] Country-dummy coefficients suppressed to conserve space; available upon request.

Table 1: *Nonlinear-Least-Squares Estimation of Equation (1)*

	Coefficient	Standard Error	t-Statistic	Prob(T>|t|)
D_{t-1}	1.212	0.060	20.112	0.000
D_{t-2}	-0.153	0.085	-1.792	0.074
D_{t-3}	-0.121	0.045	-2.677	0.008
ρ_n	**0.007**	**0.006**	**1.089**	**0.277**
ρ_{ar}	**-0.000**	**0.006**	**-0.013**	**0.990**
ΔY	-0.336	0.111	-3.033	0.003
ΔU	0.992	0.308	3.219	0.001
ΔP	-0.188	0.063	-2.965	0.003
β_{cg}	**-0.037**	**0.037**	**-0.988**	**0.323**
X_1 (*open*)	15.891	5.279	3.010	0.003
X_2 (*ToT*)	0.388	1.744	0.222	0.824
X_3 (*open·ToT*)	-10.681	5.156	-2.072	0.039
X_4 (*dxrig*)	-0.036	0.066	-0.544	0.587
X_5 (*oy*)	2.064	1.094	1.886	0.060
E_t	0.687	0.568	1.210	0.227
E_{t-1}	1.490	0.645	2.310	0.021
γ_{en}	**-0.547**	**0.182**	**-3.001**	**0.003**
γ_{sd}	**0.573**	**0.486**	**1.179**	**0.239**
Z_1 (*CoG*)	0.051	0.131	0.390	0.697
Z_2 (*ENoP*)	0.281	0.446	0.629	0.530
Z_3 (*SDwiG*)	0.542	0.437	1.242	0.215
Z_4 (*NoP*)	0.181	0.277	0.654	0.514
Z_5 (*ARwiG*)	-0.312	0.259	-1.205	0.228
Summary Statistics				
N (Deg. Free)	735 (691)		**Std. Err. Regression**	2.525
R^2 ($\bar{R}^2$)	0.991 (0.990)		**Durbin-Watson**	2.101

We find reasonably strong evidence for the common-pool-moderated electoral-cycles argument, where effective-number-of-parties gauges the degree of moderation, as seen in the γ_{en} estimate, although polarization may work against this, as seen in the γ_{sd} estimate.[30] We find generally correct sign for veto-actor policy-adjustment retardation, as measured by raw numbers of parties (ρ_n), although the absolute range measure of polarization shows no such effect (ρ_{ar}). We also find correct sign for β_{cg}, indicating partisan-differentiated degrees of Keynesianism, with the partisan measure a weighted-average (Nash-bargained/compromise) of government-members' parties. These correctly-signed parameter estimates

[30] More likely, this is an example of Achen's (1985) effect of correlated imperfect measures of the same or closely related concepts in one regression model. In such cases, the indicator that more accurately and closely gauges the concept tends to receive inflated coefficient estimate and significance while the lesser proxy receives reversed sign and muted significance. We have strong reason to believe here that both effective numbers of governing parties and standard deviations of their partisan-scores relate to voters' divvying of credit for electioneering, which creates the common pool, but the former measure also surely better measures and more accurately reflects the underlying concept than does the latter. However, we refrain from closer, substantive analysis of these and other parameter estimates until determining a preferred model-specification.

are only about equal to their standard errors, but joint-significance tests of the conditioning effects of multiple policymakers (γ_{en}, γ_{sd}, ρ_{n}, ρ_{ar}, and β_{cg}) overwhelmingly reject excluding these from the model (p≈.001) whereas joint-significance tests of the set of constituent terms, **Z**, clearly fails to reject (p≈.602) their exclusion. Since such constituent terms are not included for any theoretically, substantively,[31] statistically, or mathematically inevitable reason, but rather as an application Occam's razor—i.e., to allow a simpler proposition, that these variables matter non-interactively, a chance—and since the evidence seems so comfortable with their omission, we might re-evaluate the equation above with these **Z** terms omitted. As seen in **Table 2**, the results are much clearer and rather remarkably supportive of these arguments, although, of course, we can no longer take these significance levels at face value since the model has now been pre-tested on this data and some previously insignificant regressors removed.

Table 2: *NLS Estimation of Equation (1) with Insignificant Constituent Terms Removed*

	Coefficient	Standard Error	t-Statistic	Prob(T>|t|)
D_{t-1}	1.207	0.060	20.290	0.000
D_{t-2}	-0.158	0.085	-1.851	0.065
D_{t-3}	-0.117	0.045	-2.577	0.010
ρ_n	**0.011**	**0.005**	**2.369**	**0.018**
ρ_{ar}	**-0.002**	**0.004**	**-0.437**	**0.662**
ΔY	-0.375	0.087	-4.332	0.000
ΔU	1.095	0.286	3.829	0.000
ΔP	-0.207	0.053	-3.889	0.000
β_{cg}	**-0.051**	**0.020**	**-2.484**	**0.013**
X_1 (*open*)	16.128	5.314	3.035	0.002
X_2 (*ToT*)	0.414	1.728	0.239	0.811
X_3 (*open·ToT*)	-10.780	5.194	-2.076	0.038
X_4 (*dxrig*)	-0.038	0.066	-0.578	0.563
X_5 (*oy*)	1.898	1.100	1.724	0.085
E_t	0.475	0.420	1.133	0.258
E_{t-1}	1.146	0.562	2.040	0.042
γ_{en}	**-0.570**	**0.209**	**-2.727**	**0.007**
γ_{sd}	**0.881**	**0.586**	**1.503**	**0.133**
		Summary Statistics		
N (Deg. Free)	735 (696)		**Std. Err. Regression**	2.522
R^2 ($\bar{R}^2$)	0.991 (0.990)		**Durbin-Watson**	2.099

[31] As noted in above, *ENoP* and *SDwiG* are partial exceptions, as their coefficients may relate somewhat to the *inter-temporal* common-pool problem in public-debt levels. Some weak evidence of such an effect does emerge. The estimated effect at the sample average of *ELE* (about .3) of both *ENoP* and *SDwiG* increasing one unit—i.e., hypothetically adding one effective party to government that increases its standard-deviation polarization by one—is +.83% of GDP and significant at p≈.105.

The effects expected from increasing polarization of policymakers, γ_{sd} and ρ_{ar}, remain absent and/or counter-intuitive—policymakers' fiscal preferences may be too crudely measured by the fixed, expert-judgment left-right indices for parties used here, perhaps—but, otherwise, these results are remarkably favorable to the three-fold model of the effects of the dispersion of policymaking authority induced by increasing the number of actors. *Ceteris* paribus, adding a party to government retards debt-adjustment rates by about 1% ($\rho_n \approx .01$), but, simultaneously, increasing the *effective* number of parties by one dampens electoral cycles in fiscal policy by almost 60% ($\gamma_{en} \approx .57$). Meanwhile, insofar as adding this party shifts the government's center of gravity rightward (leftward), Keynesian activism diminishes (increases) also ($\beta_{cg} \approx .05$), and all of these effects are now satisfactorily precisely estimated.

Table 3 gives substantive magnitudes for these estimated effects in three sections. The top section describes the estimated effect of numbers of veto actors on the policy-adjustment rate five ways. First, it calculates the net coefficient on the lagged dependent-variable as a function of the (raw) number of parties in government.[32] Public debt, unsurprisingly, adjusts very slowly under any conditions, but the extent to which last year's debt persists into this year varies over the sample range from .943 in single-party to .986 in six-party governments. This corresponds to policy-adjustment rates of a very slow 5.7% to a glacial 1.4% per year, as seen in the next row. Even more dramatically, these estimates also entail an even more widely varying long-run multiplier, from 17.5 for unified governments to 44.7 for five-party and a whopping 73.2 for six-party governments. These imply that the long-run effects of permanent changes in regressors whose impact on debt occurs unless and until policies respond, such as economic or demographic shocks (see notes 21 and 23), are that many times greater under more fractionalized governments. For example, a permanent 0.5 increase in the ratio of over-65 to under-16 population would increase debt around 16.6% of GDP in a polity continually governed by single parties whereas the same demographic shift would increase debt around 42.4% of GDP under permanent five-party rule

[32] These and subsequent estimates include the (small and insignificant) effect of polarization, i.e., the absolute range from farthest-left-to-right parties, *ARwiG*, insofar as this correlates with *NoP*, by assuming *ARwiG*=-0.67913+0.97106(*NoP*), which is the empirical (bivariate-linear-regression) relationship in the sample.

and 69.5% under permanent six-party rule. Finally, as the number of veto actors increases from one to six, the half-lives of these long-run effects range from 11.8 to 50.4 years, and between 39 and 168 years must pass for 90% of these long-run effects to accumulate.

Table 3: *Estimated Veto-Actor, Bargaining, and Common-Pool Effects of Multiple Policymakers*

Veto-Actor Effects: Estimates of Policy-Adjustment Rate

Adjustment Rates	***NoP*=1**	***NoP*=2**	***NoP*=3**	***NoP*=4**	***NoP*=5**	***NoP*=6**
Lag Coefficient[a]	0.943	0.952	0.960	0.969	0.978	0.986
Policy-Adjust/Yr[b]	0.057	0.048	0.040	0.031	0.022	0.014
Long-Run Mult.[c]	17.498	20.639	25.154	32.200	44.727	73.208
½-Life[d]	11.778	13.956	17.087	21.971	30.654	50.397
90%-Life[e]	39.127	46.362	56.761	72.985	101.832	167.415

Bargaining Effects: Estimates of Keynesian Fiscal Responsiveness

	Mean Econ. Performance -2 std. dev.	***Mean Econ. Performance -1 std. dev.***	***Mean Economic Performance***	***Mean Econ. Performance +1 std. dev.***	***Mean Econ. Performance +2 std. dev.***	
Growth	-2.354	0.454	3.261	6.069	8.877	
d(UE)	1.915	1.034	0.153	-0.728	-1.608	
Infl	-3.593	1.230	6.054	10.877	15.701	
CoG	***E(D|Econ)***[f]	***E(D|Econ)***	***E(D|Econ)***	***E(D|Econ)***	***E(D|Econ)***	***Fiscal-Cycle Magnitude***[g]
3.0	3.157	0.599	-1.959	-4.516	-7.074	10.231
4.2	2.930	0.556	-1.818	-4.192	-6.566	9.496
5.4	2.703	0.513	-1.677	-3.867	-6.058	8.761
6.6	2.476	0.470	-1.536	-3.543	-5.549	8.026
7.8	2.250	0.427	-1.396	-3.218	-5.041	7.291
9.0	2.023	0.384	-1.255	-2.894	-4.533	6.555

Collective-Action/Common-Pool Effects: Estimates of Electoral Debt-Cycle Magnitude

	***ENoP*=1**	***ENoP*=2**	***ENoP*=3**	***ENoP*=4**	***ENoP*=5**
Electoral-Cycle Magnitude[h]	1.07410	0.86454	0.65497	0.44541	0.23585

Notes: [a] Calculated as the sum of the coefficients on the dependent-variable lags times $(1+\rho_{nat}NoP+\rho_{int}ARwiG)$, where $ARwiG=0.97106 \cdot NoP-0.67913$.
[b] Calculated as one minus the lag coefficient.
[c] Calculated as one over the policy-adjustment per year.
[d] Calculated as *ln(.5)/ln(lag coefficient)*.
[e] Calculated as *ln(.9)/ln(lag coefficient)*.
[f] Predicted deficits given the state of the macroeconomy listed in that column and the partisanship of government listed in that row.
[g] Calculated as the difference between the predicted deficits in the worst macroeconomic scenario minus those in the best.
[h] Calculated as the sum of the coefficients on E_t and E_{t-1} times $(1+\gamma_{int}ENoP+\gamma_{int}SDwiG)$, where $SDwiG=0.500551 \cdot ENoP-0.23653$.

The next section of **Table 3** illustrates the estimated bargaining effects multiple policymakers. More precisely, the empirical specification *assumes* that partisanship in fiscal policy reflects a weighted average of the preferences of government members, which reflects some bargained compromise as discussed in Section I.C. It does not truly test the empirical efficacy of that assumed bargaining structure against alternatives (but see Thomson *et al.* forthcoming for evidence of that efficacy). Right (left) partisanship,

as gauged by this government *Center of Gravity*, is then expected to counter (enhance) Keynesian activism. The (significantly) estimated β_{cg} indicates about 5% such dampening *per* unit of *CoG*. (For reference, U.S. Democrats and Republicans are about three, and U.K. Labour and Conservatives about five, *CoG* units apart. Typical U.S. governments, which blend partisan shares of presidency and each legislative chamber equally, are about one unit apart, leaning right or left with the presidency.) The substantive magnitude of this bargained-*CoG* effect on fiscal activism (deficits) depends on economic performance. As seen in the second section of the table, with macro-economic conditions, real-GDP growth, unemployment change, and inflation, each two standard-deviations worse than their sample mean, the left-most governments in the sample would apply over 3% of GDP fiscal stimulus (deficits), whereas the right-most would apply just 2%, *ceteris paribus*. Conversely, though, these same left-most (right-most) governments would retire 7% (4.5%) of GDP in debt (fiscal constraint) in a year with the macro-economy racing at two standard-deviations better than the mean in all three respects. In a (sample) average year, governments would retire debt, *ceteris paribus*, at rates varying from almost 2% of GDP at far left to 1.25% at far right of the sample. Of course, these hypotheticals over-state the macroeconomic, and so the fiscal, cycle because growth, unemployment, and inflation do not usually improve and worsen in lock-step; nonetheless, the relative magnitude of estimated left- and right-government fiscal cycles over these hypothetical, extreme macroeconomic cycles, which range from over 10% to about 6.5% of GDP left to right, are informative.

The bottom of **Table 3** similarly describes the estimated substantive effects of the collective-action problem multiple policymakers face in fiscal electioneering. Credit from voters for (short-term, macro or micro) economic boons delivered by deficit spending is a common pool for the government. Therefore, as the effective (i.e., size-weighted) number of policymakers increases, electioneering diminishes, seen here in the fading amplitude of estimated electoral deficit-cycles, from 1% of GDP under single-party government down to ¼% as the effective number of governing parties rises to six.

III. Conclusion and Future Research

A. Conclusion: Multiple, but Distinguishable, Effects of Multiple Policymakers

The dispersion of policymaking authority across multiple actors affects policies in myriad ways. When empirical models are specified to reflect correctly the central implication of Tsebelis' veto-actor theory, most fully expounded in *Veto Players: How Political Institutions Work* (2002), that the number (and polarization) of veto actors enhances policy inertia, evidence strongly and consistently supports that core proposition. However, the number (and polarization) of policymaking actors does more than induce veto-actor effects. It also creates collective-action problems for these multiple policymakers, which induces over-fishing/under-investment of/in their common-pool resources, and it ignites bargaining between them, which tends to engender (Nash-bargaining) compromises in their enacted policies. This paper has shown theoretically how these veto-actor, common-pool, and bargaining-compromise effects manifest differently in outcomes—retarding policymakers' responses to their policymaking incentives, altering policymakers' policymaking incentives, and blending policymakers' differing incentives into one compromise, respectively—and how the aspects of government fractionalization and polarization, i.e., of the number and ideal points of policymakers that produce these different effects likewise varies—raw numbers and preference ranges, size-weighted (i.e., effective) numbers and preference variances, and preference weighted-averages, respectively. This paper has also illustrated how to model these effects empirically and shown that these multifarious effects of the dispersion of policymaking authority vary sufficiently across democracies and over time in the aspects of fractionalization and polarization that induce them and in the manifestation of their effects on policy outcomes to obtain noticeably distinct and appreciably precise estimates of their substantively interesting implications.

B. Future Research: Further Refinement of the Model

Much work remains, however, in refining further this approach to modeling more fully the effects of the dispersion of policymaking authority in democracies. As already mentioned (notes 21, 24, 26), one can incorporate also the Ghandi and Przeworski (2004) insight regarding veto-actor effects. In their

model, policymakers have a target, Y^*, for an outcome, Y, which target is a linear function of some explanator(s), X, and policy moves toward that target have their magnitudes *per* period dampened at rate a by veto actors, V. This gives the following LDV model, estimable by ordinary (linear) least squares:

$$\Delta Y_t = \frac{\left(Y_t^* - Y_{t-1}\right)}{aV_t} = \frac{\left(k - cX_t - Y_{t-1}\right)}{aV_t} = \left(\frac{k}{a}\right)\left(\frac{1}{V_t}\right) - \left(\frac{c}{a}\right)\left(\frac{X_t}{V_t}\right) - \left(\frac{1}{a}\right)Y_{t-1}$$
$$\Rightarrow Y_t = \left(\frac{k}{a}\right)\left(\frac{1}{V_t}\right) - \left(\frac{c}{a}\right)\left(\frac{X_t}{V_t}\right) + \left(\frac{a-1}{a}\right)Y_{t-1} \qquad \textbf{(2)}.$$

Replacing their single-factor measure of veto actors, aV, with one reflecting both fractionalization and polarization, a_1NoP+a_2ARwiG, is straightforward, although it will necessitate nonlinear least squares. Notice, however, that this model assumes veto actors dampen the magnitude of policy responses to X and the rate of policy-adjustment equally at rate a and that it does not distinguish outcome from policy because it assumes the entire gap from target, $Y^*=f(X)$, to outcome, Y, is equally narrowed at that rate in response to X. Veto-actor theory does not necessarily imply the former, and the latter is substantively unlikely if Y is indeed an outcome, like debt, that policymakers only partially control rather than a policy, like tax rates, which they fully control. Using the last line of **(2)**, relaxing these assumptions produces:

$$Y_t = k^0 + \left(\frac{k^1}{a_1 NoP_t + a_2 ARwiG_t}\right) + \mathbf{X}_t^0\mathbf{B}^0 + \left(\frac{\mathbf{X}_t^1\mathbf{B}^1}{a_1 NoP_t + a_2 ARwiG_t}\right) + (\rho_0 + \rho_1 NoP_t + \rho_2 ARwiG_t)Y_{t-1} \qquad \textbf{(3)}.$$

Here, veto-actors modify the effects of only some variables, $\mathbf{X}^1$, namely those where policy change is expected to produce their effect on the outcome, and not others, $\mathbf{X}^0$, whose effects incur directly on the outcome rather than by inducing policy change. Likewise, the constant, or conditional mean of Y, the outcome, only partially reflects the constant in the target, Y^*, equation, k^1, also having a non-policy-induced component, k^0. Finally, outcomes, Y, also have dynamics of their own, distinct from the policy dynamics that veto actors retard at possibly different rate than that at which they dampen policy-change magnitudes. The last parenthetical term reflects these considerations.

Using the explanators identified in **(1)**, such model of debt should clearly include the purely political conditions government partisanship and electoral indicators among the factors, $\mathbf{X}^1$, whose effect occurs

through policy. Also clearly in $\mathbf{X}^1$ is *dxrig*, the difference between expected real-interest and growth rates, which has its effect exclusively by inducing policy shifts.[33] Almost as clearly, the economic conditions, like growth, unemployment, and inflation have their effect almost exclusively[34] by inducing a particular increase or decrease in debt given the current (unchanged) policies, placing them among the $\mathbf{X}^0$. Where economic-structural factors like the remaining ones, openness, terms-of-trade, and age demographics, enter the model is less clear. Terms-of-trade (*ToT*) and openness (*open*), perhaps, can be managed. *ToT* and *ToT·open* may have immediate, direct impact on debt by affecting revenue- and expenditure-relevant outcomes. The other macroeconomic factors largely control this channel, but will miss expenditure and revenue effects of trade shocks insofar as they differ from those of broad macroeconomic conditions. *ToT* and *ToT·open* may also shape the degree to which macroeconomic shocks are expected permanent, which would shift policies. *Open* and *ToT·open* may also shift expectations about future growth, thereby altering policy, but these effects are already controlled through *dxrig*. Finally, open economies may have easier access to (foreign) capital, which would induce a direct effect on debt through the interest burden. Age demographics, *oy*, also have complicated causal pathways to debt. Even after netting any effect they may have through shifting expectations of future growth—*oy*, too, is in the model generating *dxrig*—they would still have effects on debt through policy—the political effects of demographics—and directly due to the demographic effects on the costs of existing programs. A perhaps prudent strategy, then, might be to include *ToT*, *open*, *ToT·open*, and *oy* in both $\mathbf{X}^0$ and $\mathbf{X}^1$.[35]

The specifications of collective-action/common-pool effects of multiple policymakers in the model,

[33] Policymakers expecting greater future real-growth relative to real-interest expect diminishing real debt-financing costs and so choose to borrow more: a policy move.

[34] Recall that the model controls for expected future economic conditions through *dxrig* (see note 22) and past conditions through its model of dynamics. Therefore, coefficients on these economic conditions will relate to their contemporaneous impact only, and any effect they may have in inducing a contemporaneous policy shift would work through expectations and/or (perceived) trends, both of which are thus largely controlled elsewhere.

[35] These factors should receive distinct coefficients in their two appearances. As a side-benefit of such an approach, each coefficient in each pairs would actually be separately identifiable given that the veto-actor effects dampen their $\mathbf{X}^1$ but not their $\mathbf{X}^0$ appearance; thus, one would obtain distinct estimates of the direct and the policy-induced indirect effects of these factors. However, making that empirical distinction will be challenging empirically, requiring many observations and great variation with much explanatory leverage for precise estimation (small standard errors).

too, need refinement. As *Section I.B* detailed, common-pools for fiscal policymakers arise in two respects. First, future revenues, i.e., current borrowing (deficits), are a common pool to the set of current and future policymakers, and so are over-exploited. This effect did manifest in the current model, but only weakly (see note 31). However, as the appropriate conception of government fractionalization for this effect is inter-temporal, future research should devise measures of current policymakers' expectations of their share of all current and future policymaking authority. A feasible strategy for this is to use parties' actual share of all government seats across all sample years for each country, thereby assuming parties know or can forecast well and without bias, their future share of governance.[36] Second, policymakers' common pool of credit from voters for electioneering, for which the current model provided stronger evidence, does not exhaust their common pools of credit for policymaking. The key features of deficit electioneering that create this dampening effect are that policymakers share interests in fostering it and that voters cannot allocate credit to specific policymakers in proportion to their efforts to foster it. This suggests that all explanators (a) whose effects operate through policy and to which policy responses are (2) not partisan-differentiated and (3) not clearly attributable by voters to specific policymakers will have their effects dampened by the effective number of policymakers (and perhaps the standard-deviation of policymakers' ideologies/preferences). A third issue requiring fuller attention, as just seen parenthetically again, is that the role of polarization in collective-action/common-pool effects remains vague.

Finally, the current model unsatisfactorily assumes *pre-estimation* the bargaining/compromise effects of multiple policymakers. That is, *Section I.C* noted that a generalizable feature of equilibrium policies produced by multiple policymakers in most specific (i.e., extensive-form) non-cooperative bargaining games is that they will be some convex combination of the policymakers' ideal points. It also cited work (Thomson et al. forthcoming) demonstrating that a simple form of this generalization, the bargaining-strength-weighted average of policymakers' ideals that emerges from the (cooperative game-theoretical) *Nash Bargaining Model*, performs best empirically, and, in fact, tends to outperform specific, extensive-

[36] See also note 28 and the discussion in its referent text.

form, non-cooperative bargaining models. Accordingly, the current model uses (cabinet-seat) weighted-averages of governing parties' left-right ideological scores to measure the government partisanship that shapes fiscal activism. However, rather than assume weighted-average compromises and that bargaining powers (i.e., the weights) equal cabinet seat-shares, future research might more satisfactorily attempt to embed theoretical models of bargaining power and/or of partisan responses to particular explanators in the specification for empirical estimation. *I.e.*, if we can describe the bargaining power of party *i* as some function of characteristics of *i* and its bargaining environment, *j*, giving $p_i(\boldsymbol{V}_{ij})$, and we can describe how fiscal policy would respond to explanators $\boldsymbol{X}_k$ if party *i* had exclusive policymaking authority, $q_i(\boldsymbol{X}_k)$,[37] then we could embed the *Nash-Bargaining* solution, $\sum_i p_i(\boldsymbol{V}_{ij})q_i(\boldsymbol{X}_k)$, in the model for estimation rather than assuming its weighted-average compromise outcome *pre-estimation*.

Fuller consideration and actual implementation all these steps, however, remains for future research.

[37] For identified and effective estimation, *p* and *q* must be sufficiently distinct from each other and across parties. Franzese (1999, 2002, 2003) exemplify such modeling strategies.

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