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Joshua Hall
Bryan Khoo *Editors*

# Essays on Government Growth

## Political Institutions, Evolving Markets, and Technology

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# Essays on Government Growth

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# Chapter 1
# Accounting for the Growth of Government


**Gary S. Becker and Casey B. Mulligan**

**Abstract** Why has government grown in so many countries during the twentieth century? We present a simple model of political competition and show how different sources of the growth of government have different effects on the amount and structure of taxes, spending, and regulatory programs undertaken by the government. Those sources include: demographic shifts, more efficient taxes, more efficient spending, a shift in the "political power" from those taxed to those subsidized, shifts in political power among taxed groups, and shifts in political power among subsidized groups. We also show how the effects of each source varies according to the model of public decision-making. Based on a variety of empirical indicators of regulation, we suggest that regulation has grown from 1890 to 1990, but less rapidly than tax revenues. Regulation grew more slowly during the 1980s and, according to some measures, declined. We suggest that the long term regulatory and budgetary trends are consistent with growth in the political power of those subsidized—especially the elderly. The 1980s decline in regulation together with its growth in taxes is not consistent with any one of the theories of government growth.

## 1.1 Introduction

Why has government grown in so many countries during the twentieth century? Many explanations have been proposed, explanations ranging from an increased demand for government services to changes in the distribution of skill. Our study helps estimate the importance of each theory by partitioning the set of

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possible explanations according to their implications for the quantity, composition, and incidence of taxes, spending, and regulation. The partition is the following categories:

(i) increases in the efficiency of taxes, spending, and/or regulation
(ii) decreases (increases) in the political power of taxpayers (those subsidized)
(iii) changes in the political power of particular taxpaying or subsidized groups
(iv) demographic shifts

We begin with an interest group model to derive the implications of (i)–(iv) for the quantity, composition, and incidence of taxes, spending, and regulation. The "social redistribution" and "merit good" models often have similar implications for the effects of (i)–(iv) on taxes, spending, and regulation; we discuss those cases when the three models differ.

We present some evidence on the growth of American federal, state and municipal spending together with some crude aggregate measures of federal regulation over the period 1890–1990, and the sub-periods 1890–1930, 1930–1980, 1980–1990. Improvements in the measurement of the quantity, composition, and incidence of regulation are desperately needed, but the empirical analysis serves three purposes. First, it illustrates how one might account for the growth of government using our framework. Second, we compare a variety of aggregate measures of federal regulation and show how each of them apparently grows less rapidly than taxes and spending. Third, we offer some tentative conclusions regarding the sources of the growth of government. Growth in the "political power" of the elderly appears to be an important source of the growth of government because both spending and regulation benefitting the elderly has grown relatively rapidly over the entire period—and probably over each of the sub-periods. More efficient means of tax collection may have facilitated the growth of government between 1890 and 1980, since non-elderly government programs have also grown (albeit less slowly) and spending apparently more rapidly than regulation. The 1980s witnessed a reduction in regulation, an increase in government spending (although at a slower rate than for previous periods), and a constant share of government spending on the elderly despite their substantial growth in numbers, which we cannot explain with any single one of the theories we consider.

We show how, in principle, a study of the quantity, composition, and incidence of taxes, spending, and regulation can not only distinguish among potential causes for the growth of government, but also among the various models of public decision-making by which those causes affect public policy. This proves to be difficult in practice because each of the models considered—interest group competition, social redistribution, and merit goods—have in common the majority of their implications for public policy responses to various stimuli. If, as our evidence suggests, increased tax efficiency and power of the elderly are the main stimuli, then all three public decision models predict the same changes in the composition of spending and regulation. The three models do differ according to their predictions for the amount and incidence of non-elderly regulation, but not enough is known about regulation for us to favor one model over the others.

## 1.2 The Basic Interest Group Model

Consider a simple model of competition for political power between two interest groups, "Taxpayers" and "Beneficiaries" (this is an extension of the political competition model developed by Becker 1983 and Becker and Mulligan 2003). At the equilibrium, Taxpayers are made worse off in order to make Beneficiaries better off. Let $I$ denote an "index of interference", which measures how much the government is doing to interfere with Taxpayers in order to benefit Beneficiaries. The index might denote amounts of taxes collected or regulations imposed on Taxpayers. Taxpayers spend resources, $A$, on lobbying legislators, influencing voters, etc. to persuade them to vote to keep taxes or regulations relatively low. Conversely, Beneficiaries spend resources, $B$, also trying to influence legislators and the electorate to vote to raise the transfers to them or beneficial (from Beneficiaries' point of view) regulation of Taxpayers.

We bypass an explicit discussion of the process involved in reaching government decisions on spending, taxes, and regulation. Instead, we assume a reduced form "influence function" that is the end result of what may be a very complicated process of electoral voting, legislative decisions, and executive branch initiatives. In this reduced form, government spending and regulation directly depend on the amounts $A_I$ and $B_I$ spent on gaining political influence:

$$I = F_I(\theta A_I, \lambda B_I) \tag{1.1}$$

where $F_a < 0$, $F_b > 0$, $F_{aa} > 0$, and $F_{bb} < 0$. $\theta$ and $\lambda$ are parameters indexing the "political power" of A and B, respectively. The derivatives mean that increased political pressure by the taxed Taxpayers lowers government spending and regulation, while increased pressure by Beneficiaries raises government spending and regulation of Taxpayers, and both effects are subject to diminishing returns.

Each group is assumed to spend the amount on influencing the political outcome that maximizes its net income, given political spending by the other group. In the non-cooperative equilibrium, each group is maximizing, given the equilibrium level of spending by the other group. Therefore, Taxpayers minimize the sum of its political spending and the cost to members of its group of the taxes or regulations assessed against it. The cost of government activity per group member is $C(I/\alpha, \delta I)$, where $\alpha$ is Taxpayers' share of the population and $\delta_I$ is the parameter indexing the dead weight cost (dwc) of each dollar of taxes (or each unit of regulation) used to achieve the index of interference $I/\alpha$ per Taxpayer. So Taxpayers (collectively) minimize $AI/\alpha + C(I/\alpha, \delta_I)$.

Because per member costs are likely to be nonlinear in interference per member, aggregate costs for the group are likely to depend on the group's size $\alpha$ as well as aggregate pressure $A$ and the aggregate index of interference $I$.

Similarly, Beneficiaries maximize the difference between the value to Beneficiaries of the subsidies it receives and the amount it spends on political activity. The value of the subsidy is $S(I/\beta, \sigma_I)$, where $\beta$ is Beneficiaries' share of the population

($\alpha + \beta = 1$) and $\sigma_I$ is a parameter indexing the dwc to Beneficiaries of each dollar of taxes (or each unit of regulation) used to achieve the index of interference $I/\beta$ per Beneficiary. So Beneficiaries (collectively) maximize $S(I/\beta, \sigma_I) - B_I/\beta$.

We interpret aggregate pressures $A_I$ and $B_I$, aggregate costs $\alpha C$, and aggregate benefits $\beta S$ as fractions of potential aggregate GDP. Although we recognize that actual GDP responds to the amount of government interference, henceforth we hold potential GDP fixed and suppress any reference to it.

### *1.2.1 Regulations vs Taxes and Subsidies*

Although textbook analyses often suggest that cash transfers dominate regulation, this is no longer true once the deadweight costs of raising and spending the cash are taken into account: a taxpayer changes his behavior to avoid the taxes and a subsidized person changes his behavior to increase his subsidy. The reduction in labor supply occurring in order to reduce incomes and thereby decrease tax liabilities or increased subsidies is one well-known example of such change behavior. Hence, we assume that income is redistributed by two means in a political equilibrium: taxes and regulations. We let $T$ and $R$ denote these two indices of interference, which are determined according to the political pressures ($A_T$, $A_R$, $B_T$, $B_R$) applied by the two groups: $T = F_T(\theta A_T, \lambda B_T)$ and $R = F_R(\theta A_R, \lambda B_R)$.

We assume for simplicity that each index of interference is measured in the same units (say, dollars) as the pressures $A_T$, $A_R$, $B_T$, and $B_R$. This is more natural when taxes are the means of interference, but might also apply to regulation if the index R were measured in the right way. We also decompose the costs and benefits of interference I into a "transfer" $I$ and a "deadweight loss" so that the functions $C$ and $S$ are:

$$\begin{aligned} C(I/\alpha, \delta_I) &= (I/\alpha) + \delta_I \Delta_I(I/\alpha) \\ C(I/\beta, \sigma_I) &= (I/\beta) - \sigma_I \Sigma_I(I/\beta) \\ \Delta_I'', \Sigma_I'' &\geq 0, I = T, R \end{aligned} \tag{1.2}$$

Notice that, when $\Delta$ and $\Sigma$ are positive, $I$ costs group $A$ more than $I$ and benefits group B less than $I$.

The social deadweight cost of government is $\alpha\delta_T\Delta_T + \alpha\delta_R\Delta_R + \beta\sigma_T\Sigma_T + \beta\sigma_R\Sigma_R$ plus the resources groups devote to influencing policy, $A_T + A_R + B_T + B_R$. We do not assume that $\alpha\delta_T\Delta_T + \alpha\delta_R\Delta_R + \beta\sigma_T\Sigma_T + \beta\sigma_R\Sigma_R$ is positive for all government activities or even that marginal social deadweight cost be positive for all government activities. Taxes, subsidies, and mandates "correcting market failures" or "providing public goods" are government activities which may have negative average and marginal social deadweight cost. We only assume $\Delta_T''$, $\Sigma_T''$, $\Delta_R''$, and $\Sigma_R'' \geq 0$—that the marginal government tax, transfer, or regulation has the largest marginal deadweight cost.

Our notation (Eq. (1.2)) and interpretation suggest that the government has a budget constraint for interference that balances—namely that, other than the dead-weight costs, every unit of interference enjoyed by Beneficiaries is a unit of interference suffered by Taxpayers. Our suggestion is quite natural when "interference" refers to taxes and spending, but less natural when interference refers to regulation. However, another legitimate interpretation of Eq. (1.2) is as *definitions* of the deadweight costs as a function of the total costs $C$ and surpluses $S$—that the "dwc" suffered by each Taxpayer (each Beneficiary) from interference $I/\alpha$ per A ($I/\beta$ per B) is defined to be the difference between $C(I/\alpha, \delta_I)$ and $I/\alpha$ (the difference between $I/\beta$ and $S(I/\beta, \sigma_I)$). What is crucial for our results that this difference be a convex function of $I$.

Each group knows the "political process" $F_T$ and $F_R$ and applies pressures $A_T$ and $A_R$ (or $B_T$ and $B_R$) to maximize their net surplus per member taking as given the pressure applied by the other group and the number of group members. Taxpayers minimize $C_T(T/\alpha, \delta_T) + C_R(R/\alpha, \delta_R) + (A_T + A_R)/\alpha$ while Beneficiaries maximize $S_T(T/\beta, \sigma_T) + S_R(R/\beta, \sigma_R) - (B_T + B_R)/\beta$.

A few relevant assumptions have been made above. First, given the parameters $\delta_T$, $\delta_R$,$\sigma_T$, and $\sigma_R$, the costs of taxes are independent of the costs of regulation. It is unclear whether, in fact, the marginal deadweight cost of taxes is increasing in the amount of regulation (as in the case of payroll taxes and minimum wage regulations) or vice-versa, although an interesting analysis of such interactions is possible.[1] Second, since $A_T$, $A_R$, $B_T$, $B_R$ are separate choice variables, groups are assumed to be able to perfectly target their political pressure towards either taxes or regulation.[2] In other words, political pressure is "specific" to an index of interference. We explore the consequences of this assumption by imposing the constraints $A_T = A_R$ and $B_T = B_R$ on the problems describing the groups' political behavior, which means that pressure is "general" rather than "specific".

The first order conditions describing the optimal pressures are:

$$-\theta(\partial F_T/\partial A)(1 + \delta_T \Delta_T^{'}) = 1, -\theta(\partial F_R/\partial A)(1 + \delta_R \Delta_R^{'}) = 1$$
$$\lambda(\partial F_T/\partial B)(1 - \sigma_T \Sigma_T^{'}) = 1, \lambda(\partial F_R/\partial B)(1 - \sigma_R \Sigma_R^{'}) = 1 \tag{1.3}$$

The left-hand-side of each first order condition is the marginal benefit (in "dollars") of pressure, which depends on four factors: (1) the group's political power index ($\theta$ or $\lambda$), (2) the magnitude of the first derivative of the influence function $F_T$ or $F_R$, (3) the deadweight cost parameter ($\delta_T$, $\delta_R$, $\sigma_T$, or $\sigma_R$), and (4) interference per group member.

[1] Summers et al. (1993), for example, suggest that some labor market regulations decrease the marginal deadweight cost of labor income taxes. The Council of Economic Advisors (2019b) concludes that entry regulations increase the marginal deadweight cost of taxes by, in effect, allowing the businesses in the industry to jointly administer an excise tax.

[2] Another way of stating this assumption is that $F_T$ is independent of $A_R$ and $B_R$ while $F_R$ is independent of $A_T$ and $B_T$.

The first two factors each increase the marginal benefit. Because Taxpayers are trying to decrease interference and Beneficiaries increase it, an increase in the relevant deadweight cost parameter increases the marginal benefit of pressure for Taxpayers and decreases it for Beneficiaries. Of particular interest is the fourth factor, interference per group member. The deadweight cost functions ($\Delta_T$,$\Delta_R$,$\Sigma_T$, or $\Sigma_R$) are nonconcave, so more interference tends to increase marginal deadweight costs. This is an important source of the dependence of political outcomes on group size (and one emphasized by Becker 1983). Furthermore, aside from nonzero cross-derivatives of the influence functions, the fourth factor is the way in which one group's pressure affects the other groups marginal benefit of pressure. More pressure by one group tends to increase the marginal benefit of pressure by the other group unless the cross-derivative of the relevant influence function is sufficiently far from zero.

Because we place no restrictions on the magnitude of the first derivatives of the influence functions $F_T$ and $F_R$ or even the sign of the marginal deadweight costs, the first order conditions (3) show that our definition of "political equilibrium" does not imply that there is necessarily too little, or too much, government interference. Negative equilibrium average and marginal deadweight costs are perfectly consistent with our model.

Before deriving the effects of the various parameters on equilibrium taxes and spending, we mention some examples of changes in those parameters. Aging and increased retirement in an economy where taxes are on labor income and subsidies are mainly for the elderly is an example in the growth of the fraction of people subsidized (i.e., a decrease in $\alpha$ and an increase in $\beta$). The invasion of an enemy army can be a circumstance of a decrease in average and marginal deadweight cost (equivalently, and increase in average and marginal benefits) of spending and regulation—namely those that help defend against the enemy. Technological and structural economic changes—such as increased urbanization and monetization of the economy or decreased monitoring costs—can allow taxes, subsidies, and regulations to be administered more efficiently.[3]

### *1.2.2 Equilibrium Mix of Regulations and Cash Transfers*

Our model is convenient for analyzing the effect of various parameter changes on the quantity, composition, and incidence of regulations and cash transfers. A few of the parameter changes have been derived in the literature and used to explain the growth of government—as in Kau and Rubin (1981), Turner (1984), Wilson (1990), and Becker and Mulligan (2003)—but our purpose here is to contrast the

[3]Becker and Mulligan (2003) emphasize that $\delta$ parameterizes "tax efficiency" in the sense that (for $\Delta' > 0$) a lower $\delta$ means lower average and marginal deadweight costs of taxes for any given amount of taxes to be collected.

implications of various theories from the literature. As we show below, the theories have substantially different empirical implications.

The first order conditions with respect to $A_T$ and $B_T$ alone determine the reaction functions and the Nash equilibrium $A_T$, $B_T$, and $T$. These equations are studied more carefully by Becker and Mulligan (2003). The first order conditions with respect to $A_R$ and $B_R$ alone determine the reaction functions and the Nash equilibrium $A_R$, $B_R$, and $R$.

**Proposition 1.1** *With perfectly "specific" pressure, an exogenous change in the efficiency of taxes $\delta_T$ or the efficiency of spending $\sigma_T$ affects the Nash equilibrium $A_T$, $B_T$, and the size of the budget $T$, but not $A_R$, $B_R$, or the quantity of regulation $R$. An exogenous change in the efficiency of regulation ($\delta_R$ or $\sigma_R$) affects the Nash equilibrium $A_R$, $B_R$, and the amount of regulation $R$, but not $A_T$, $B_T$, or the size of the government budget $T$.*

Proposition 1.1 is a strong result and obviously depends on our assumption that dwcs are important and that groups can expend resources to change taxes without changing regulation and vice versa. But the qualitative result—that $\delta_T$ and $\sigma_T$ have a greater effect on taxes than on regulation—is quite general and, as we demonstrate below, allows us to distinguish changes in tax or spending efficiency from changes in the political power of those taxed or subsidized.

Henceforth, we restrict our attention to particular Nash equilibria: those that are "stable" and "strategically separable". The stability condition is familiar from game theory and restricts how Beneficiaries' reaction function might cross Taxpayers' in the $[A, B]$ plane. Unfamiliar is "strategic separability", by which we mean an exogenous increase in A's pressure or an exogenous decrease in B's pressure decreases equilibrium interference.[4] Our "strategic separability" restricts the magnitude of the cross-derivative $F_{ab}$, but is weaker than additive separability (i.e., is weaker than $F_{ab} = 0$).

The stability and strategic separability of the equilibrium gives us a Corollary to Proposition 1.1,

**Corollary 1.1** *An increase in efficiency of taxes or spending increases $T$ relative to $R$. An increase in the efficiency of regulation increases $R$ relative to $T$.*

### *1.2.3 Causes of the Growth of Government Budgets*

A number of reasons for the growth of government budget can be analyzed, which we do in Propositions 1.2, 1.3, and 1.4:

[4] $(F_{ab})^2 - F_{aa}F_{bb} > 0$ at an equilibrium is sufficient for the equilibrium to be "stable." $-F_bF_{aa}/(-F_a) < F_{ab} < F_aF_{bb}/F_b$ at the equilibria is necessary and sufficient for the equilibria to be "strategically separable." If the influence functions are either additively separable or homogeneous of degree zero, then any Nash equilibrium is stable and strategically separable.

**Proposition 1.2** *A decrease in the political power of the taxed group ($\theta$) or an increase in the power of the subsidized group ($\lambda$) increases aggregate taxes.*

**Proposition 1.3** *An increase in the efficiency of taxes or spending (which is a decrease in $\delta_T$ or $\sigma_T$ when $\Delta_T^{'}$ or $\Sigma_T^{'}$ are positive) increases taxes and spending. If political pressure is somewhat "general," an increase in the efficiency of regulation (which is a decrease in $\delta_R$ or $\sigma_R$ when $\Delta_R^{'}$ or $\Sigma_R^{'}$ are positive) increases taxes and spending.*

**Proposition 1.4** *An increase in the efficiency of regulation increases regulation. If political pressure is somewhat "general," an increase in the efficiency of taxes or spending increases regulation.*

Propositions 1.3 and 1.4 point out that, when pressure is somewhat "general", the amount of taxation depends on the efficiency of regulation and the amount of regulation depends on the efficiency of taxation. Even with completely specific pressure, these dependencies would arise if the marginal deadweight costs of taxation (regulation) were decreasing in the amount of regulation (taxation).

We begin to summarize these results of the interest group (IG) model in Table 1.1 and the Appendix Table A.1. The Tables also summarize results for two other models of government activity: the social redistribution (SR) model and the merit goods (MG) model. The SR and MG models are discussed in Sect. 1.3. In order to simplify the exposition, we look ahead to our empirical findings and report in Table 1.1 theoretical results for only three sources of government growth (more efficient taxes, more efficient regulation, and growing political influence of one subsidized group) and the empirical measures that might be used to distinguish them (the amount of regulation, the composition of taxes and spending taxes per regulation, and the relative incidence of taxes and regulation). Our framework can also distinguish among five other sources of government growth, which we compare in the Appendix Table A.1.

According to our Table 1.1, data on the amounts and composition of taxes, spending, and regulation are not enough to say whether growing government derives from increases in the efficiency of taxes or of spending. We can, however, distinguish these causes from a mere increase in the (relative) power of those subsidized because the former predict an increase in taxes per regulation. With measures of the efficiency of taxes and spending, we can begin to distinguish increased tax efficiency from increased spending efficiency, and show elsewhere how to do so (see Becker and Mulligan's (2003) analysis of wartime and "flypaper" effects).

It is also easy to show that the effects of tax and spending efficiency on tax collections increases with the relative political power of those subsidized. From Young's theorem, it then follows that more relative political power for those subsidized leads to a greater increase in government when efficient means of redistribution are available. Hence, increased efficiency of redistribution (the "supply" of government) and increased political power of those demanding redistribution (the "demand" for

**Table 1.1** Accounting for the growth of government (both general and specific pressure)

| Source of growing spending and taxes | Model of public decisions[b] | Changes in amount of regulation | Changes in composition of spending and regulation | Changes in taxes per regulation | Correlation between regulation and tax incidence |
|---|---|---|---|---|---|
| More efficient taxes or spending | IG | + | 0 | + | + |
| | SR | − | 0 | + | + |
| | MG | + | 0 | 0 | − |
| More efficient regulation[a] | IG | + | 0 | − | + |
| | SR | − | 0 | + | + |
| | MG | + | 0 | 0 | − |
| Power of one subsidized group | IG, SR | +[c] | Yes | 0 | + |

[a]SR model predicts growing government budgets when regulation becomes *less* efficient
[b]Models of public decisions: *IG* interest group, *SR* social redistribution, *MG* merit goods
[c]Result requires somewhat stronger assumptions than stability and strategic separability ($F_{AB} = 0$ sufficient)