Corruption and staff expenditures in the U.S. Congress

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Staff expenditures in the U.S. Congress increased exponentially from 1940 to 1980, but have remained roughly constant since. A theoretical model of Congressional expenditures, bureaucratic oversight, and congressional ethics is developed to understand historical data. Such a model allows one to define and test a measure of the fraction of Congress that maximizes material rewards (vs. intrinsic rewards of being in office). *JEL* code D72.

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Staff expenditures in the U.S. Congress have increased exponentially from 1940 to 1980, but remained roughly constant since. Figure 1 describes the number of staff assigned to members of the House and the Senate. The increase in staff expenditures could be explained by the increase in the size of the government over the same time period. However, Figure 2 shows that even as a fraction of government, staff expenditures in the U.S. Congress increased exponentially.

Figure 1. Number of staff members in the House and the Senate. Source: [31].

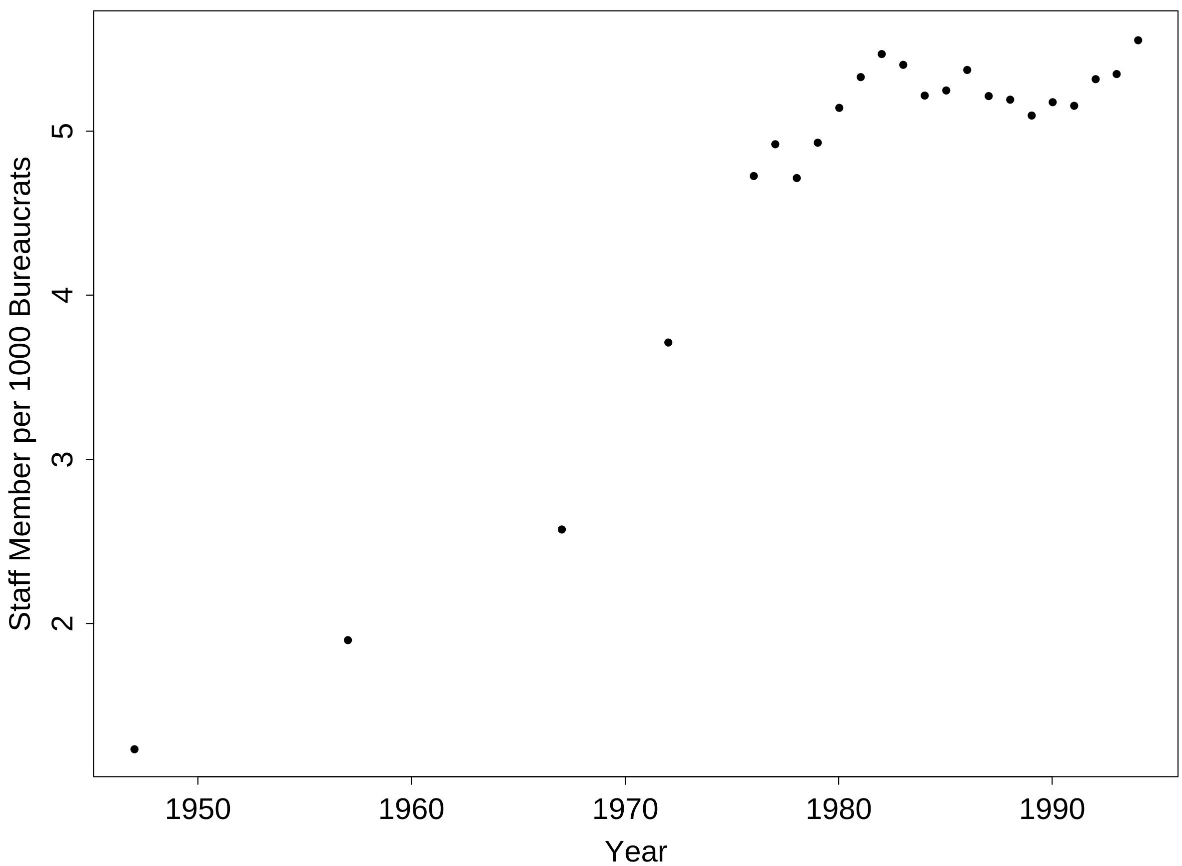

Figure 2. Number of staff members in the House and the Senate per one thousand Federal Government Employees. Sources: [31], [40], [29].

A theoretical model of Congressional expenditures, bureaucratic oversight, and congressional ethics is developed to understand this pattern. The reasons for being interested in such a model and such data are discussed below.

The economic theory literature has long recognized the fact that interest group activity plays a major role in almost every process of political decision making involving economic issues. In Becker [3], each interest group chooses the level of contributions that maximizes their payoff given the contributions of the other interest groups. One of the shortcomings of the model, however, is that it does not explicitly model the preferences of the government official.

The more recent literature models the preferences of government officials. Specifically, government officials are not assumed to be benevolent but instead are concerned with their personal well-being. This literature has tended to model lobbying as an auction (see for instance, Bernheim and Whinston [5], Grossman and Helpman [18], Dixit [12], Hillman and Riley [20], Baye, et al. [2], Groseclose and Snyder [17]). For instance, in [2], all lobbies announce a most preferred alternative and a bid. The most preferred alternative of the highest bidder is implemented, and all lobbies have to pay their bids.

One of the contributions of the auction literature is to emphasize the importance of the preferences of government officials in determining the lobbying outcome (see in particular [18]). Goldberg and Maggi [16] attempt to derive empirically the preferences of the government official; their estimates indicate that a government official cares more about being reelected than about monetary contributions.

Most of the auction literature assumes that a single government official makes all the decisions (see [17] for an exception). Boylan [7] considers a model where different Congresspersons make decisions, and in which Congresspersons differ in their preferences for material rewards. Congress decides how much power to delegate to the bureaucracy. Such a model is shown to predict the number of private bills better than auction models.

This paper generalizes the model in [7] to analyze the level of staff expenditures. The predictions from such a model are again consistent with empirical evidence. Further, the model makes predictions about the evolution over time of honesty in Congress.

The paper is organized as follows. The differences among members of Congress are discussed in Section 1. A model of Congressional staff expenditures is described in Section 2. Section 3 discusses how the model captures a stylized description of congressional behavior. A simplified version of the model is solved in Section 4. Discussions of the assumptions and conclusions of the simplified version of the model are found in Section 5. Finally, the importance of the study of staff expenditures in understanding the preferences of members of Congress is discussed in Section 6.

The data used in the paper is listed in Appendix A, the literature on Congressional staff allocation is discussed in Appendix B, while a more general model of staff allocations is found in Appendix C.

1. Intrinsic preferences and staff expenditures

Parker [34] suggests that a model of rent-seeking in Congress should satisfy the following assumptions:

1. Legislators are utility-maximizers, and their utility depends on intrinsic rewards and material rewards;
2. Long service in politics reflects one's preference for the intrinsic, rather that material rewards of public service;
3. The intrinsic returns to officeholding accrue with tenure in the job;
4. Rent-seeking behavior in a legislature reduces the intrinsic returns.

Intrinsic returns represent the rewards of public service resulting from performing official congressional duties. It is difficult to come up with a model that does full justice to the concept of intrinsic returns. In this paper, intrinsic returns are going to be an increasing function of the power of the legislator and of the size of the bureaucracy the legislator has control over. A few examples may clarify this definition of intrinsic returns. In 1994, Glenn English received a hefty raise when he resigned from Congress and his chair of the House subcommittee that oversees the Rural Electrification Administration to become general manager of the National Rural Electrification Cooperative Association, the most important lobbying organization on rural development [39]. English's hefty raise resulted from his position as chairman and the fact that under his chairmanship the agency had not been curtailed. Another example of intrinsic returns are campaign expenditures which have been shown to be a function of the power of the legislator and of the size of the appropriations the legislator has control over.[1] Finally, the returns to lobbying for a former

[1] As stated in McChesney [25]: "The biggest misunderstanding about political contributions, though, probably does not concern supposed donation amounts. There seem to be more popular confusion about supposed limits on the uses to which politicians and candidates can put the funds. PAC contributions in principle must be used for campaign rather than personal expenses. The distinction, however, is so fuzzy and its enforcement so infrequent as to make it meaningless."

Congressperson seem to accrue with the responsibilities that the individual had while in Congress.[2]

For simplicity, material rewards are described as the use of Congressional staff expenditures for one's personal benefit. Of the 47 Congressmen indicted for activities relating to their office between 1941 and 1994, eleven Congressmen were indicted for misappropriation of staff and office funds [7]. Further, scandals that have given the public the appearance of misappropriations of Congressional expenditures (e.g., check kiting) have significantly affected public disapproval of Congress [39].

2. Model of Staff Expenditures

While Parker has in mind a full blown dynamic model, the model below contains the basic insights. There are five periods, the first four in which individuals make decisions (see Figure 3 on page 6). In period 1, voters select the tax rate. In period 2, Congress allocates tax revenue between Congressional expenditures (specifically, Congressional staff) and Appropriations (specifically, bureaucrats). In period 3, each Congressperson decides how much of their budget to allocate to congressional oversight of the bureaucracy and how much to embezzle for personal consumption. In period 4, bureaucrats decide whether or not to put in effort, which in turn affects bureaucratic output. In period 5, Congress skims part of the public output, while voters receive the rest. The 'equilibrium' is the subgame perfect equilibrium to the game (see Rubinstein and Osborne [32]). The different parties involved are described below.

Voters: There are n voters. A voter's utility is quasi-linear in income and in the output of the government. Further, voters believe that if taxes are t, then each voter receives benefits from the government equal to $f(t)$, where f depends on the behavior of Congresspersons and bureaucrats. Consequently, the tax selected maximizes $u(f(t)) - t$, where u is the utility for output produced by the government.

Bureaucrats: The compensation of a bureaucrat is normalized to one. If a bureaucrat expends effort at a cost e, the bureaucrat produces g units of percapita output; otherwise the bureaucrat produces 0 output. If a bureaucrat expends no effort and is audited, the bureaucrat's utility is 0.[3] Summarizing,

[2] The success of former member of Congress as a lobbyist depends on the amount of knowledge acquired in Congress, see Salisbury et al [38].

[3] Since Niskanen [27], the traditional way to induce an agency problem with a bureaucracy is as follows. The bureaucrat who oversees an agency is assumed to pick the agency budget and to have a salary which depends on the budget level. This incentive scheme leads the bureaucrat to select a budget larger than what would be Pareto efficient. In contrast, note

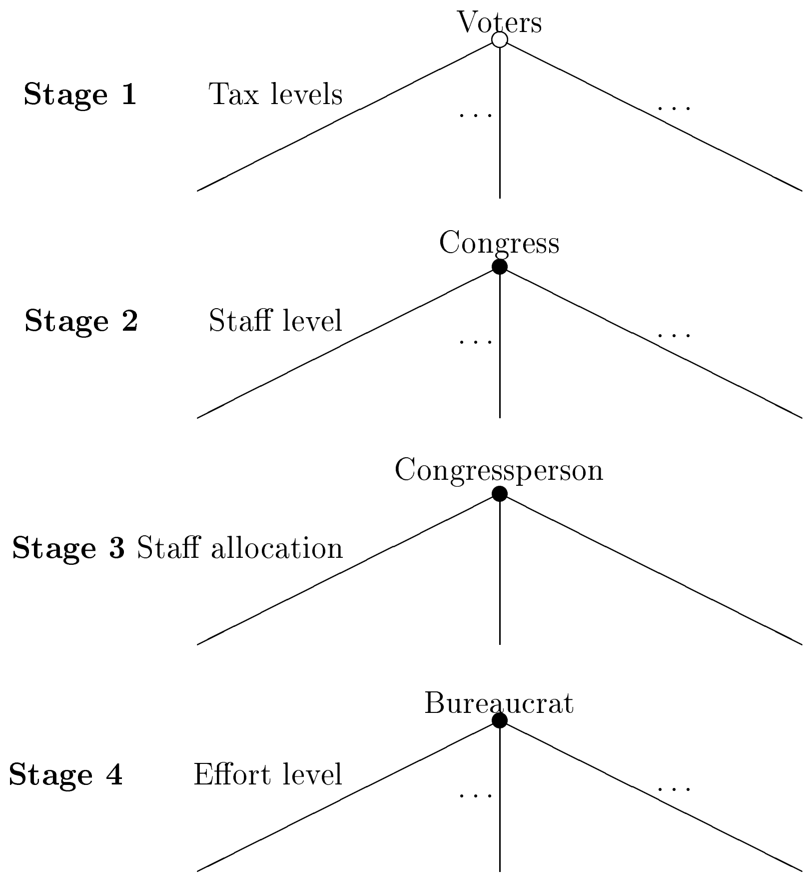

Figure 3. Model of staff expenditures. Voters select a tax level (even though only three branches are drawn, there is a continuum of such levels). Then, Congress decides how much of the budget to spend on bureaucrats and how much to spend on staff. In the next stage, each Congressperson allocates their personal staff between oversight and personal consumption. Finally, bureaucrats select their effort level.

the utility of the bureaucrat is as follows:

$$\begin{cases} 1-e & \text{if effort is exerted,} \\ 1 & \text{if no effort is exerted and there is no audit,} \\ 0 & \text{if no effort is exerted and there is an audit.} \end{cases}$$

Consequently, the bureaucrat expends effort if and only if the probability of an audit is greater than e.

Congressperson: Each Congressperson is allocated an equal share of the Congressional staff budget. A Congressperson decides how much of the budget to allocate to audit the bureaucracy and how much to allocate for personal consumption.[4] Specifically, let c be the number of staff members allocated to each Congressperson, let c_i be the number of staff members that Congressperson i allocates to oversee the bureaucracy, and let y be the output of the bureaucracy.[5] Then, the utility of Congressperson i is

$$s_i y + (c - c_i),$$

where s_i is the fraction of the budget of the bureaucracy that Congressperson i skims.[6]

Note a more benign interpretation of this model is to consider s_i as the weight that Congressperson i puts on the welfare of voters.

Congress: There are m Congresspersons who differ in how much they can skim from the bureaucracy. For instance, a person who chairs a committee that oversees a bureaucracy can skim a larger fraction from that bureaucracy. Congress decides by majority rule how much of the tax revenue to allocate to Congressional staff and how much to bureaucrats. Specifically, Congress

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that in the model considered in this paper, *ceteris paribus*, a bureaucract prefers a larger size of the government because it dilutes the amount of oversight. The *ceteris paribus* assumption is however not relevant because the equilibrium determines both the size of the government and the level of oversight.

[4] In fact, Congresspersons do not spend their entire budget; this issue is addressed in Bennett and DiLorenzo [4].

[5] The average size of the personal staff of a member of the House and the Senate are, respectively, 15 and 34, see Romzek and Utter [36].

[6] This public good aspect of Congressional oversight of the bureaucracy is also present in Niskanen [28]. The clever reader will ask why doesn't Congress do away with personal staff and accomplish all oversight of the bureaucracy with a larger committee staff. As discussed in Fox and Hammond [15], committee staff precedes personal staff. Congress allocated staff to members of Congress as a way of democratizing Congress. Hence, abolishing personal staff would be opposed by all members of Congress who do not chair a committee or subcommittee.

selects the number of staff members allocated to each Congressperson, c, and the total number of bureaucrats, b.

Auditors: the total number of auditors $a = \sum_{i=1}^{m} c_i$. It is assumed that each Congressional staff member can audit at most one bureaucrat (per time period). If a staff members audit b_a bureaucrats (where $b \geq b_a \geq a$), then each bureaucrat is audited with probability a/b_a.

3. Discussion of model

The main difficulty in modeling the behavior of Congresspersons is defining what is meant by intrinsic preferences; i.e., preferences over power, prestige, and legislative accomplishment. As pointed out by Hirshleifer [21] in his comment on Peltzman [35], economists should define preferences of politicians the same way they define preferences of all other individuals; i.e., as maximizing a utility function over consumption bundles or at least income. Hence, one should define power, prestige, and legislative accomplishment as means of acquiring income. This is what is the paper defines as 'skimming.' This does not necessarily mean that the legislator skims while in office; what this means is that the legislator is aware that the power and prestige acquired while in office will lead to a higher lifetime income.

The rest of the section reviews how the model in this paper satisfies the four assumptions of Parker. Legislators' preferences depend on intrinsic returns (skimming public output) and material returns (embezzling Congressional expenditures). There is no dynamic model, but the "skimmers" are individuals with higher abilities in chairing committees, serving in boards of directors after retirement, and so on. Embezzlers stay in office for a shorter time period because (as pointed out in [34]) if they stay longer the paper trail catches up with them. Because of the seniority system in Congress, with tenure on the job, Congresspersons acquire more power and hence higher intrinsic returns. Finally, a high rate of embezzlement in Congress results in voters electing candidates who will reduce the size of government and hence the size of the intrinsic returns.

By coming up with a detailed model, the assumptions of Parker can be shown to be consistent with one another and the model can be tested. Further, the analysis of such a model can explain the evolution of staff expenditures.

4. A simple model of staff expenditures

This section characterizes the solution of a simplified version of the model of staff expenditures. More general versions of the model are discussed in Section

5 and Appendix C. Suppose that Congresspersons are of two types: for type 1, $s_i = s > 0$, while for type 2, $s_i = 0$. The fraction of Congresspersons of the first type is $\alpha \in (0.5, 1)$, while the disutility of effort for a bureaucrat is $e < 0.5$. Assume $\frac{1}{\alpha m} > s$ and $sg > e$.[7] Also, assume that $sg > \frac{1}{m-2}$.[8] Further, assume that Congress maximizes the average utility of Congresspersons of the first type. Finally, assume that the utility function over the output of the government for the representative consumer is $u(x) = \sqrt{x}$.

Lemma 1 *Take (b, c) as given, where b is the number of bureaucrats and c is the number of staff members allocated to each Congressperson. Then, $(\overline{c}_i)_{i=1}^m$ is an equilibrium staff allocation if and only if the following conditions hold: (i) if $s_i = s$, then the number of staff members that Congressperson i allocates to oversight is $\overline{c}_i = \min\{c, be - \sum_{i \neq j} \overline{c}_j\}$; (ii) if $s_i = 0$, then $\overline{c}_i = 0$.*

Proof: Let $(\overline{c}_i)$ be an equilibrium staff allocation.

If there are a staff members auditing b_a bureaucrats, each bureaucrat is audited with probability a/b_a. It follows that, in equilibrium, $a/b_a = e$. (If $a/b_a < e$, then no bureaucrat exerts any effort and hence the resources expended in auditing are wasted. If $a/b_a > e$, then more auditors are used than what is necessary to ensure that bureaucrats expend effort.)

Congressperson i selects $c_i \in [0, \min\{c, be - \sum_{j \neq i} \overline{c}_j\}]$ to maximize

$$s_i g \frac{c_i + \sum_{j \neq i} \overline{c}_j}{e} + (c - c_i).$$

If $s_i = s$, the optimal choice is $c_i = \min\{c, be - \sum_{j \neq i} \overline{c}_j\}$; if $s_i = 0$, the optimal choice is $c_i = 0$. ∎

Lemma 1 implies that more influential members of Congress (i.e., with larger s_i) allocate a greater fraction of their staff to oversight. As discussed in Appendix B, the existing literature on Congressional staff allocation does not relate to this hypothesis. Johannes [22], page 180, discusses how casework is especially effective for oversight if the personal staff belongs to a Congressperson influential in that area.[9] This gives an additional reason to believe the conclusion in Lemma 1, namely that oversight is performed by more influential members of Congress.

[7] If either condition is not satisfied, then in equilibrium there are no taxes, no bureaucrats, and no Congressional staff. The same is true if e is too large.

[8] This condition insures that in equilibrium only the individuals of the first type embezzle.

[9] "Casework is intervention for individuals, groups, or organizations (including businesses) that have requests of, grievances against, or a need for access to federal government departments or agencies" [22, page 2].

Lemma 2 *Take (b, c) as given and let $(\bar{c}_i)$ be an equilibrium staff allocation. Then, the number of auditors is $\sum_i \bar{c}_i = \min\{\alpha mc, be\}$.*

Proof: Suppose $\sum_i \bar{c}_i < \alpha mc$. Then, there is a Congressperson i for which $s_i = s$ and $\bar{c}_i < c$. By Lemma 1, $\bar{c}_j = be - \sum_{j \neq i} \bar{c}_i$. ∎

Lemma 2 implies that the level of oversight is (weakly) increasing in the number of staff members and the size of the bureaucracy.

Lemma 3 *In equilibrium, $b = \frac{nt\alpha}{\alpha+e}$ and $c = \frac{nt}{m}\frac{e}{\alpha+e}$.*

Proof: By Lemma 1, the average utility of a Congressperson of type 1 is

$$U_1 = s\frac{a}{e}g + (c - \frac{a}{\alpha m}), \tag{1}$$

where $a = \min\{\alpha mc, be\}$. If $be > \alpha mc$, then $U_1 = cs\alpha mg/e$, so

$$\frac{dU_1}{dc}|_{mc+b=T} > 0.$$

If $be < \alpha mc$, $U_1 = b(sg - \frac{e}{\alpha m}) + c$. Hence,

$$\frac{dU_1}{db}|_{mc+b=T} = m(sg - \frac{e}{\alpha m}) - 1 > 0.$$[10]

Consequently, $a = be = \alpha mc$. Hence, $b = nt - mc = nt - \frac{be}{\alpha}$, or $b = \frac{nt\alpha}{\alpha+e}$. ∎

Lemma 3 implies that, for a fixed level of tax revenue, staff expenditures are an increasing function of the fraction of Congress which is of type 2 (corrupt). Lemma 4 characterizes the equilibrium level of tax revenue.

Lemma 4 *In equilibrium, $t = (1 - \alpha ms)\frac{g}{4}\frac{n\alpha}{\alpha+e}$.*

Proof: By Lemma 3, a voter faces the following problem:

$$\max_t u\Big((1 - \alpha ms)g\frac{nt\alpha}{\alpha + e}\Big) - t.$$

Given that $u(x) = \sqrt{x}$, this implies that $t = (1 - \alpha ms)\frac{g}{4}\frac{n\alpha}{\alpha+e}$. ∎

Corollary 5 *In equilibrium, staff expenditures per Congressperson are* $c = (1-\alpha ms)\frac{g}{4}\frac{n^2}{m}\frac{\alpha e}{(\alpha+e)^2}$*. Hence,*

$$\frac{\partial c}{\partial \alpha}|_{\alpha ms = S} = (1-\alpha ms)\frac{g}{4}\frac{n^2}{m}\frac{e(e-\alpha)}{(\alpha+e)^3} < 0.$$

Further,

$$\frac{\partial c}{\partial g} = \frac{\alpha e n^2(1-\alpha ms)}{4(\alpha+e)^2 m} > 0.$$

Hence, Congressional expenditures are increasing in the fraction of Congresspersons of type 2 (while keeping the total amount skimmed constant at S). Further, as predicted in Fiorina and Noll [14], Congressional expenditures are an increasing function of growth in government.

5. Discussion of the assumptions and conclusions in simple model

Corollary 5 suggests the following econometric model:

$$\log c_t = \beta + \gamma \log \alpha_t + \xi \log g_t + \epsilon_t,$$

where the instruments for c_t, α_t, g_t are, respectively, Legislative Branch Appropriations, Public Opinion of Congress, and Executive Branch Productivity. The sources for the data are in Appendix A; it was argued on page 5 that disapproval of Congress correlated with the fraction of Congress which is of type 2 (corrupt). The years considered are 1967 to 1994, because these are the only years for which the government collected the data on Executive Branch Productivity. The signs of the coefficients are as predicted (the t-statistics are in parentheses):

$$\gamma = -0.268\ (-1.72),\ \xi = 6.6\ (18.95), \text{ the R-Squared is } 0.95.$$

The remainder of this section discusses how the results depend on the specific assumptions in the simple model.

The result in the previous section can be extended to the case where s_i takes more than two values. A Congressperson is of type 1 if $s_i > e/g$ and of type 2 if $s_i \leq e/g$. Let the number of individuals of the first type be αm, where $\alpha > 0.5$. Let $\overline{s} = \frac{1}{m}\sum_{s_i}$ and assume that $\overline{s}$ satisfies the same conditions as s in Section 3. Suppose Congress picks the allocation (b, c) which maximizes the average utility of a Congressperson of type 1. Then, the results in the previous section extend in a straightforward way, namely in equilibrium, staff expenditures per Congressperson are $c = (1 - \alpha m\bar{s})\frac{g}{4}\frac{n^2}{m}\frac{\alpha e}{(\alpha+e)^2}$.

Further, the comparative statics results in Section 3 hold for more general utility functions. For instance, if the coefficient of absolute risk aversion is less than one then it can be shown that in equilibrium, $\frac{\partial c}{\partial \alpha} < 0$ and $\frac{\partial c}{\partial g} > 0$.[11] Again, the predictions are consistent with the sign of the coefficients in the regression.

A more serious restriction in the simple model is the fact that bureaucrats can select only two different effort levels. This forces (in equilibrium) the number of staff members who audit to be a constant fraction of the number of bureaucrats.

Suppose bureaucrats can select any effort level e, where $e \in [0, 1]$. Output per bureaucrat is ge, while the disutility of effort equals $\frac{1}{2}e^2$. It follows from the results in Appendix C that all bureaucrats select an effort level $\sqrt{2\frac{a}{b}}$ and the number of auditors equals $\min\{\alpha mc, \frac{1}{2}bs^2g^2\}$. Assume $\alpha \geq 0.5$ and $sg \in (\sqrt{2\alpha}, \sqrt{m-1})$. Then, the equilibrium allocation (b, c) — the allocation that maximizes the utility of a Congressperson of type 1 — is characterized below.

Lemma 6 *In equilibrium,* $b = \frac{\alpha t}{\alpha + 0.5s^2g^2}$ *and* $\frac{b}{mc} = \frac{2\alpha}{g^2s^2}$.

Proof: A Congressperson of type 1 has a utility function

$$U_1(b) = sgb\sqrt{2\min\{\alpha m\frac{c}{b}, \frac{1}{2}s^2g^2\}} + c - \min\{c, \frac{1}{2}\frac{bs^2g^2}{\alpha m}\}.$$

In order to solve the problem $\max_b U_1(b)$ consider the following three cases.

Case 1: at the optimum, $\alpha m\frac{c}{b} > \frac{1}{2}s^2g^2$. Then,

$$U_1(b) = (1 - \frac{1}{2\alpha m})s^2g^2b + c.$$

Hence, $b = 0$ and $U_1(t) = \frac{t}{m}$.

Case 2: at the optimum, $\alpha m\frac{c}{b} > \frac{1}{2}s^2g^2$. Then,

$$U_1(b) = sgb\sqrt{2\alpha m\frac{c}{b}}$$

Note that $U_1^2 = s^2g^2b2\alpha(t-b)$ is maximized by $b = \frac{t}{2}$. In order for this to be feasible, $\alpha > \frac{1}{2}s^2g^2$. Contradiction.

[11] There are very few studies that try to estimate coefficient of absolute risk aversion. Cicchetti and Dubin [9] find that, for an individual with average characteristics, the coefficient of absolute risk aversion is 0.23919.

Case 3: at the optimum, $\alpha m\frac{c}{b} = \frac{1}{2}s^2g^2$. Then, $b = \frac{\alpha t}{\alpha+0.5s^2g^2}$ and $U_1 = \frac{\alpha t}{\alpha+0.5g^2s^2}$.

Suppose $\alpha > \frac{1}{2}s^2g^2$. Since $sg\sqrt{\frac{\alpha}{2}} > \frac{1}{m}$, Case 3 yields higher utility than Case 1. ∎

Suppose s is constant over time. Then, Lemma 5 suggests a proxy for honesty in Congress, $\frac{b}{mc}g^2$. Figure 4 on page 13 describes the value of this proxy for α for the years 1967-1994. Figure 5 on page 15 describes poll data on public approval of Congress over the same time period.

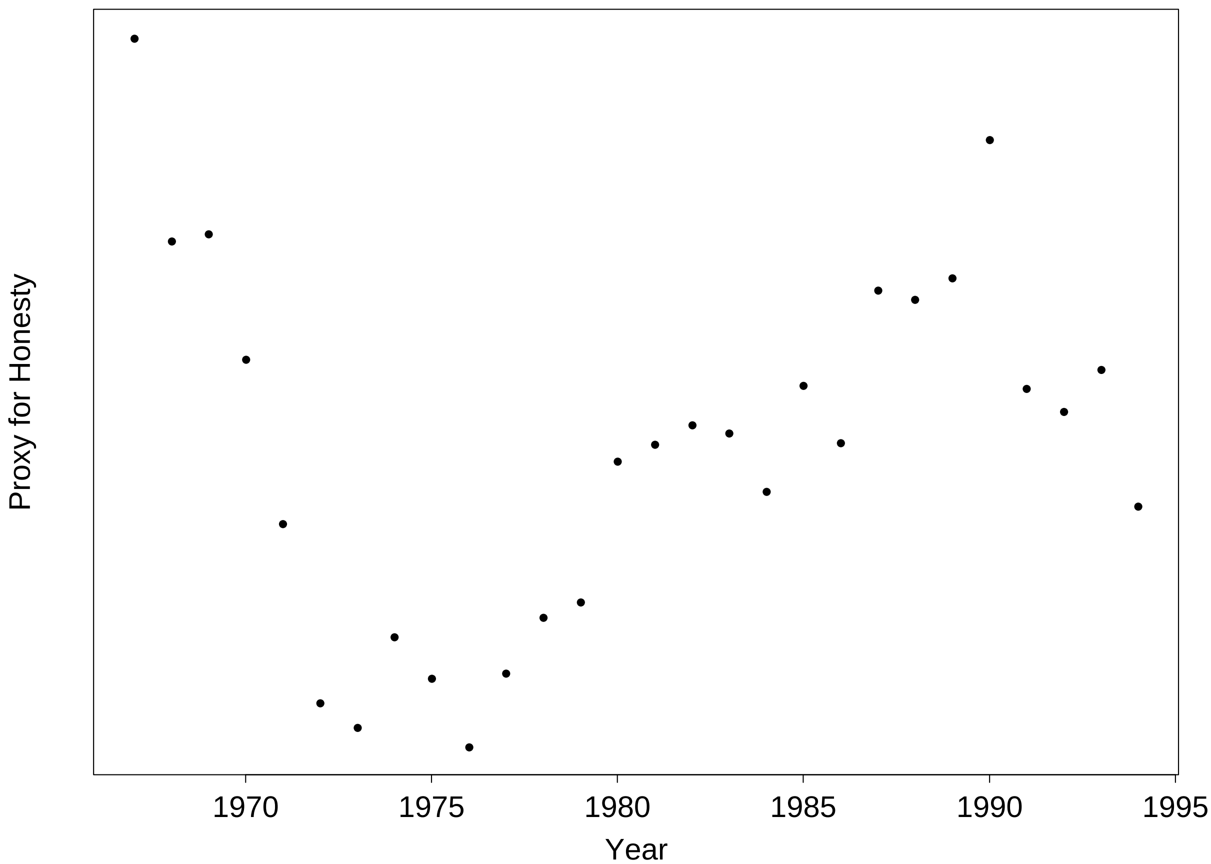

Figure 4. Estimate of α given in Lemma 5. Namely: square of Productivity times Number of Civilian Federal Government Employees for Executive Branch (Post Office excluded) divided by (real) Legislative Branch Appropriations. Since the productivity is in term of an index, no units are provided for 'Honesty.' Sources: [31], [40], [29] , [24].

The theory of staff expenditures suggests the following explanation for the evolution in the ratio of staff members over bureaucrats (see Figure 2 on

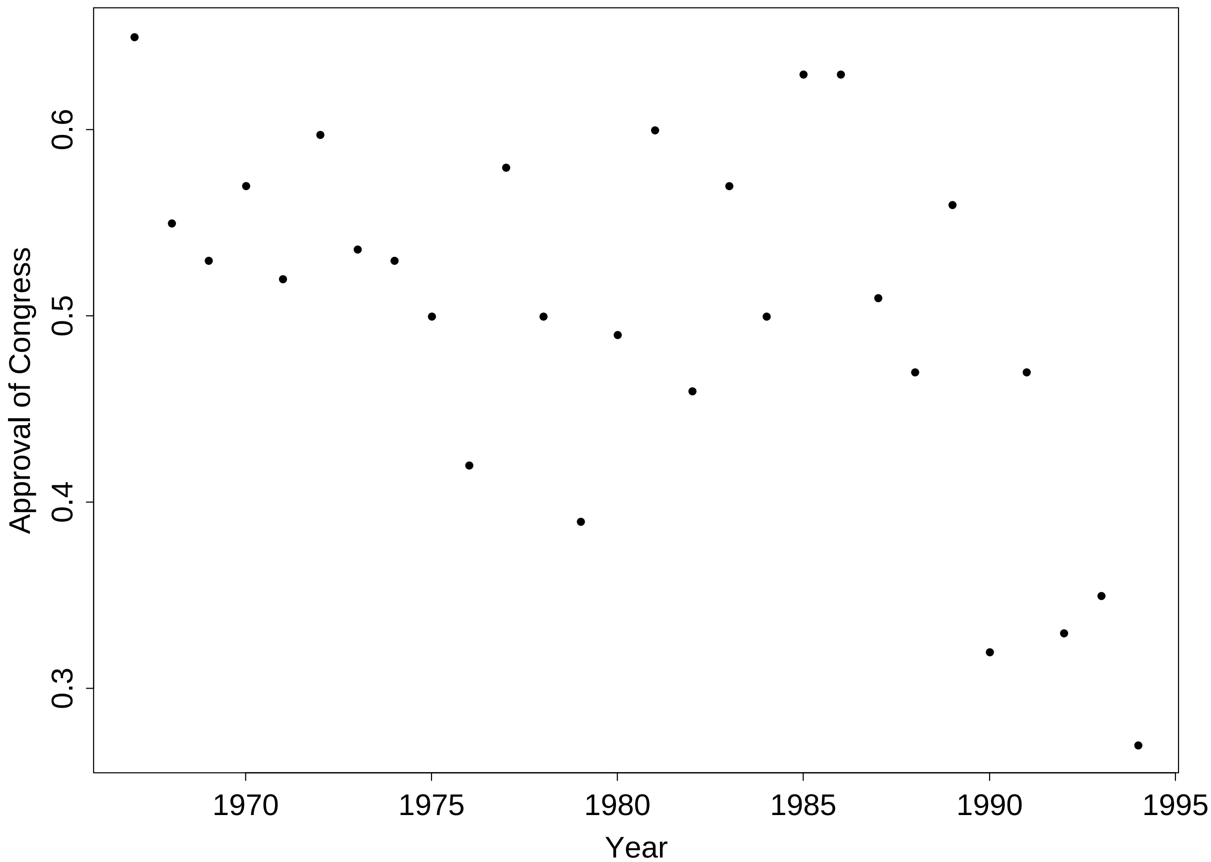

Figure 5. Fraction of the population that does not disapprove Congress 1967-1994. Source: [7].

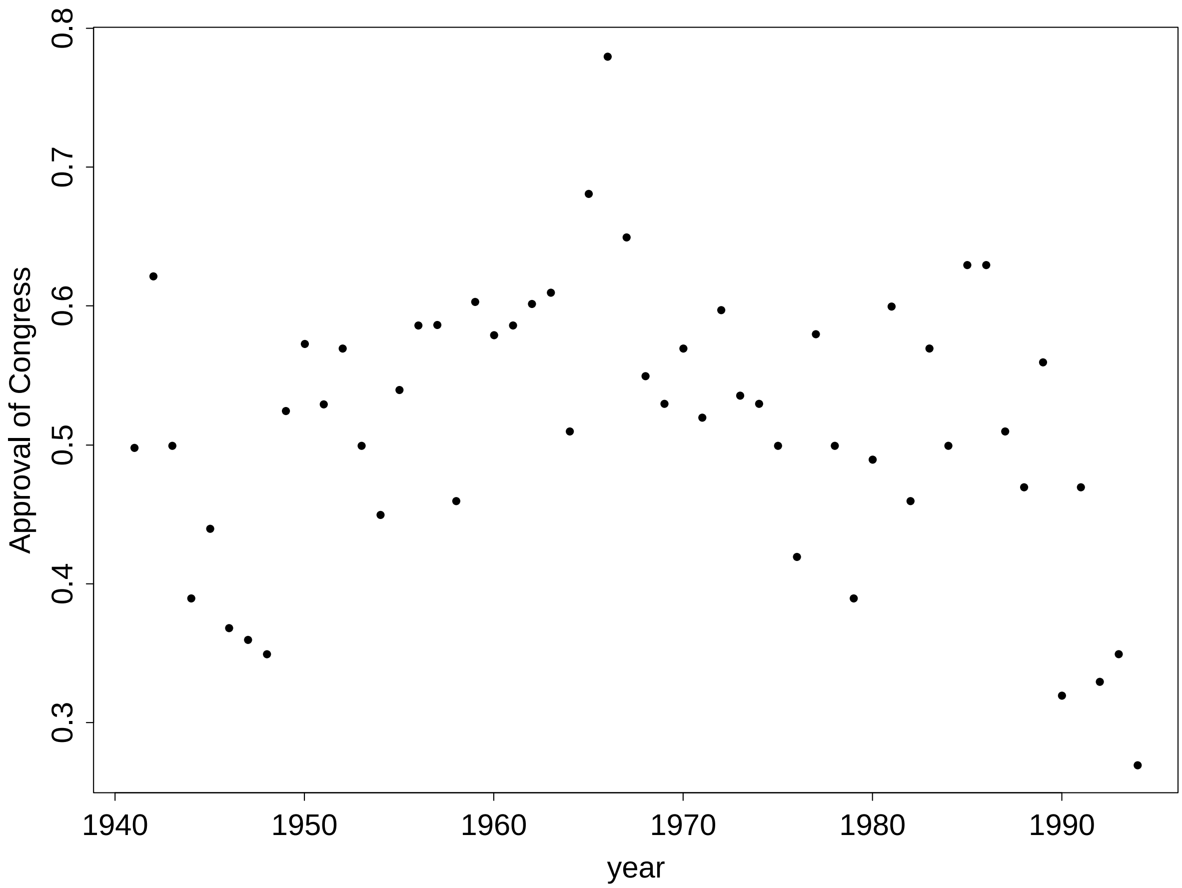

Figure 6. Fraction of the population that does not disapprove Congress 1941-1994. Source: [7].

page 2). The general pattern — increasing until the eighties, relatively constant thereafter — seems to be driven by changes in productivity in the public sector. To this trend is superimposed an increase in the level of dishonesty in Congress which starts around the seventies, fades in the mid eighties, and increases again the nineties (see Figure 6 on page 15).

6. Conclusion

The dominant paradigm in political economy is that preferences of politicians depend on only the probability of being in office.[12] Such an assumption is difficult to reconcile with the fact that Congresspersons engage in activities for which they can be indicted. Between 1941 and 1994, 47 Congressmen were indicted, while in office, for activities relating to their office. In the overwhelming majority of the cases, Congressmen were trying to enrich themselves and not trying to increase the probability with which they would be reelected. If one believes that a person engaging in such activities is caught with very low probability, then the fraction of Congress involved in such activities must be non-negligible.

Political corruption is hard to measure for obvious reasons. However, there is some regularity in the types of infractions committed by politicians who are indicted. Of the 47 Congressmen indicted, six were indicted for having been bribed to pass a private immigration bill, eleven were indicted because of misappropriation of staff and office funds, one individual for campaign violations, while the rest were indicted for being bribed to put pressure on bureaucrats and regulators. This suggests that by keeping track of the overall level of private bills, staff expenditures, and regulatory measures, one may be able to infer the level of corruption.

[7] shows how the number of private bills can be predicted in a model in which some Congresspersons pass private bills in exchange for bribes. This paper shows how the level of staff and office funds can be explained in a model where some Congresspersons embezzle funds. Future work will study the behavior of bureaucrats and regulators in a model where Congresspersons are bribed to put pressure on them.

[12] Exceptions include Barro [1], Rose-Ackerman [37], Kalt and Zupan [23], Osborne and Slivinski [33], Besley and Coate [6], and the articles cited on page 3.

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Appendix A

This section gives sources for the data used in this paper together with the mean value and range for each variable.

Civilian Federal Government Employees for Executive Branch (Post Office excluded) [40], [29]. Mean: 2,074 (thousands); minimum: 1,081; maximum: 3,370.

Congressmen indicted: [7]. Mean: 0.87; minimum: 0; maximum: 7.

Disapproval of Congress: [7]. Mean: 48.45 %; minimum: 22 %; maximum: 73 %.

Executive Branch Productivity: [24]. Mean: 119.58; minimum: 100; maximum: 133.98.

(Real) Legislative Branch Appropriations: [41] (1941), [42] (1942), [43] (1943), [44] (1944), [45] (1945), [31] (1946–1992), [10] (1993), [11] (1994). Mean: 8.97; minimum: 1.55; maximum: 18.36.

Number of staff members in the House and the Senate: Source: [31]. Minimum: $2,030$; maximum: $11,665$.

Appendix B

One of conclusions in the paper is that more influential members of Congress allocate a larger fraction of their staff to oversight. This section discusses the existing literature on Congressional staff allocation and points out that it cannot be used to prove or disprove this conclusion.

Political scientists have emphasized the allocation of personal staff between Washington and district offices (see, for instance, Fenno [13]). Such a literature assumes that staff in the district improves the likelihood of reelection by performing constituency service, while staff in Washington increases the influence that the member has on Congress by working on legislation. This literature concludes that more established members of Congress should assign a greater percentage of their staff in Washington than less established members.

However, the allocation of personal staff to the district office has not been shown to affect electoral margins (see Cain, Ferejohn, and Fiorina [8]). Further, it is not entirely clear whether more established members of Congress assign a greater percentage of their staff in Washington (see Hibbing [19]).

Even if one could establish a relationship between influence and allocation of staff in the district, this would not allow us to say much about the allocation of staff to oversight. First, more influential Congresspersons have control over committee staff which can be used for oversight. Second, in studying the activities of staff members, it is difficult to clearly differentiate legislative, oversight, and constituency work. For instance, constituency service is often used as a form of oversight (see Fox and Hammond [15], Johannes [22], Oleszek [30], McCubbins, Noll, and Weingast [26]).

Appendix C

The simple model is generalized to the case where a bureaucrat can select any effort level $e \in [0, 1]$. If the effort is e, the bureaucrat produces a per-capita output of ge at a personal cost $d(e)$, where $g > 0$, $d' > 0$, $d'' > 0$, and $d(0) = 0$. To insure that the bureaucrat puts some effort, Congress selects a compensation scheme that specifies a payment of 0 if the individual is audited and selects an effort less than e', and otherwise the compensation scheme specifies a payment of 1. Without loss of generality, assume that if $i < j$ then $s_i \geq s_j$.

Lemma 7 *Take (b, c) as given. Let $\xi = (d^{-1} \circ d')^{-1}$ and let $i^\star$ be the largest i such that $b\xi(s_i g) \geq c(i-1)$. Let $I^\star = \{i \colon s_i = s_{i^\star}\}$, $m^\star = |\{i \colon s_i > s_{i^\star}\}|$. Then, in equilibrium, $(\overline{c}_i)_i$,*

1. *if $s_i > s_{i^\star}$ and $i \neq I^\star$, then $\overline{c}_i = c$;*
2. *if $s_i < s_{i^\star}$ and $i \neq I^\star$, then $\overline{c}_i = 0$;*
3. *$\sum_{i \in I^\star} \overline{c}_i = \min\{|I^\star| c,\, b\xi(s_{i^\star} g) - m^\star c\}$.*

Hence, $\sum_i \overline{c}_i = \min\{(|I^\star| + m^\star)c,\, b\xi(s_{i^\star} g)\}$.

Proof: Let p be the probability of an audit. Then, then expected payoff for an effort e where $e \geq e'$ is $1 - d(e)$. The expected payoff for an effort e where $e < e'$ is $(1-p) - g(e)$. Hence, the bureaucrat selects $e = 0$ if $p < d(e')$, and otherwise the bureaucrat selects $e = e'$. A bureaucrat puts effort e' if $d(e') = p$. Let $h(p)$ be such that $h\Big(d(e)\Big) = e$.[13] If there are b bureaucrats and c staff members, effort is $e = h(c/b)$ and hence output is $gb\, h(c/b)$.

Note that $h'\Big(d(e)\Big)d'(e) = 1$ and hence $h'\Big(d(e)\Big) = 1/d'(e) > 0$. Further, $h''\Big(d(e)\Big)[d'(e)]^2 + h'\Big(d(e)\Big)d''(e) = 0$ or $h''\Big(d(e)\Big) = -d''(e)/[d'(e)]^3 < 0$.

The problem faced by Congressperson i is the following:

$$\max_{c_i \in [0,c]} V_i(c_i; c_{-i}) \equiv s_i g b\, h\left(\frac{c_{-i} + c_i}{b}\right) + (c - c_i).$$

For the continuation of the proof it is useful to note that

$$d^2 V_i / dc_i^2 = \frac{s_i g}{b} h''\left(\frac{c_{-i} + c_i}{b}\right) < 0.$$

[13] The existence of the function h follows from the implicit function theorem and the fact that $d'(e) \neq 0$.

The function ξ is defined to be such that for all x, $\xi\Big(d'(h(x))\Big) = x$. Since $\xi'\Big(d'(h(x))\Big)d''(h(x))h'(x) = 1$,

$$\xi'\Big(d'(h(x))\Big) = \frac{1}{d''(h(x))h'(x)} > 0.$$

Note that if $i < j$ then $\xi(s_i g) \geq \xi(s_j g)$. Further,

$$\begin{aligned} dV_i/dc_i > 0 \Rightarrow s_i g h'(\frac{c_{-i}+c_i}{b}) > 1 \quad &\Rightarrow \quad s_i g > d'\Big(h(\frac{c_{-i}+c_i}{b})\Big) \\ &\Rightarrow \quad \xi(s_i g) > \frac{c_{-i}+c_i}{b} \\ &\Rightarrow \quad b\xi(s_i g) > a. \end{aligned}$$

Let (c_i) be an equilibrium staff allocation. We have just shown that without loss of generality, we can assume that if $i < j$, then $c_i \geq c_j$. Let j be the smallest i such that $c_i = 0$. If $j < i^\star$, then

$$V_j{}'(0; c_{-i}) = b\xi(s_j g) - \sum_i c_i > b\xi(s_j g) - (j-1)c \geq 0,$$

which implies that $c_j = 0$ cannot be a best response. Hence, $j \geq i^\star$ which means that for all $s_j > s_{i^\star}$, $c_j = c$.

Let j be the largest i such that $c_i = c$. If $j > i^\star$, then

$$V_j{}'(c; c_{-i}) = b\xi(s_j g) - \sum_i c_i \leq b\xi(s_j g) - jc < b\xi(s_j g) - (j-1)c < 0,$$

which implies that $c_j = c$ cannot be a best response. Hence, for all $s_j < s_{i^\star}$, $c_j = 0$.

If $V'_{i\star} < 0$, then for all $i \in I^\star$, $c_{i^\star} = 0$. Hence, $b\xi(s_{i^\star} g) < (i^\star - 1)c$ which contradicts the fact that the definition of $i^\star$ requires that $b\xi(s_{i^\star} g) \geq i^\star c$. If $V'_{i\star} > 0$, then for all $i \in I^\star$, $c_{i^\star} = c$. Note that in this case $b\xi(s_{i^\star} g) - i^\star c > 0$ and $\sum_{i \in I^\star} \bar{c}_i = |I^\star|c$. Finally, if $V'_\star = 0$, then $\sum_i c_i = b\xi(s_{i^\star} g)$. ∎