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ON THE REDISTRIBUTIVE PROPERTY OF BUDGET DEFICITS

Luisa Lambertini

Department of Economics, University of California, Los Angeles, U.S.

INTRODUCTION

The rapid accumulation of public debt in most industrialized economies since 1973 has challenged economists to ask themselves again why and when a government runs a budget deficit. Barro's public debt theory (1979) argues that public debt should be countercyclical. Since taxes are distortionary, it is optimal to keep their excess burden constant over time and this implies running budget deficits during recessions and budget surpluses during expansions. However, most industrialized economies run large and persistent primary deficits from 1973 to the early 1990s, encompassing several peaks and troughs of the business cycle.

Large public debt accumulations have often occurred in the past, but they coincided with wars and once wars were over, public debts slowly returned to their pre-war levels. In the period 1973 to 1990, none of the industrialized economies[1] was involved in a major conflict. In the search for explanations, economists have started to explore the effect of political institutions on budgetary and fiscal policy.

This paper argues that budget deficits can be used strategically by the incumbent government to improve its chance of reelection. In this model, political institutions affect budget deficits via wealth taxation. I consider an economy where taxes are levied on private wealth to finance government expenditure on a public good; voters have identical preferences but are heterogeneous in terms of wealth. There are two parties: a conservative party, which represents individuals with high wealth, and a liberal party, which represents individuals with low wealth; the structure of wealth taxation is chosen by the incumbent government and it can either be proportional or progressive. To ensure reelection, the conservative incumbent may need to run a budget deficit to raise the median voter's wealth and make him better off under a conservative tax policy. Vice versa, a liberal incumbent who would not be otherwise reelected runs a budget surplus to lower the median's voter wealth and bring the median voter`s preferences in line with its own.

If taxes on wealth are proportional, Ricardian Equivalence holds and budget deficits are neutral, as argued by Barro (1974). In this model, budget deficits or surpluses are

[1] With the exception of the United Kingdom, which was involved in the Falkland Islands war against Argentina between April and June 1982.

not neutral because, by affecting saving, they affect wealth and the marginal tax rate paid on it. At the heart of the strategic use of budget deficits therefore lies the fact that wealth taxes are strictly non-proportional and that government bonds fail to be neutral in this setting, as first pointed out by Abel (1986). Notice that the vast majority of direct taxation in the industrialized economies is in fact progressive.

Other existing contributions have argued that budget deficits have a strategic explanation, but for different reasons. This paper contributes to this body of research by showing another, different way in which political institutions may affect budget deficits. Aghion and Bolton (1990) consider an economy where the government can costlessy default on its debt. The conservative party is believed to be more financially responsible, and therefore less likely to default on public debt, than the liberal party. To improve its chance of reelection, the conservative government runs budget deficits to accumulate debt to make the liberal party appear financially irresponsible in the eyes of voters, who hold public debt.

In the model of Tabellini and Alesina (1990), a conservative and a liberal party have different preferences about the composition of public spending: for example, the conservative party likes more defense and less environmental protection and vice versa for the liberal party. Any incumbent that anticipates the possibility of being voted out at the next election runs a budget deficit to bring the composition of future public spending closer to its preferences.[2] In this setting, both conservative and liberal governments that are uncertain about their reelection run budget deficits.

The strategic use of budget deficits also arises in Persson and Svensson (1989). They consider a model where a conservative and a liberal party have different preferences over the amount of public good to provide in each period, as the liberal party gets more utility from the public good than the conservative one. A conservative government that anticipates the possibility of its defeat in the next election runs a budget deficit to increase public debt and reduce future public spending: the larger the debt, the larger the fraction of the budget spent on interest payments. On the other hand, a liberal government that anticipates the possibility of its defeat at the next election runs a budget surplus so as to reduce public debt and raise future public spending. In this model, conservative governments run budget deficits and liberal governments run budget surpluses if they anticipate to be voted out at the next election.

The result in Persson and Svensson (1989) is similar to the main result of this paper - namely, that conservative governments run budget deficits and liberal governments run budget surpluses to ensure reelection; the features generating the results in the two models, however, are completely different. In this paper, the incumbent government ensures its reelection by running a budget deficit that changes the future marginal wealth tax rate paid by the median voter; in Persson and Svensson, the

[2] The result in Tabellini and Alesina arises only for utility functions whose concavity index is decreasing in their argument.

incumbent government can do nothing to improve its chances of reelection, but it can run budget deficits to affect the future level of public spending.

Other contributions have focused on the relationship between the political structure of the government and the sign and size of its budget imbalances. Roubini and Sachs (1989) find that weak and divided governments (as evidenced by the expected tenure in office and by the number of political parties in the governing coalition) have been less effective in reducing budget deficits over the period 1973 to 1985 than stable and majority-party governments.

The rest of the paper is organized as follows. Section 2 introduces the model. Section 3 describes the agents' optimal consumption and saving behavior; Section 4 solves for the optimal tax policy of conservative and liberal governments without elections; Section 5 solves for the tax policies with elections. Section 6 discusses several extensions to the model and whether the results obtained in the simple model of section 2 are robust to such changes; Section 7 concludes.

THE MODEL

Consider a small open economy that consists of three agents: L, M, and R. There is a single, perishable consumption good; the world lasts for two periods and agents have identical preferences, as represented by the utility function

$$\sum_{s=1}^{2} b^{s-1} \ln c_s \tag{1}$$

where c_s is private consumption in period *s* and $b \leq 1$ is the personal discount factor. The logarithmic specification has been chosen for simplicity, but the results hold for more general functional forms. This is a small open economy that can borrow and lend from the rest of the world at the interest rate *r*; for simplicity, I assume that the interest rate is constant and that $b(1+r)=1$. Agents are heterogeneous in terms of wealth: each period, agent *i* is endowed with $w_0^i \geq 0$ of the consumption good, with $w_0^L < w_0^M < w_0^R$. In other words, agent L has less endowment than M, who has less endowment than R. The heterogeneity in wealth endowments is the central feature of the model and it captures the stylized fact that wealth is unequally distributed in the population. Throughout the paper subscripts refer to time and superscripts refer to agents.

There are two political parties in the economy, which compete to be elected. The liberal party represents the interests of individuals with low wealth and, for simplicity, I assume it coincides with agent L. The conservative party represents the interests of those with high wealth and I assume it coincides with agent R. The important assumption here is not the party's specific position but the fact that the

preferences of the median voter (agent M) are between those of the liberal and the conservative party.

The government spends an amount *g* of the consumption good every period, where *g* is exogenously given. One possible rationalization for this assumption is that the government is required, perhaps by law, to provide a constant flow of the public good.[3] The government's role is to determine the method to finance its expenditures. The government can levy taxes on wealth at the beginning of each period; it can choose among two wealth tax schedules, one of which is more progressive than the other. The government can also borrow or lend from the rest of the world in the first period; I assume that the government cannot default on its debt.

Taxes are a step function of the agent's wealth: agent *i* pays lump-sum taxes $T_1(w_0^i)$ and $T_2(w_1^i)$ in period 1 and 2, respectively, where w_1^i is agent *i*'s wealth at the beginning of period 2. There are three wealth brackets for the purpose of taxation:

- low-wealth bracket, for wealth levels below *a*;

- medium-wealth bracket, for wealth levels in the interval (a,b), with *a*<*b*;

- high-wealth bracket, for all wealth levels above *b*.

I am going to assume that *a* and *b* are both positive and exogenously given. That is to say that the thresholds of the wealth brackets cannot be changed by the government. To keep the analysis simple, I also assume that $w_0^L < a, a < w_0^M < b$ and $w_0^R > b$: in period 1, agent L belongs to the low-wealth bracket, agent M belongs to the medium-wealth bracket and agent R belongs to the high-wealth bracket.

Taxation involves not only a transfer of resources from the agents to the government but also some collection costs and/or misallocation costs that are imposed on private agents. This means that the production of tax revenues involves the using up of some resources that are often referred to as "deadweight losses" or "excess burdens". For the case of direct collection costs for administration, enforcement and so on, let *d(T)* represent the cost. I assume that *d'*>0, *d''*>0 and *d*(0)=0: the collection cost depends positively and with a positive second order derivative, on the tax paid by each agent. Such collections costs, which I will hereafter refer to as distortionary costs, represents only a small fraction of tax revenues. To keep notation simple, I will use the notation T_1^i for $T_1(w_0^i)$ and T_2^i for $T_2(w_1^i)$.

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[3] The agents' preferences may include a term for the utility stemming from the public good, i.e. the utility may be $\sum_{s=1}^{2} b^{s-1}(\ln c_s + \ln g_s)$, but since the amount g_s is exogenous and not chosen optimally by the government, it can be dropped without any consequence to the results.

The timing of decisions and events is the following. Nature randomly selects the first-period government between the liberal and the conservative party; the incumbent chooses between the proportional and the progressive schedule and decides the marginal tax rate, thereby determining the amount of public debt, *D*. Elections are held at the beginning of the second period and the political party which gets more votes (at least 2 in this 3-agents model) is elected. The second-period incumbent chooses between the proportional and the progressive tax schedule and sets the second-period marginal tax rate so as to satisfy its budget constraint. This model is a simple two-stage, perfect information game. Since political parties cannot commit to a specific fiscal policy prior to election, I will only consider optimal time-consistent tax policies.

OPTIMAL CONSUMPTION BEHAVIOR

This section derives the optimal consumption and saving behavior for the agents in the economy, taking taxes as given. Agent *i* solves the following maximization problem

$$U^i = \max_{B^i} \sum_{s=1}^{2} b^{s-1} \ln c_s^i \tag{2}$$

$$s.t. \quad c_1^i = w_0^i - T_1^i - d(T_1^i) - B^i \tag{3}$$

$$c_2^i = B^i(1+r) + w_0^i - T_2^i - d(T_2^i) \tag{4}$$

where B^i is agent *i*'s saving, which he lends abroad. (3) is the period-1 budget constraint and it simply says that the agent's endowment net of wealth taxes and distortionary costs is either consumed or saved. According to the period-2 budget constraint (4), the agent consumes his period-2 wealth net of taxes and distortionary costs; the period-2 wealth of agent *i* is simply given by his endowment plus the saving that was lent abroad and earned the rate of interest *r*:

$$w_1^i = B^i(1+r) + w_0^i . \tag{5}$$

Under the assumption that $b(1+r) = 1$, the first-order condition for the problem is

$$c_2^i = c_1^i , \tag{6}$$

which implies that it is optimal for the agent to equalize consumption over his life time. Perfect consumption smoothing is achieved by saving

$$B^i = \frac{T_2^i + d(T_2^i) - T_1^i - d(T_1^i)}{2+r} . \tag{7}$$

period his available resources, net of taxes and distortionary costs; on the other hand, if taxes increase over time, he is better off saving in period 1 and vice versa if

that w_0 is sufficiently far from the lower wealth bracket that he has no incentive to

B^i for the purpose of driving is period-2 wealth in the lower wealth bracket. Agent 's optimal consumption in period 1 and 2 are

$$c \;\; = c^i \;\; = w^i \quad \frac{1}{2+r} \;\; 1+r)(T \quad d \;\; T^i)) + T^i \;\; + d(T$$

OPTIMAL TAXATION WITHOUT ELECTIONS

This section studies the first-best tax policy for each political party, namely the tax

beginning of the second period. As pointed out earlier, the incumbent can choose among two tax schedules. The first schedule is a flat tax that does not depend on the

$$T_s^i = t_s \quad s = 1, 2 \quad and \quad \forall i \,. \tag{9}$$

I am going to label such schedule as "flat". The second schedule is a step function of the level of wealth and it can be described as follows:

$$T_s^i = \begin{cases} t_s & if \;\; w_{s-1}^i \le a \,; \\ t_s + a & if \;\; w_{s-1}^i \in (a,b) \quad s = 1, 2 \\ t_s + fa & if \;\; w_{s-1}^i \ge b_s \end{cases} \tag{10}$$

where $a > 0$ and $f > 1$ are given. Since higher wealth levels are subject to higher taxation, I am going to label this schedule as "step-like".

The results obtained in the paper do not depend on the specific tax schedules above, which have been chosen only on simplicity grounds. A non lump-sum wealth tax of the form $T_s w_s$, for example, is distortionary and delivers the same qualitative results as the lump-sum specification used here at the cost, however, of extremely complicated solutions. I could also allow for more than two tax schedules but, as it will become clear, the conservative party chooses the least progressive tax schedule whereas the liberal party chooses the most progressive tax schedule. Hence, only the two extreme schedules matter for the analysis.

Consider now the role of the government. The first-period incumbent chooses:

1) whether to implement the flat or the step-like tax schedule;

2) the period-1 tax level: t_1 with the flat schedule, t_1 with the step-like schedule. In period 1, the government spends *g* and can borrow *D* from the international capital market, where *D* can also be negative. The second-period incumbent chooses whether to implement the flat or the step-like tax schedule; it must repay *D(*1+*r)* and has expenditure *g*, which uniquely define the period-2 tax level t_2 with the flat schedule and t_2 with the step-like schedule.

Consider the case where there are no elections at the beginning of period 2; suppose that party *j=L* or *R* has been chosen by nature at the beginning of period 1 and will therefore be in power also in period 2. The first-best tax policy for party *j* is the solution to the following problem:

$$\max \quad \ln c_1^j + b \ln c_2^j \tag{11}$$

$$s.t. \quad g = \sum_i T_1^i + D \tag{12}$$

$$g + (1+r)D = \sum_i T_2^i \tag{13}$$

and to (8) with *i=L,M,R,* and T_s^i as defined in (9) if the flat schedule is chosen and as defined in (10) if the step-like schedule is chosen. The budget constraint for the period-1 incumbent is (12) and (13) is the constraint for period-2 incumbent, where *D* is the budget deficit (surplus if *D*<0). I assume that government spending $g < w_0^i$, for all *i*, that ensures that consumption is strictly positive for all agents.

Consider first the case where the conservative party is in power both periods. The first-best tax policy for the conservative party can be found solving problem (11) with *i=R* and the following proposition summarizes the results.

Proposition 1: *Without elections, the conservative party chooses the flat tax schedule; it sets*

$$T_1^i = t_1 = T_2^i = t_2 = \frac{g}{3}, \quad i = L, M, R, \quad and \quad D = 0;$$

consumption and private saving are

$$c_1^i = c_2^i = w_0^i - \frac{g}{3} - d(\frac{g}{3}), \quad B^i = 0, \quad i = L, M, R.$$

For any incumbent that is in power in both periods it is optimal to keep taxes constant over the two periods in order to smooth distortions over time; since government expenditure is also constant over the two periods, the first-best budget deficit is zero. The conservative government is clearly better off with the flat

schedule, since this imposes a lighter tax burden on the wealthiest agent: with the flat schedule, agent R pays *g*/3 in taxes each period; with the step-like schedule, he pays $g/3 + a(2f-1)/3 > g/3$.

Consider now the case where the liberal party is in power both periods; its first-best tax policy can be found solving problem (11) with *i=L* and the following proposition summarizes the results.

Proposition 2: *Without elections, the liberal party chooses the step-like tax schedule; it sets*

$$T_1^L = t_1 = T_2^L = t_2 = \frac{g}{3} - \frac{a(1+f)}{3}, \quad D = 0$$

so that

$$T_1^M = t_1 + a = T_2^M = t_2 + a = \frac{g}{3} + \frac{a[3-(1+f)]}{3},$$

$$T_1^R = t_1 + a(1+f) = T_2^R = t_2 + a(1+f) = \frac{g}{3} + \frac{a(2f-1)}{3};$$

consumption and private saving are

$$c_1^L = c_2^L = w_0^L - \frac{g}{3} + \frac{a(1+f)}{3} - d(\frac{g}{3} - \frac{a(1+f)}{3}), \quad B^L = 0,$$

$$c_1^M = c_2^M = w_0^M - \frac{g}{3} - \frac{a[3-(1+f)]}{3} - d(\frac{g}{3} + \frac{a[3-(1+f)]}{3}), \quad B^M = 0$$

$$c_1^R = c_2^R = w_0^R - \frac{g}{3} - \frac{a(2f-1)}{3} - d(\frac{g}{3} + \frac{a(2f-1)}{3}), \quad B^R = 0.$$

The liberal government also chooses a constant profile of taxation, so that the optimal budget deficit at the end of the first period is zero; unlike the conservative government, it prefers the step-like tax schedule, which imposes lower taxes on agent L in both periods. Notice that whether agent M is better off with the flat or the step-like schedule depends on how progressive the schedule is: if $f > 2$, agent M is better off under a liberal government that adopts the step-like tax schedule and vice versa if $f < 2$. To be more precise, $f > 2$ implies that the tax increase going from the medium- to the high-wealth bracket is higher than the tax increase going from the low- to the medium-wealth bracket: richer agents pay increasingly higher taxes.

OPTIMAL TAXATION WITH ELECTIONS

In this section I study optimal taxation when elections are held at the beginning of the second period. The first-period incumbent is chosen randomly between the liberal and the conservative party; it chooses the tax schedule and its preferred combination of tax and debt financing in period 1. Elections are held at the beginning of the second period; all three agents vote and the new government is chosen by majority rule: it is the party that gets at least two of the three votes. The second-period incumbent chooses the tax schedule and sets the tax level so as to satisfy the budget constraint (13).

Proposition 1 and 2 show that agent L and agent R prefer different tax schedules. Since the conservative party's preferences are those of agent R and the liberal party's preferences are those of agent L, the voting behavior of the two agents at the extremes of the wealth distribution is trivial: agent R always votes for the conservative party, agent L always votes for the liberal party. Agent M's voting behavior is less trivial and it is the focus of the analysis of this section. Moreover, agent M is the median voter in this economy and the period-1 incumbent will be reelected only if agent M votes to reelect him. Therefore, first-period incumbent may have an incentive to bias its tax policy away from first-best to get agent M's vote and ensure reelection.

Suppose the conservative government is in power in period 1. Let's consider first the case where $f > 2$, i.e. the step-like tax schedule imposes increasingly higher taxes on richer agents. If the conservative government adopts the tax policy of proposition 1 ($t_1 = g/3$ and D=0), it will lose the election and be replaced by the liberal government in the second period because agent M is better off with the step-like schedule in period 2: agent M would pay $t_2 + a = g/3 + a[3-(1+f)]/3$ rather than $t_2 = g/3$. Therefore, agent M votes in favor of the liberal party if the conservative government implements its first-best tax policy. The conservative government manipulates agent M's preferences to obtain his vote and be reelected; this can be achieved by lowering period-1 taxes and running a budget deficit so as to drive agent M's period-2 wealth into the high-wealth bracket. Once agent M's wealth belongs to the high-wealth bracket, he prefers flat rather than step-like taxation and therefore votes in favor of the conservative party. Since the conservative party gets the vote of agent R and agent M, it is reelected; in period 2, it will choose flat taxation. The rest of this section formally derives this result; then, I will discuss under what conditions this solution profile is the sub-game perfect equilibrium of the game.

To get agent M's vote, the conservative government solves the maximization problem (11) subject to the additional constraint

$$w_1^M \geq b, \tag{14}$$

which imposes that agent M's wealth at the beginning of period 2 belongs to the high-wealth bracket. Since I have assumed that $w_0^M \in (a,b)$, the constraint (14) is certainly binding if the conservative government adopts its first-best tax policy. Let t_s^* denote the flat tax adopted by the conservative government when constraint (14) is binding; the latter can be rewritten as

$$w_0^M + \frac{1+r}{2+r}[t_2^* + d(t_2^*) - t_1^* - d(t_1^*)] \geq b .$$

To find a closed-form solution, let $d(T) = T^2/2$. To drive agent M's period-2 wealth into the high-wealth bracket, the constrained flat rates in period 1 must be equal to

$$t_1^* = \frac{g}{3} + \frac{1}{r}\left(1+\frac{g}{3}\right) - \frac{1}{r}\sqrt{\left(1+\frac{g}{3}\right)^2 + \frac{2r}{1+r}\left(b - w_0^M\right)} . \tag{15}$$

As long as $b > w_0^M$, $t_1^* < t_1$: the constrained flat tax is below the without-election first-best tax and the more so the larger $b - w_0^M$. Therefore, the conservative government runs a budget deficit in the first period equal to

$$D^* = \frac{3}{r}\left[-\left(1+\frac{g}{3}\right) + \sqrt{\left(1+\frac{g}{3}\right)^2 + \frac{2r}{1+r}\left(b - w_0^M\right)}\right] > 0 . \tag{16}$$

The deficit is larger as the distortion $b - w_0^M$ gets larger. Agent M's wealth is in the high-wealth bracket at the beginning of period 2; if he votes for the conservative party, his period-2 tax is

$$t_2^* = \frac{g + (1+r)D^*}{3} . \tag{17}$$

If he votes for the liberal party, his period-2 tax is

$$t_2^* + af = \frac{g + (1+r)D^* + af}{3} . \tag{18}$$

Since $t_2^* + af > t_2^*$, agent M is better off with the flat schedule; therefore, he votes in favor of the conservative party, which is reelected and implements t_2^*.

Notice that the constrained solution implies a ragged tax profile: taxes are low in period 1 and high in period 2. Such tax profile is a source of inefficiency because it fails to smooth tax distortions over time.

In the solution profile constructed above, the conservative government runs a budget deficit in period 1 to raise the median voter's wealth and be reelected. Alternatively, the conservative government can choose its optimal tax policy in period 1 knowing that it will be voted out and that the liberal government will be choosing tax policy in period 2. The optimal tax policy for the conservative government under this scenario is to choose the flat schedule in period-1 tax and set the tax to be equal to the period-2 tax that agent R will pay in period 2. More precisely, the period-1 tax is set equal to[4]

$$\tilde{t}_1 = \tilde{t}_2 + af = \frac{g}{3} + \frac{a(2f-1)}{3(2+r)}. \tag{19}$$

Given that the conservative government will be defeated at the next election, its optimal strategy is to pay equal taxes in both periods, so as to equalize tax distortions over time. But since the conservative government adopts the flat schedule in period 1 whereas the liberal government adopts the step-like schedule in period 2, a constant tax for agent R implies running a budget surplus in the first period equal to

$$\tilde{D} = -\frac{a(2f-1)}{2+r}. \tag{20}$$

The constrained solution profile (t_1^*, t_2^*) is the sub-game-perfect equilibrium of the game when the conservative government is in power in period 1 if agent R is better off under it than under the solution profile $(\tilde{t}_1, \tilde{t}_2 + af)$. Let $\tilde{c}_1^R$ be agent R's consumption in period 1 under the latter solution profile and let c_1^{*R} be agent R's consumption in period 1 under the constrained solution profile[5]; the conservative party chooses the constrained solution if

$$c_1^{*R} - \tilde{c}_1^R = \frac{1}{2+r}\left\{\begin{array}{l}(1+r)\left[\tilde{t}_1 - t_1^* + d(\tilde{t}_1) - d(t_1^*)\right] + \tilde{t}_2 + \\ af - t_2^* + d(\tilde{t}_2 + af) - d(t_2^*)\end{array}\right\} > 0 \tag{21}$$

Absent distortions, namely if $d(T) = 0$, $c_1^{*R} - \tilde{c}_1^R = a(2f-1)/(3(2+r)) > 0$ and the conservative party is clearly better off under the constrained solution profile, which imposes an overall lower tax burden on agent R. The welfare gain for the

[4] The solution is found under the assumption that this tax profile does not drive any agent outside his original wealth bracket.

[5] Consumption in period 1 and 2 are equal, as we know from (6).

conservative party under the constrained solution falls and becomes negative the larger the distortionary cost of taxation *d(T)* and the larger $b - w_0^M$.

Consider now the case where the conservative government is in power in period 1 and $1 < f \leq 2$. Since agent M, who is the median voter, is better off under the flat schedule[6], the conservative government can simply implement its first-best tax policy outlined in proposition 1 and be reelected in period 2. Intuitively, if the step-like tax schedule fails to be truly progressive, the lower tax burden on agent L falls relatively more heavily on agent M than on agent R. Hence, agent M prefers the step-like tax schedule only if it is truly progressive.

The above results can be summarized in the following proposition.

Proposition 3: *If f>2, the conservative period-1 incumbent chooses flat taxation and runs a budget deficit to raise the wealth of the median voter and be reelected; if $f \leq 2$, the conservative period-1 incumbent chooses flat taxation and balances the budget.*

Suppose that the liberal party is randomly chosen to be the period-1 incumbent and $f > 2$. Agent M is strictly better off under the step-like taxation adopted by the liberal government than under the flat taxation adopted by the conservative government; therefore, the liberal incumbent implements its first-best tax policy described in proposition 2, it balances the budget and is reelected at the beginning of the second period thanks to the vote of agent M.

Suppose now that the liberal party is the period-1 incumbent but $1 < f \leq 2$. Agent M strictly prefers the flat tax schedule now and votes in favor of the conservative party if the liberal runs its first-best tax policy. The liberal incumbent therefore biases its tax policy away from optimality to obtain agent M's vote and ensure reelection. More precisely, the liberal incumbent adopts the step-like schedule in period 1 and raises the tax t_1^* so as to drive agent M's period-2 wealth into the low-wealth bracket; agent M strictly prefers a step-like tax schedule in period 2 and therefore votes to reelect the liberal incumbent. Since period-1 taxes are high, the budget is in surplus, which allows for low period-2 taxes. The solution of this problem can be found following the same steps that led to the solution of the conservative incumbent problem, with the exception that the relevant constraint here is

$$w_1^M \leq a . \tag{22}$$

Absent distortionary costs, i.e. if *d(T)*=0, the budget deficit in the constrained solution when the liberal party is in power is

[6] See Proposition 1 and 2.

$$D^* = -\frac{3}{1+r}\left(w_0^M - a\right) \leq 0 . \tag{23}$$

The budget surplus is larger, the larger $w_0^M - a$, namely the more distant agent M's endowment from the low-wealth bracket. Once again, the constrained tax profile is not flat: period-1 taxes are high and period-2 taxes are low, and this is a source of inefficiency.

The constrained solution is the sub-game-perfect equilibrium of the game with the period-1 liberal incumbent as long as the distortionary cost of $w_0^M - a$ is not too large. These results can be summarized in the following proposition.

Proposition 4: *If* $f \leq 2$, *the liberal period-1 incumbent chooses step-like taxation and runs a budget surplus to lower the wealth of the median voter and be reelected; if* $f > 2$, *the liberal period-1 incumbent chooses step-like taxation and balances the budget.*

EXTENSIONS

In the simple political economy model of section 2, public debt is not neutral and it can be used strategically by the government to manipulate the preferences of the median voter and be reelected. The model of section 2, however, is extremely simple. In fact, the model of section 2 is the simplest setting that accomodates progressive wealth taxation and, at the same time, generates relatively simple closed-form solutions which richer models do not allow. In this section, I want to discuss whether the results of the previous section are robust to several extensions and generalizations of the model.

The distortionary cost of taxation, *d(T)*, is exogenous in the model of section 2. If the tax schedules are redefined so that the flat schedule implies a constant marginal tax rate and the step-like schedule implies a marginal tax rate that is a step function of the level of wealth[7], the period-1 and period-2 tax payments of agent *i* can be written as $T_1^i w_0^i$ and $T_2^i w_1^i$, respectively. Taxes are distortionary because they are levied on saving, which is therefore discouraged. As a result, the first-best tax policies of both parties concentrate taxation only in the first period and are therefore characterized by budget surpluses. With elections, the first-period conservative incumbent may run lower-than-optimal budget surpluses, or even budget deficits, in order to swing the median voter; vice versa, the first-period liberal incumbent may run larger-than-optimal budget surpluses to swing the median voter. Hence, modeling tax distortions exogenously or letting them arise endogenously brings to qualitatively similar results.

[7] An earlier version of the this paper modeled taxes as just described; such model, however, did not generate simple closed-form solution.

I have assumed that the endowment of each individual is sufficiently above the lower bound of its tax bracket not to make it worthwhile to reduce saving so much to drive period-2 wealth in the lower wealth bracket. Formally, this assumption implies that, for the relevant values of saving, $T_2^{'}(w_1) = 0$ for agents M and R (agent L is already in the lowest wealth bracket), where a ' means first-order derivative. Suppose this assumption does not hold for agent M. A first-period liberal incumbent does not need to bias its policy away from its first-best policy to be reelected because agent M biases his own saving so as to belong to the lowest wealth bracket anyway. On the other hand, a first-period conservative incumbent needs to bias its policy a great deal away from optimality to swing agent M. Suppose now the assumption does not hold for agent R, who reduces saving to drive his period-2 wealth in the medium-wealth bracket. Independently of the value of f, both agent M and agent R prefer the flat schedule in period 2; hence, a period-1 liberal incumbent must always run a budget surplus to swing the median voter and be reelected; a period-1 conservative incumbent is always reelected and never runs a budget deficit.

The basic result of this paper - that governments may run budget deficits or surpluses to temporarily raise or lower the wealth of the median voter and be reelected - is robust to changes in the definition of the tax base. For example, the result remains if period-2 wealth is defined as $w_0 + rB$ rather than $w_0 + (1+r)B$. However, the result may not hold if taxes are levied on consumption or endowments rather than wealth. More precisely, if taxes are levied on endowments, which are exogenous in this model, the median voter prefers one tax schedule over the other (depending on f) and votes for the party that implements it; the incumbent simply cannot change the median's preferences. If taxes are levied on consumption, so that the tax bases in period 1 and 2 are $w_0 - B$ and $w_0 + B(1+r)$, respectively, agents do not save and consumption taxes become equivalent to endowment taxes. Even if the endowments in period 1 and 2 are different and agents save to make their consumption profile flat, their saving does not depend on taxes and the median voter preferences cannot be manipulated.

Allowing for more tax schedules does not affect the analysis of this paper because the liberal party chooses the most progressive tax schedule and the conservative party chooses the least progressive one; all other schedules are simply not relevant. If the model is extended to have more agents while retaining the two-party structure used here, the main result remains basically unchanged.

A meaningful extension to a multi-period setting requires a more complete model. Formally, the government's incentive to run budget deficits (if conservative) or surpluses (if liberal) to swing the median voter is still present in a multi-period setup; however, a government cannot run budget deficits or surpluses forever without violating its budget constraint or that of its debtors'. A multi-period model

should therefore incorporate the various dimensions along which parties compete, with wealth taxation certainly being one of them.

CONCLUSIONS

This paper has developed a political economy model where future elections motivate the government to use public debt strategically to ensure its reelection. Ricardian Equivalence fails under progressive wealth taxation because a budget deficit changes the marginal tax rate on wealth. The conservative government that needs to swing the median voter to be reelected runs a budget deficit to drive the median voter into the high marginal wealth tax bracket. The median voter is now better off under a less progressive wealth tax schedule and therefore votes to reelect the conservative party. On the other hand, the liberal government that needs to swing the median voter to be reelected runs a budget surplus.

In this model, budget deficits (and surpluses) enable the government to change the future marginal wealth tax rate that agents will be asked to pay. This provides the government with a tool to manipulate agents' voting behavior.

The implications of the model are that conservative governments choose less progressive wealth taxes whereas liberal governments choose more progressive wealth taxes. Moreover, when electoral competition is stiff, conservative governments reduce wealth taxes and run budget deficits; on the other hand, liberal governments raise wealth taxes and run budget surpluses.

Political institutions affect government budget deficits in several ways and this paper has explored one of them. More precisely, this work has focused on the effect of elections on budget deficits when the government decides on wealth taxation; previous works have explored the effect of elections on budget deficits when the government decides the level and composition of its expenditure. All these models deliver testable implications and future work may look for their empirical validity.

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