

Political instability, capital taxation, and growth

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Abstract

In cross-country studies of economic growth, average growth rates of GDP per capita tend to be negatively associated both with the size of government and with measures of political instability. We show that a linear endogenous growth model with a very simple model of government spending and taxation, in the presence of political instability, can account for both empirical correlations. In addition, the model predicts that both correlations are intimately linked: thus greater political instability leads to both lower growth rates and a higher share of government spending in GDP. © 1998 Elsevier Science B.V. All rights reserved.

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1. Introduction

In cross-country studies of economic growth, average growth rates of GDP per capita tend to be negatively associated both with the size of government and with measures of political instability (e.g., Barro and Sala-i-Martin, 1995). What are the underlying factors behind these correlations? This paper presents a very

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simple model of the determination of government spending and taxation in the face of political instability. The model provides an explanation for both empirical correlations. In addition, it predicts that both correlations are intimately linked with one another. Thus, greater political instability leads to both lower growth rates, and a higher average share of government spending in GDP.

We take a simple linear ‘endogenous growth’ model in which there are two types of governments or regimes that can possibly be in power at any time period. Governments must tax in order to finance spending on publicly provided goods. Each government provides its own type of public good, and places no value whatsoever on the type of good provided by the opposition should they be in power. Political instability is introduced by the assumption that governments have a constant probability of losing power. The only form of revenue that governments have is to tax the returns to the single factor (capital). Governments are allowed, however, to transfer purchasing power through time by debt issue.

In the absence of political instability, the government or regime in power initially remains in power forever. It is faced with a very simple optimal tax problem: choosing a path of capital taxes to finance an optimal government spending policy over the infinite future. The optimal tax rule for the government is to tax initial holders of capital as much as required to maintain a constant stock of (negative) government debt to GDP, and never impose a tax on capital in the future. This is reminiscent of the solutions to the Ramsey tax problem presented by Chamley (1986), save for the fact that, in the absence of labour supply, we have a first-best outcome.

But, when the prevailing regime is uncertain, the path for taxes and government debt are considerably different. In this case, the initial capital tax is lower, but capital will be taxed at a constant positive rate at all periods in the future. Since the capital tax directly reduces the incentive to invest, the long-run growth rate is lower in the economy with political instability. In addition, political instability leads all governments to engage in excessive spending, relative to the economy with certainty of government tenure. Thus, the share of government in GDP is higher with political instability. As a corollary, the model implies that countries with political instability exhibit higher government debt to GDP ratios.

The intuition behind these results is quite straightforward. With political instability, the government in power at any time period will place no value on the spending of opposition parties in the event that they gain power in the future. This leads to two separate effects. First, they would like their opponents to engage in some capital taxation, since the knowledge of future capital taxation will reduce current investment and future output, thus reducing the potential for their opponents to spend. They effectively force their opponents into capital taxation by reducing the net claims that they bequeath to them.

Thus, the initial (date zero) capital tax is lower and future capital taxes are higher with political instability. Secondly, they choose a higher rate of spending on their public-owned good, since part of the cost of this spending is lower for future output, which might otherwise be used to spend on the opponent-government's good.

While we do not test the model directly, in a later section we discuss some evidence which supports the proposition that the share of government in GDP is positively related to measures of political instability.

The theme of the paper is closely related to previous work in the area of political uncertainty and macroeconomics. Alesina and Tabellini (1990a, b) and Persson and Svensson (1989) independently formulated environments where uncertainty over political succession could generate excessive debt creation. They do not, however, allow for capital accumulation and economic growth. Alesina and Rodrick (1994) examine the effects of government redistributive policies on economic growth in a heterogeneous agent economy, but do not allow for capital taxation or government debt. Alesina and Perotti (1995) look at how redistribution in a unionized economy could drive up tax rates and increase wage costs and unemployment, but do not examine the growth effects of this. By contrast, in this paper, we do not explore the implications of the model for redistribution of income.

The paper is organized as follows. The next section sets out the details of the model. Section 3 computes the equilibrium of the model with endogenous taxes and government spending rates. Section 4 provides a brief discussion of empirical evidence related to the model's predictions. Finally, Section 5 presents some conclusions.

2. The model

2.1. Households

Households in this economy derive utility both from privately produced goods, c_t , and from government-provided goods, g_{jt} . Government-provided goods are of two types; type D and type R . Households differ only in their preference for the two types of goods. The intensity of their preference for the government good of type D versus type R is captured by the parameter α . Individual i has preferences

$$E_0 \sum_0^{\infty} \beta^t (U(c_t) + \alpha_i V(g_{Dt}) + (1 - \alpha_i) V(g_{Rt})), \quad (1)$$

where $\alpha \in (0, 1)$. Thus, a higher α_i person values g_D more than g_R . Assume that $U' > 0$, $V' > 0$, $U'' < 0$, $V'' < 0$.

Households choose consumption and saving, taking as given a sequence of government spending rates, interest rates, and tax rates. Households save in the form of real capital and government bonds. Capital holdings must be non-negative, but bond holdings may be negative (in equilibrium, since the government saves, households bond holdings will be negative). The physical technology is such that k_t units of the consumption good invested today returns Ak_t units in one period's time. The return on government debt is R_t .

Taxes τ_t on capital income are levied by the government in power. Governments cannot identify individuals by type. Therefore, they cannot impose differential taxes across households. Since publicly-provided goods enter into preferences separably, their magnitude has no effect on private sector decisions. That means that all households are alike in their consumption and savings decisions. The household's budget constraint at any moment of time is then

$$b_{t+1} + c_t + k_{t+1} = Ak_t(1 - \tau_t) + R_t b_t. \quad (2)$$

2.2. Governments

There are two types of government or political regimes. Type *D* has the preferences given by

$$E_0 \sum_0^{\infty} \beta^t (U(c_t) + V(g_{Dt})). \quad (3)$$

Type *R*, on the other hand, has preferences

$$E_0 \sum_0^{\infty} \beta^t (U(c_t) + V(g_{Rt})). \quad (4)$$

Thus, governments lie at either extreme of agents' preferences for publicly provided goods. When government *D* is in power it will maximize Eq. (3), which coincides exactly only with the preferences of the $\alpha_i = 1$ th individual.¹

A government chooses spending and taxes so as to maximize their objective function, subject to a competitive equilibrium, and subject to the actions of other governments. Each government is forced to honour the other's debt obligations. In equilibrium, since debt will be negative, this constraint would never be binding in any case.

¹ This is clearly an extreme case of political polarity. It is possible to extend the model to allow governments to care about both types of goods, but differ in the intensity with respect to which they do. Thus, the *D* government could care about high α individuals, and the *R* government would care about low α individuals. In this case, in order to get the same results as in the paper, additional restrictions have to be placed on the utility function, as shown in Alesina and Tabellini (1990b).

For a government of type $j (= D, R)$ the budget constraint at any period is given by

$$b_{t+1} + \tau_{jt} A k_t = g_{jt} + R_t b_t. \quad (5)$$

Note that type D and R goods are both provided in the same way, directly out of tax revenue. Thus, both goods can be produced simply by taking one unit of output away from consumption or investment.

2.3. Political instability

We introduce political instability or uncertainty in a very simple way. We assume that each incumbent government, no matter what type, loses power with probability ρ every period, and retains power with probability $(1 - \rho)$. Thus, let $\{S_D, S_R\}$ be the possible states of the world, where S_i represents the event ‘government i in power’. Then the state of the world S evolves according to the Markov chain

$$\begin{pmatrix} \rho & (1 - \rho) \\ (1 - \rho) & \rho \end{pmatrix}.$$

With a constant probability of losing power of ρ in each period, each government has an unconditional probability of $\frac{1}{2}$ of being in power.²

3. Equilibrium

The symmetric structure leads to a very useful simplification of the environment. As far as consumers are concerned, there is no uncertainty with respect to taxes or rates of return. This is because, no matter what government is in power, it will choose the same tax rate as would the alternative government had that government been in power. Thus, while the tax rates might vary over time, they will not vary across political parties.

An equilibrium for the economy is (a) a competitive equilibrium in which households maximize utility subject to budget constraints and a given sequence of government spending rates and taxes, and (b) a solution to the government maximization problem, where each government chooses a combinations of taxes spending, and future debt level, while in power, subject to a competitive

² Political turnover need not necessarily be associated with an official change in government. A change in the ascendancy of one faction relative to another within a ruling party could be associated with the political change described here. Nor are we necessarily thinking of the transfer of power as being achieved democratically. For non-democratic regimes, ρ could capture the probability of the ruling regime losing its hold on power due to a revolution or coup.

equilibrium and taking into account the decision rules that will be followed by the opposition government should they be in power in the future.

3.1. Model solution

In what follows, we make the following specific assumptions about preferences

A1: Let $U(c_t) = \log(c_t)$,

A2: Let $V(g_{jt}) = \gamma I_{jt} \log(g_{jt})$,

where I_{jt} is an indicator function such that $I_{jt} = 1$ if $S = S_j$, $I_{jt} = 0$ if $S \neq S_j$. Assumption A2 is necessary to avoid having utility at negative infinity when one of the government goods is not provided.

We solve the model in the following way. Beginning at some arbitrary ‘end’ period T , choose optimal government spending and taxation, taking as given a competitive equilibrium and the inherited level of public debt, for each possible party in power. Then, taking the solution for this as given, move back one period. Again, for either possible party in power, choose g_{T-1} and τ_{T-1} , given a competitive equilibrium and an inherited level of debt. This latter choice will determine the debt level that will be carried forward to period T .

By letting T get arbitrarily large, we can derive stationary rules for government spending, taxes and debt, as functions of the current state (the aggregate capital stock). The influence of political uncertainty (in the form of an increase in ρ above zero) on these decision rules is the key issue of interest.

Because the two types of governments are completely symmetric, they will choose the same tax rates and government spending, except that the government spending will be in the form of different types of goods, depending upon which government is in power. Therefore, we do not actually have to identify the government in power at each date. The tax and spending rates it would choose are in fact, the same as if the other party, held power.

Take the private sector budget constraint at $t = T$. Since this is the end period, it may be written, for any household, as

$$c_T = Ak_T(1 - \tau_T) + R_T b_T. \tag{6}$$

At time T , households have no economic decision to make. They simply consume their income. The government of time T , of type j , will choose spending g_{jT} to maximize

$$\log(c_T) + \gamma \log(g_{jT}) \tag{7}$$

subject to the budget constraint

$$\tau_{jT} Ak_T = g_{jT} + R_T b_T \tag{8}$$

and the feasibility condition

$$c_T + g_{jT} = Ak_T. \quad (9)$$

From the standpoint of period T , capital taxes are non-distortionary. Thus, government j will simply maximize Eq. (7) subject to Eq. (9). The budget constraint, given by Eq. (8) just suffices to determine the breakdown of the financing of total spending between taxes and returns on government claims on the private sector, $-b_T$.³ The government's optimal spending rate is given by

$$g_{jT} = \gamma/(1 + \gamma)Ak_T. \quad (10)$$

The tax rate is then determined residually from Eq. (8), given b_T .

Since the spending rule is the same for each potential government, we may use Eq. (10) to derive the value of being in power and being out of power for each government at time T . Define these value functions as $V_T^I(k_T, b_T)$ and $V_T^O(k_T, b_T)$, respectively. Then

$$V_T^I(k_T, b_T) = (1 + \gamma) \log k_T + \Delta_T^I,$$

$$V_T^O(k_T, b_T) = \log k_T + \Delta_T^O,$$

where Δ_T^I and Δ_T^O are constant functions of parameters. Note that b_T does not actually enter the V_T^K functions as a separate argument, since there is no distinction, from the standpoint of time T , between financing from bond income and from taxes.

Now, move back to period $T - 1$. Households in period $T - 1$ choose holdings of government debt and capital to maximize two-period utility. This gives the following conditions:

$$1/c_{T-1} = \beta A(1 - \tau_T)/c_T, \quad (11)$$

$$R_T = A(1 - \tau_T). \quad (12)$$

The first condition defines, implicitly, the optimal investment rate of households, while the second is an arbitrage condition that must hold if both bonds and capital are to be held.⁴

³ Implicitly, in writing this choice problem, we are assuming that $Ak_T \geq R_T b_T$, so that at the maximal possible tax rate, the government can feasibly engage in government spending without renegeing on the debt. In fact, in an equilibrium of the model, $b_T < 0$, so this is certainly true.

⁴ If $R_t > (1 - \tau_t)A$, then the private sector will never borrow from the government. If $R_t < (1 - \tau_t)A$, they would wish to borrow infinite amounts from the government and invest it in capital.

Now, taking Eq. (11), and combining it with the aggregate resource constraints for period T and period $T - 1$,⁵ and using Eq. (10), we may derive the period $T - 1$ investment rule for the private sector

$$k_T = \beta(1 + \gamma)(1 - \tau_T)(Ak_{T-1} - g_{T-1}) / (1 + \beta(1 + \gamma)(1 - \tau_T)). \tag{13}$$

This gives the capital stock brought into the final period as a function of period $T - 1$ government spending, and period T taxes. The government in period $T - 1$ will choose both these variables.

Now, we look at the choice of the government in power at time period $T - 1$. Since it is of no importance whether $j = D$ or R , we will henceforth drop the j subscript. This government will choose g_{T-1} and b_T maximize

$$V_{T-1}^I = \log c_{T-1} + \gamma \log g_{T-1} + \beta(1 - \rho)V_T^I + \beta\rho V_T^O \tag{14}$$

subject to the investment rule, Eq. (13), the budget constraint

$$b_T = R_{T-1}b_{T-1} + g_{T-1} - \tau_{T-1}Ak_{T-1}, \tag{15}$$

the arbitrage condition, Eq. (12), and finally the feasibility condition

$$c_{T-1} + g_{T-1} + k_T = Ak_{T-1}. \tag{16}$$

By substituting Eqs. (13) and (16) into Eq. (14), we may express V_{T-1}^I as a function of k_{T-1} , g_{T-1} , and τ_T . In turn, τ_T depends through Eq. (8) on the choice of b_T . But given the government spending policy to be followed at period T , the choice of b_T by the type j government at period $T - 1$ is equivalent to the choice of τ_T . Thus there is no need to directly choose b_T .

The optimal g_{jT-1} and τ_T values for the time $T - 1$ government are given by

$$g_{jT-1} = \gamma Ak_{T-1} / (1 + \gamma + \beta((1 - \rho)(1 + \gamma) + \rho)), \tag{17}$$

$$(1 - \tau_T) = (1 - \rho) + \rho / (1 + \gamma). \tag{18}$$

The solution for τ_T together with the government spending rule for period T gives the level of government debt that is bequeathed to the period T government. This is given by⁶

$$b_T = - \frac{k_T(1 - \rho)\gamma}{(1 - \rho)(1 + \gamma) + \rho}. \tag{19}$$

Substituting for k_T using Eqs. (13) and (17), and taxes from Eq. (18), gives

$$b_T = - \beta(1 - \rho)\gamma Ak_{T-1} / (1 + \gamma + \beta((1 - \rho)(1 + \gamma) + \rho)). \tag{20}$$

⁵ Given by Eqs. (9) and (16), respectively.

⁶ To derive Eq. (19), we have used the arbitrage condition, Eq. (12).

As in the period T problem, the government at time $T - 1$ is indifferent to the composition of revenue coming from earnings on government debt (if negative) and taxation. The inherited debt level b_{T-1} will determine how much it will tax, given its optimal choice of g_{T-1} and b_T .

We can now provide an interpretation of the solutions, Eqs. (17)–(20). When $\rho = 0$, the government in power at time $T - 1$ is certain of its tenure. In that case, it would always wish to avoid any distortionary capital taxes on investment income in period T . Hence, by Eq. (18), it will set τ_T to zero. It does this by taxing in period $T - 1$ as much as it needs, over and above its bond income, which is $-R_{T-1}b_{T-1}$, so as to have net claims sufficient to fully finance desired government spending in period T without recourse to capital taxation. That is, it would have claims valued at $-b_T = k_T\gamma/(1 + \gamma)$ against the private sector in period T . With an interest rate of A , this just leaves it enough revenue to finance its period T spending without any taxation.

But when its tenure is uncertain the government at time $T - 1$ will place no value at all on government spending to be incurred by the opposition party, should it gain power next period. This will happen with probability ρ . Then the $T - 1$ government reduces the claims it bequeaths to the next period.

To see the intuition behind this, we look at the costs and benefits to the government at time $T - 1$ of a rise in the capital tax rate τ_T . The rise in the tax rate will have a current utility benefit, since by reducing private investment, it increases resources available for current consumption. The size of the utility gain in period $T - 1$ is

$$\frac{\beta(1 + \gamma)(1 + \beta((1 - \rho)(1 + \gamma) + \rho))}{(1 + \beta(1 + \gamma)(1 - \tau_T))}. \quad (21)$$

But, by reducing investment and future capital, the cost in terms of future utility, for a government currently in power, is

$$\beta((1 - \rho)(1 + \gamma) + \rho)/(1 - \tau_T). \quad (22)$$

When $\rho = 0$, the first expression is equal to the second expression at $\tau_T = 0$. Thus, the optimal time T capital tax for a time $T - 1$ government is zero. But when $\rho > 0$, the first expression must exceed the second at $\tau_T = 0$. Thus, the government at time $T - 1$ is willing to allow some capital taxation to take place in period T , because the benefits of eliminating capital taxes would not match the costs in terms of foregone consumption, given that they place no value in the publicly-provided goods financed by the period T opposition. Equivalently, the period $T - 1$ government will wish to constrain the spending of the period T opposition. They can do this by allowing for some capital taxation, leading to lower investment, income, and opposition government spending.

We may use the same procedure for period $T - 2$, deriving the private sector investment rule, and looking at the government in powers' choice of g_{T-2} and

b_{T-1} , given that it has a probability $1 - \rho$ of being in power in the next year, and probability $(1 - \rho)^2 + \rho(1 - \rho)$ of being in power the year after. Continuing on in this manner, the derivation of the full path of taxes, government spending and debt levels can be computed by solving back recursively, computing V_{T-i}^I and V_{T-i}^O for $i = 2, 3, \dots, T$. Then letting T get arbitrarily large we derive the solutions for the infinite horizon economy. The appendix illustrates this procedure, and shows that the solutions for tax and government spending rates converge to the following:

$$g_t = \frac{\gamma A k_t}{(1/(1 - \beta) + \gamma(1 - \beta(1 - \rho)))/A}, \quad (23)$$

$$(1 - \tau) = (1 - \rho) + \frac{\rho(1/(1 - \beta) + \gamma\beta\rho/A)}{(1/(1 - \beta) + \gamma(1 - \beta(1 - \rho)))/A}, \quad (24)$$

where $A = (1 - \beta(1 - \rho))^2 - (\beta\rho)^2$.

As $T \rightarrow \infty$, the law of motion for the capital stock will converge to

$$k_{t+1} = \beta A k_t (1 - \tau). \quad (25)$$

Finally, the level of government debt to GDP, defined as $\hat{b} = b_{t+1}/A k_t$ will be constant, equal to

$$\hat{b} = - \frac{\beta\gamma(1 - \rho(1 - \beta)/A)}{(1 + (1 + \beta)\gamma(1 - \beta(1 - \rho)))/A}. \quad (26)$$

3.2. Interpretation

In the economy without any instability in political tenure (where $\rho = 0$), whatever government is in power at time 0, stays in power forever. Then we have a constant share of government in GDP, equal to

$$\gamma(1 - \beta)/(1 + \gamma). \quad (27)$$

In this case, the tax for all $t > 0$ is zero, the growth rate of the economy is βA , and the ratio of debt to GDP is $-\beta\gamma/(1 + \gamma)$.

Without political uncertainty, the government at time zero taxes time zero capital income at exactly that rate required to maintain the stationary debt to GDP ratio forever. All spending is then financed by the return on the government claims against the private sector. No taxes are ever levied after period 0. The gross return on government claims, b_{t-1} , at any period, as a proportion of GDP is $(1/\beta)\beta\gamma/(1 + \gamma)$. The government then spends $(1 - \beta)$ of this in every period, maintaining the debt to GDP ratio constant at $-\beta\gamma/(1 + \gamma)$. Since the

interest rate is A in every period, the present value of government spending evaluated at time 0 must be

$$\sum_{t=0}^{\infty} A^{-t}(\gamma(1-\beta)/(1+\gamma)Ak_t) = Ak_0\gamma/(1+\gamma) \quad (28)$$

(where we have used the decision rule for the capital stock $k_t = \beta Ak_{t-1}$).

For the government budget to be intertemporally balanced, the initial tax rate must equal the present value of government spending. Thus, we must have

$$\tau_0 = \gamma/(1+\gamma). \quad (29)$$

Using the government budget constraint at time 0, we see that this tax rate gives us exactly the required debt to GDP ratio.⁷

The optimal taxation path in the economy without political uncertainty is similar to the Ramsey optimal tax rules derived in infinite horizon economies by Chamley (1986) and others. In that work, it is well known that the optimal tax on capital is zero, asymptotically. The Ramsey approach presupposes full commitment on the part of government. Here, we have not presumed any commitment. But, in fact, commitment is irrelevant here, due to the absence of a labour supply decision. In the case without political uncertainty, the tax path described above is, in fact, the Ramsey path,⁸ since when labour is inelastically supplied and initial capital taxation unconstrained, we effectively have a lump-sum tax base at the initial period, and for the reason discussed in footnote, Eq. (7), this is all that is required to provide financing for all future government spending.

Now, with the introduction of political uncertainty, we see that the capital tax will be set at a constant positive rate, as described in Eq. (24). The tax rate will be higher, the higher ρ is, or the greater the likelihood of the present government losing its tenure. As a consequence, the growth rate, given by $\beta A(1-\tau)$, will be lower, the higher ρ is. Finally, the government spending to GDP ratio is higher,

⁷Note that the government will never need to tax more than 100% of GDP at the initial time period, if it begins with zero debt. This is because its spending, which determines its initial financing requirements, is endogenously determined, and is in equilibrium proportional to the capital stock. Thus, unlike models where the path of government spending is exogenously specified, taxation will never be entirely confiscatory here. The same property holds for the economy with political uncertainty.

⁸Chamley (1986) imposes an upper limit on the capital income tax that can be levied within any time period. We could easily incorporate such a limit. Say, still in the case $\rho = 0$, that the capital tax could not exceed $\varepsilon\gamma/(1+\gamma)$, where $0 < \varepsilon < 1$. Then the government will impose the tax at this upper limit for as many periods as required to build up the stationary debt to GDP ratio, and then set $\tau = 0$ for the future.

the higher ρ is. The time zero tax rate, derived using the same procedure as before, is

$$\tau_0 = \frac{\gamma(1 + \beta/(1 - \beta)(1 - \rho(1 - \beta)/\Lambda))}{(1/(1 - \beta) + \gamma(1 - \beta(1 - \rho))/\Lambda)}. \quad (30)$$

When $\rho > 0$, this is less than Eq. (29). Thus, even though the share of government spending in GDP is higher, the greater is ρ , the initial capital tax is lower, since in every period, spending for the particular government in power will be financed at least partially out of contemporaneous taxation.

At any time period, a government in power has the option of setting a capital tax at a rate which would eliminate the need to impose any taxes in the future. However, it will choose not to do so, since if it did, it would reduce the amount that the future government, which could be an opponent government, would have to use capital taxes. This would increase current investment and therefore future income, and allow the future opponent government to spend more on the public good for which the present government places no value. Thus, as we have shown, the present government will always leave insufficient net claims to finance all of future government spending requirements.

The government at time zero will set a higher tax rate, since it begins with no net claims against the private sector. But the tax rate is still below the level required to maintain a constant debt to GDP ratio without recourse to future capital taxation.

In addition, in its choice of current government spending, the government trades off the utility derived from publicly-provided goods today, against the cost in terms of a lower capital stock in the future (since current government spending must imply lower net investment). When $\rho > 0$, some future output will be used to finance spending by the opposition in the event that it gains power. This reduces the utility costs of current spending for today's government, leading to a higher government spending to GDP ratio in equilibrium, relative to an economy without political uncertainty.

This model then implies a simultaneous negative correlation between political instability and economic growth, and between the size of government and economic growth. Both correlations are supported by empirical evidence presented in Barro and Sala-i-Martin (1995). As a corollary, the model also implies a positive correlation between political uncertainty and the size of government. The next section of the paper discusses some evidence on this relationship.

Note that the model also implies that the government debt to GDP ratio is higher (less negative) in the economy with political instability. Thus, we derive a prediction of a negative relationship between government debt and economic growth. While in the simple specification of the model used here, government debt is always negative, it would be easy to include other realistic features of the

economy that would allow for the same results to hold but with a positive ratio of government debt to GDP.⁹

A more general implication of the results, in common with the work of Alesina and Tabellini (1990a) and Persson and Svensson (1989), is that the role of the government budget constraint in smoothing out intertemporal tax distortions tends to be circumscribed in the presence of an unstable government. The classic tax smoothing results of Ramsey (1927), Barro (1979), Lucas and Stokey (1983), and Chamley (1986) assume government as a benevolent social planner. But when there exist political divergences over the appropriate functions of government, the strategic interaction between alternating governments conflicts with the desire of any one government to eliminate the excess burden of taxes.

4. Evidence

The model presented above predicts that political instability results in higher government spending and lower long-run economic growth. The evidence of Barro and Sala-i-Martin (1995) supports the view that both political instability and government spending are negatively associated with economic growth in a wide cross-section of countries. Our model further implies that there should be a positive effect of political instability on government spending.¹⁰ What evidence is there to support this latter hypothesis? In this section, we provide a brief discussion of some evidence relating the share of government to measures of political instability.

Roubini and Sachs (1989a,b) relate the post-1973 patterns of public-sector spending as a share of GDP in the OECD countries to the characteristics of their political institutions. In particular, in Roubini and Sachs (1989a, Table 12), they show that an index of political instability, based on the dispersion of political power within the ruling group, is positively correlated with the share of government spending in GDP. Roubini and Sachs (1989b, Table 2) also show that OECD countries with larger budget deficits (from 1975–1986) are characterized by political instability in the form of a short-average tenure of governments.

⁹ One way to do this would be to allow the government to have a lump-sum (e.g., as a tax on a unit of inelastically supplied labour in our model), non-discretionary tax source, that must be used to service a pre-existing stock of debt.

¹⁰ If our model completely explained the data, then, conditional on the political instability variable, the coefficient on government spending would not be statistically significant. Thus, we must allow for the fact that either political instability or government spending affect economic growth through additional channels than our model captures.

Unfortunately, similar data do not exist for a large set of countries. However, the Roubini and Sachs evidence can be extended to a wider set of countries, if slightly different variables are employed.

Barro and Lee (1994) provide a cross-country measure of political instability. We used this measure of political instability as an explanatory variable in cross-section regressions where the left-hand side variable is the share of government consumption in GDP. Given the great diversity of political systems in the sample of countries, we also include as a regressor an index of democracy. The democracy index for each country is the average of the two indices for political rights and civil liberties developed by Gastil (1987) and used in Barro and Sala-i-Martin (1995) as proxies for democracy. The Gastil indices range from one to seven with higher numbers signifying less democracy; we multiply this by -1 so that larger values are associated with more democracy. Finally, while there does not exist easily accessible data on tenure of government or regime for non-OECD countries, Bienen and Van de Walle (1991) provide data on the duration of leaders for most countries. We also include this in the regressions.

Our model suggests that the Barro–Lee political instability variable ought to be positive. The regression results are shown in Table 1.¹¹ In the regressions we allow for a cross term between political instability and democracy. This is meant to capture the idea that political instability may have quite different impacts on government in democratic countries than in non-democratic countries. A similar justification can be offered for the cross term between the Bienen Van de Walle duration variable and the democracy variable.

The coefficient on the Barro–Lee measure of political instability is statistically significant and strongly positive (the elasticity at the mean is 0.41). Thus, government spending relative to GDP tends to be higher in countries that exhibit greater political instability. Interestingly, the democracy variable is statistically significant and indicates that more democracy is associated with less government spending (the elasticity at the mean is 0.46). The cross term with the Barro–Lee political instability variable suggests that the more democratic is the country, the more important is political instability in raising government spending.

In contrast to the results of Roubini and Sachs, the average leadership duration variable is not statistically significant in this larger sample of countries. It remains an open question, however, as to whether party or coalition tenure would have greater explanatory power.

These results provide some circumstantial evidence that political instability results in a larger share of government spending. An alternative approach for

¹¹ Our sample of 52 countries is the set of North and Latin American, European, and Asian countries that achieved statehood prior to 1961, for which both the Barro–Lee political instability variable and the Bienen and Van de Walle data series are available.

Table 1

Effects of political variables on the share of government consumption in GDP (1960–1985)

	(1)	(2)
<i>CONSTANT</i>	0.0119 (0.41)	0.0396 (3.66)
<i>POLINSTAB</i>	0.3151 (2.19)	0.3201 (2.24)
$\log(\textit{DURATION})$	0.0168 (0.91)	
<i>DEMOCRACY</i>	– 0.0213 (2.52)	– 0.0108 (2.87)
<i>POLINSTAB * DEMOCRACY</i>	0.0901 (2.43)	0.0853 (2.31)
$\log(\textit{DURATION}) * \textit{DEMOCRACY}$	0.0054 (1.26)	
<i>R</i> ²	0.2065	0.1724

Note: *t*-statistics in parentheses. Government consumption excludes expenditures on defense and education. Variables are averages for 1960–1985.

evaluating the implications of the model would be to directly examine the relationship between political instability, taxes on capital, and economic growth. One of the main difficulties in studying the effects of taxes across countries is the inability to obtain accurate data on effective tax rates for a wide sample of countries. Recent work by Mendoza et al. (1996) has employed a method of measuring taxes due to Mendoza et al. (1994) in order to investigate the relationship between capital taxation, investment and growth. Their data are restricted to a sub-sample of OECD countries, however. They found quite strong evidence that higher capital taxes depress the share of investment in GDP. They found some weaker evidence that capital taxes reduce average rates of economic growth.

5. Conclusions

This paper has developed a simple model which relates political instability to economic growth and the share of government in GDP. Our model implies that political instability depresses economic growth and at the same time increases the government's share of GDP. The evidence of cross-country growth regressions suggests that political instability reduces average growth rates. We have also provided some evidence that political instability tends to increase the size of government.

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Appendix A.

To show how the recursive procedure for computing tax rates and government spending approaches the solutions Eqs. (23) and (24) in the text, take the problem for period $T - 2$, using the solutions for period $T - 1$ given in the text. In this case the government in power has a probability of being in power next year equal to $(1 - \rho)$, and of being in power the year after of $(1 - \rho)^2 + \rho(1 - \rho)$. Following the same steps as for period $T - 1$, we may derive the private-sector investment rule

$$k_{T-1} = \frac{\beta(1 - \tau_{T-1})\Gamma_1(Ak_{T-2} - g_{T-2})}{(1 + \beta\Gamma_1(1 - \tau_{T-1}))}, \tag{A.1}$$

where $\Gamma_1 = 1 + \gamma + \beta((1 - \rho)(1 + \gamma) + \rho)$.

The government in power in time $T - 2$ chooses g_{T-2} and b_T (or equivalently, τ_{T-1}) as before. The time $T - 2$ solutions are

$$g_{T-2} = \gamma Ak_{T-2} / (1 + \gamma + \beta(1 - \rho)\Gamma_{1T-1} + \beta\rho\Gamma_{2T-1}), \tag{A.2}$$

$$(1 - \tau_{T-1}) = (1 - \rho) + \rho\Gamma_{2T-1} / \Gamma_{1T-1}, \tag{A.3}$$

where $\Gamma_2 = 1 + \beta(\rho(1 + \gamma) + (1 - \rho))$.

Again we can solve for debt levels by using the period $T - 1$ government budget constraint.

By proceeding recursively in this way, the general solutions for government spending and taxes in period $T - j$ are

$$g_{T-j} = \gamma Ak_{T-j} / (1 + \gamma + \beta(1 - \rho)\Gamma_{1T-j} + \beta\rho\Gamma_{2T-j}), \tag{A.4}$$

$$(1 - \tau_{T-1}) = (1 - \rho) + \rho\Gamma_{2T-j} / \Gamma_{1T-j}, \tag{A.5}$$

where $\Gamma_{1T-j} = (1 + \gamma + \beta(1 - \rho)\Gamma_{1T-j+1} + \beta\rho\Gamma_{2T-j+1})$ and $\Gamma_{2T-j} = \Gamma_{1T-j} - \gamma$. From these solutions, it may be shown that as $j \rightarrow \infty$, the government spending rules and tax rates converge to Eqs. (23) and (24) of the text.

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