



A political economy theory of the soft budget constraint

James A. Robinson^a, Ragnar Torvik^{b,*}

^a Harvard University, Department of Government, Littauer, 1737 Cambridge Street, Cambridge, MA 02138, USA

^b Norwegian University of Science and Technology, Department of Economics, Dragvoll, N-7491 Trondheim, Norway

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ABSTRACT

Why do soft budget constraints exist and persist? In this paper we argue that the prevalence of soft budget constraints can be best explained by the political desirability of softness. We develop an infinite horizon political economy model where neither democratic nor autocratic politicians can commit to policies that are not ex post optimal. We show that because of the dynamic commitment problem inherent in the soft budget constraint, politicians can in essence commit to make transfers to entrepreneurs which otherwise they would not be able to do. This encourages such entrepreneurs to support them politically. Though the soft budget constraint may induce economic inefficiency, it may be politically rational because it influences the probability of political survival. In consequence, even when information is complete, politicians may fund bad projects which they anticipate they will have to bail out in the future. We show that, maybe somewhat surprisingly, dictators who are *less* likely to lose power, are *more* likely to use the soft budget constraint as a strategy to gain political support.

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1. Introduction

Traditional policy analysis in the tradition of Pigou (1920) and Samuelson (1954) saw policymakers as designing policies to solve market failures, or satisfy normative criteria, subject only to the availability of resources and the nature of preferences and technology. In the 1970s economists began to realize that even well-intentioned planners were subject to other types of constraints. Diamond and Mirrlees (1971) examined the nature of optimal policies without lump-sum taxation, and Gibbard (1973) and Green and Laffont (1979) argued that the incentive compatibility constraints generated by private information had to be respected. Kydland and Prescott (1977) also showed that optimal inter-temporal policies might be time inconsistent, making it difficult for a planner to commit to even a second-best policy. In the 1980s and 1990s economists began to merge such ideas with models where policymakers were self-interested and studied how the interaction between such interests and social welfare led to further deviations from first- or second-best outcomes.

These models have brought us much closer to an understanding of the relationship between market failures and political failures. Yet many puzzles remain. A central, and fascinating one, is that of the “soft budget constraint.” Originally introduced by Kornai (1979) in the context of centrally planned economies, the basic notion is that governments and policymakers are unable to impose a “hard” budget constraint on government owned enterprises or government agencies. In consequence such enterprises or agencies have incentives to act in inefficient or profligate ways knowing that they will

* Corresponding author. Tel.: +47 7359 1420; fax: +47 7359 6954.

E-mail addresses: jrobinson@gov.harvard.edu (J.A. Robinson), ragnar.torvik@svt.ntnu.no (R. Torvik).

be bailed out if things go wrong. [Gregory and Harrison \(2005\)](#) provide a detailed discussion of the soft budget constraint in the Soviet planned economy.

Since its development, the problem of the soft budget constraint has been recognized to be endemic to most polities, though clearly being worse in developing economies. This recognition emerges from the fact that all scholars note that soft budget constraints in Eastern Europe and the former Soviet Republic proved more long lived than central planning. [Maskin and Xu \(2001, p. 10\)](#) report that “considerable empirical work indicates that the soft budget constraint syndrome continues to play an important role in virtually every transition economy, even those that have already undergone many years of reform”.

Why do soft budget constraints exist and persist? The central argument in the literature is that soft budget constraints arise because politicians cannot commit not to refinance bad projects *ex post* and cannot distinguish bad from good *ex ante*. Given that a project is launched, it will be refinanced as long as benefits cover costs. Previous costs are sunk. Entrepreneurs know this, and submit bad projects for financing in the first place. This is the key argument in [Dewatripont and Maskin \(1995\)](#), which has become the canonical model of soft budget constraints. This approach follows the literature which built on [Kydland and Prescott \(1977\)](#) where policymakers were thought of as well intentioned and thus downplays any political reason for the existence of soft budget constraints.

Such an approach to understanding the soft budget constraint is interesting. But it is also useful to extend such an approach, because the overwhelming amount of evidence strongly suggests the role of political motivations in explaining soft budget constraints. For instance, political scientists who have studied this topic, argue that the main reason for soft budget constraints to persist is that soft budget constraints serve the interests of politicians—this is precisely the reason they are not dismantled. This literature leaves unanswered, however, the question of exactly why the interests of politicians manifest themselves in such a way.

In this paper we develop a fully political economy model of the soft budget constraint. Our starting point, following [Alesina \(1988\)](#), [Osborne and Slivinski \(1996\)](#), and [Besley and Coate \(1997\)](#), is that politicians cannot commit to policies that are not *ex post* optimal. This inability to commit to arbitrary policies hampers the ability of politicians to exchange policies for support, since voters do not necessarily believe political promises (unlike in the basic Downsian model where perfect commitment is assumed). Such a political setting is the natural one if one accepts that the problem of the soft budget constraint is a problem of commitment. Instruments which solve this credibility problem are therefore potentially attractive politically. We argue that the key thing about the soft budget constraint is that, in effect, it is a credible way of transferring income to potential supporters: because a policymaker *cannot commit to enforce a hard budget constraint, he can commit to make transfers* to citizens.

Nevertheless, this in itself does not make a soft budget constraint politically rational. Instruments which allow all politicians to make credible commitments to policy are not necessarily attractive unless they improve the position of one politician relative to another. For example, politicians would like to be able to offer income redistribution to groups to win their support. In order for this offer to change the expected outcome of a political fight, such redistribution has to satisfy two conditions; (1) it must be optimal *ex post* for politicians to enact, and (2) it must be something that all politicians cannot offer.

Such asymmetries arise in many natural ways. Politicians differ in their valuation of welfare of different groups, in their ability to undertake different policies, in their regional attachment, and in their interaction with different groups. For instance, [Dixit and Londregan \(1996\)](#) argue that (p. 1134) “Such differences can arise when each party has its core support groups of constituents whom it understands well. This greater understanding translates into greater efficiency in the allocation of benefits: patronage dollars are spend more efficiently”. Although in reality there may be many reasons for politicians having different costs or benefits in transferring resources to different groups, the exact modelling of these asymmetries is not crucial for our argument. We therefore simply adopt the familiar mechanism of [Dixit and Londregan \(1996\)](#) where politicians have lower net costs of transferring resources to core supporters than to other groups.

In this paper we argue that it is the combination of these two things that leads to the prevalence of the soft budget constraint. Politicians are happy to finance projects which are known to be bad in the sense that revenues do not cover costs and which they anticipate that they will find it optimal *ex post* to “bail out”. This is because such “bail outs” redistribute resources to people or groups to whom they would otherwise find it difficult to redistribute to credibly and to whom other politicians cannot credibly redistribute resources. We refer to such groups as the core supporters of a politician. We show that the key difference between such bad projects and good projects is that all politicians can commit to refinance good projects *ex post* and thus although they may redistribute resources to potential supporters, they do so symmetrically and therefore do not give any politician a strategic advantage.

In many countries where soft budgets constraints are prevalent the quality of democracy is questionable at best or they are pure dictatorships at worst. Thus it is crucial to investigate how the extent of democracy itself influences the attractiveness of the soft budget constraint as a political strategy. Our starting point is the observation by [Buono de Mesquita et al. \(2003, p. 28\)](#) that to understand the political survival of dictatorships the key is to investigate how they are able to generate sufficient support to cling to power: “Make no mistake about it, no leader rules alone. Even the most oppressive dictators cannot survive the loss of support among their core constituents.” A main difference among democracy and dictatorship, however, is that dictators actively use the state apparatus to ensure that even if they are supported by less than half of the population they remain in power. Thus while the minimum winning coalition under democracy is half of the voters, the minimum winning coalition in a dictatorship may be considerably lower. To be able to

study not only democracies, but also autocracies, we include this insight into our modelling. We show that, maybe somewhat surprisingly, dictators who are *less* likely to lose power, are *more* likely to use the soft budget constraint as a political strategy to gain political support.

The ability of incumbent politicians to launch projects that only they can credibly refinance in the future creates an incumbency bias. Moreover, it introduces an interesting inter-temporal structure to the model. If an incumbent politician launches a project today which only he can refinance tomorrow, this encourages his core supporters to support him because they anticipate that he will bail them out tomorrow, thus increasing their utility. In addition, if such a politician remains in power then he can launch further projects in the next period with payoff in the period after that. This further increases the benefit to core supporters from maintaining the politician in power. A one shot game will not capture these inter-temporal effects, and thus we develop an infinite horizon model.

While in Dewatripont and Maskin (1995) the soft budget constraint is something politicians would want to escape if they credibly could, in our model the soft budget constraint may arise as something politicians desire even when information is complete. Many case studies point out that soft budget constraints may serve political purposes. For instance, Gimpelson and Treisman (2002) find that in Russia (p. 172) “regional governments boost public employment by hiring partisans and clients and extract greater federal aid” and that (p. 178) “Central politicians responded with bailouts because they knew, too, that regional voters would, quite rationally, have punished them if they did not”. Kitschelt et al. (1999) discuss the widespread use of clientelistic policies in post-communist countries. One example is Bulgaria where politicians build clientelistic networks (p. 203) “especially in the sectors of state-run enterprises and collectivized agriculture” and where “quasi-private business groups in the BSPs sphere of supporters successfully extracted cheap credits from a compliant government-controlled central bank ... and sold foreign commodities at high world market prices to unavailable, debt-accumulating state-owned companies”. These scholars see the soft budget constraint as arising out of a clientelistic exchange of redistribution for political support.

The politics of soft budget constraints and patronage is not, however, unique to eastern European transition economies. A large number of studies emphasize such political strategies are prevalent in African countries. The first European colony in Africa that became independent was Ghana in 1957.¹ The Nkrumah government launched a policy of active involvement in the economy, but the economic effects of the policy of patronage was disastrous; massive public investments did not yield any payoff in terms of increased growth. Killick (1978, p. 248) argues that to understand the poor economic development in Ghana one need to ask “why the creation of new state enterprises was allowed to outstrip the resources devoted to project planning, why incompetent managers were tolerated and why interfering politicians were not disciplined”. He goes on to argue that

“Political interference;’ emerges as a logical result of the use of state enterprises to reward party activists and to extend the area of political control. And inattention to economic efficiency in the planning and operation of enterprises becomes explicable if the creation of such enterprises is accepted as an end in itself and as an ostentatious display to impress the electorate”.

Political motivations for the soft budget constraint have previously been proposed by Shleifer and Vishny (1994), Boycko et al. (1996), and Desai and Olofsgård (2006), who assume political benefits of excess labor in public firms that result in soft budget constraints. A difference from these models is that in the present paper these political benefits emerge as a result.² Our model is related to models where the incumbent chooses policy to bind his own hands in order to influence the outcome of an election (e.g., Milesi-Ferretti, 1995). As in such papers we study a dynamic model of voting and commitment. Although we study different questions, our model also relates to Robinson and Torvik (2005), because as in that paper a key mechanism is that politicians differ in what commitments they can make to different groups of citizens. In contrast to Robinson and Torvik (2005), the present paper develops an infinite horizon model, allowing us to capture dynamic effects. Maybe more important, however, motivated by the case study literature the present paper departs from an assumption of perfect democracy. We study how the *degree of democracy* affects the political desirability of soft budget constraints.³ Finally, our model is related to Dixit and Londregan (1995) where agents do not undertake efficient investments because politicians cannot commit not to tax away the future profits by these investments. In our model, by contrast, politicians choose policy today so that they are able to commit to a particular policy in the future.

¹ For other African examples of politically motivated soft budget constraints see Barkan and Chege (1989) on Kenya, Tangri (1999) on Zambia, Nkurunziza and Ngaruko (2002) on Burundi, and Hayward (1987).

² Shleifer and Vishny (1994), and Boycko et al. (1996) have no political competition or voting in their models. Desai and Olofsgård (2006) assume that some voters cannot observe whose policies are being implemented to increase employment, making it attractive for incompetent politicians to increase employment through subsidies. In a similar vein Coate and Morris (1995) explain how inefficient redistribution may emerge in a political equilibrium when voters do not know for sure if the implemented policies are efficient or inefficient. In contrast our model has complete information.

³ In addition to the result that dictators who are *less* likely to lose power, are *more* likely to use the soft budget constraint as a strategy to gain political support, this also clarifies that ideological heterogeneity, which does not have any effect in a perfect democracy probabilistic voting model, affects the outcome under imperfect democracy.

2. A model of politically efficient soft budget constraints

We consider an infinite horizon society with two politicians *A* and *B* and a unit mass of entrepreneurs that are also the voters (or under autocracy the potential supporters of the dictator). The starting point of our model is the two period model of the soft budget constraint in Dewatripont and Maskin (1995). Entrepreneurs have no capital themselves and submit projects for financing to the politician in power. Projects generate observable returns R one period after being launched given that they are refinanced. The politician can extract these returns. Projects require one unit of capital per period they are financed.

By holding power politicians receive some exogenous rents X , get the eventual returns on projects net of investment costs, and have the right to decide policy. The crucial assumption in our model is that different politicians have different costs or benefits in transferring resources to different groups of citizens, for instance that other things equal politicians would rather give transfers to their own region than to another region, to members of their own party rather than to members of another party, to their own social class rather than to another social class, to their own ethnic group rather than to another ethnic group, to their own clan rather than to another clan, and so on. Much empirical evidence support such an assumption. For instance, in Kenya Barkan and Chege (1989) find that when Moi replaced Kenyatta, expenditures on road construction shifted from the Kenyatta political base to the Moi political base; within six years the share going to the core supporters of Moi increased from 32% to 67% of the total, while the share going to the Kenyatta core supporters decreased from 44% to 16%. Keefer (2002) study public investments in the Dominican Republic, and reports that (p. 27) “hundreds of projects that were begun by the government of Joaquin Balaguer, two governments before, were then paralyzed under the Leonel Fernández government. Other observers noted that incomplete projects from the Fernández government were similarly halted under Mejía”.

To account for political asymmetries in a simple and transparent way, we model the transfers from politicians to entrepreneurs required to finance a project in the same way as Dixit and Londregan (1996), where transfers occur via a leaky bucket and where this leakage depends on the group and the party. The cost for a politician of transferring one unit of capital to a core supporter is $1 + \varphi$ units of resources, while the cost of transferring to a non-core supporter is $1 + \theta$ units of resources; $\varphi < \theta < 1$. The assumption that $\theta < 1$ implies that politicians are not too different with respect to their costs of transferring resources to different groups. Without loss of generality we simplify the Dixit–Londregan formulation by setting $\varphi = 0$. Each politician has a fraction $p \leq \frac{1}{2}$ of the voters in his core support group, while a fraction $1 - 2p$ of the voters do not belong in any core support group.⁴ All voters freely decide who to support and thus even members of the core group of a politician have to be persuaded to support him, they do not automatically do so.⁵ In a democracy a politician keeps power if he receives at least half of the votes. In an autocracy the incumbent only needs the support of a fraction $Q < \frac{1}{2}$ of the people. The more autocratic the regime, the lower is the minimum winning coalition Q .

Entrepreneurs receive some exogenous income w related to their productivity, with the corresponding utility $W(w)$. Y is the final period additional income of a project being refinanced, with the corresponding utility $W(w + Y)$. To economize on notation we define $W(w + Y) - W(w) = E$. Thus with $W'' < 0$, E is higher in poor countries than in rich ones. Politicians and entrepreneurs have a discount factor $\beta \in (0, 1)$ and all agents aim to maximize the expected present discounted value of utility. As in Lindbeck and Weibull (1987) and Dixit and Londregan (1996) entrepreneurs also have preferences over ideology. Each voter j has an ideological (per period) bias δ^j toward politician *A*. We assume that δ^j is uniformly distributed on the interval $[-(1/2s), 1/2s]$ with density $s > 0$, and that ideological preferences remain constant over time.⁶ Each individual is also subject to an aggregate shock in favor of politician *A*, denoted ψ , which is a random variable uniformly distributed on the interval $[-(1/2h), 1/2h]$ with density $h > 0$ (and measured in next period utility units). Each period a new drawing from the popularity distribution is undertaken independently of the popularity shock of the previous period. The expected next period (per period) utility of entrepreneur j is given by

$$W(w) + E + \delta^j G, \quad (1)$$

where E represents the utility gain of projects refinanced and G is a dummy variable that takes the value of unity if the entrepreneur votes for politician *A* and 0 otherwise (and the expected value of ψ is 0). Thus we employ a standard probabilistic voting model based on Lindbeck and Weibull (1987) and Dixit and Londregan (1996). A difference is that we

⁴ Our mechanism does not hinge on how we model political the asymmetries. In the Dixit–Londregan formulation the costs of transferring resources differ between politicians. An alternative interpretation of partisan politics is that the benefits differ when politicians care differently about the wellbeing of different voters, as in Robinson and Torvik (2005) who assume that politicians are altruistic. In any case, the crucial thing is that the *net* cost of transferring resources to own core supporters is lower than for transferring resources to other voters.

⁵ We abstract from any other type of policy instrument in the analysis. Note however that if politicians had access to transfers, since we shall analyze only Markov perfect equilibria, they would not be able to credibly promise to use them to gain support. Once in power, since politicians value their own welfare higher than the welfare of voters, they would give no transfers. Citizens understand this, and in our model promises of transfers will therefore not be credible.

⁶ To save on notation we assume that ideology is symmetrically distributed and the same in the different groups. We could easily have allowed the core supporters of a politician to have a distribution of ideology that is skewed toward that politician. However, as shown in, for example, Sections 8.1–8.3 in Persson and Tabellini (2000), in a model with a uniform distribution of ideology the marginal effect on the number of political supporters from economic policy is unaffected by such an assumption, and thus we leave it out.

extend the probabilistic model to consider also non-democratic regimes, and in addition that we extend the probabilistic voting model to an infinite horizon economy.

We consider both poor and good projects. Poor projects are projects that do not yield a positive return. Thus for poor projects $\beta R < 1 + \beta$ for a core supporter and $\beta R < (1 + \beta)(1 + \theta)$ for others. Here $1 + \beta$ is the present discounted cost of a project operated by a member of the core group of a politician and βR is the present discounted revenues. Projects that do not fulfill these inequalities are termed good projects.⁷ We assume that in addition to eventual good projects entrepreneurs may have access to, all entrepreneurs have access to one poor project in each period.

2.1. Policies

We characterize the symmetric pure strategy Markov perfect equilibria of the model. In a Markov equilibrium actions at a given play of the stage game can only be conditioned on the payoff-relevant state of the game at that point and not the entire history of play. Here the state of the game is captured by the identity of the incumbent politician and existing projects in their second period. The restriction to Markov perfect equilibria implies that strategies played within a period must be subgame perfect which means that all actions must be credible. This introduces the problem of commitment in a natural way. Therefore, entrepreneurs realize that for policies to be implemented they have to be ex post optimal for the politician in power. The timing of the stage game in period t is as follows.

1. At the start of the period whichever politician won political power starts out as the incumbent.
2. He must decide whether or not to refinance the projects launched in period $t - 1$.
3. He must decide what new projects to launch in period t .
4. Agents receive their period t payoffs.
5. At the end of the period entrepreneurs decide which politician to support, and the incumbent retains or loses power.

We start out with analyzing poor projects. The politician who wins political power must decide if such projects should be launched, as well as if existing projects should be terminated or refinanced. We start out by considering the following equilibrium strategies: when in power a politician launches poor projects with $1 < R < 1 + \theta$ for his core supporters only and he refinances core supporters only. We term this policy l . Note that policy l is symmetric in the sense that both politicians act in the same way towards their core supporters, and against the core supporters of the other politician. We study the appropriate Bellman equations, and later we show that the only possible poor projects that can be financed in equilibrium are those with $1 < R < 1 + \theta$.

Whether or not launching poor projects is an equilibrium depends on the availability of good projects, since these influence the benefits from being in power. However, since the effects of payoffs from such good projects are identical to the effects of X in the Bellman equations we do not explicitly introduce the payoffs from good projects. We treat them as contained in X , and we also return to the ramifications of good projects later.

In general, define $V_i^l(a, b, m)$ as the return to politician $i = A, B$ when politicians follow policy l , $a = P_A$ if the core supporters of politician A have non-completed projects and $a = 0$ otherwise, $b = P_B$ if the core supporters of politician B have non-completed projects and $b = 0$ otherwise, and politician $m = A, B$ has political power. Let $\pi(l)$ denote the reelection probability in a democracy or the survival probability in an autocracy of an incumbent following policy l . This probability will be endogenously determined later. Note that it is independent of who was the incumbent in the previous period as previous period projects end before next period (irrespective of whether they are refinanced or not). $1 - \pi(l)$ is the probability for an opposition politician to win political power under policy l .

Consider first the case where politician A wins political power. If politician B was the previous incumbent, the static payoff to politician A as a consequence of winning is the rents of power X net of the unit financing cost for the p entrepreneurs in his core support group that he launches poor projects for. If keeping power also for the next period the politician gets $V_i^l(P_A, 0, A)$, while otherwise he gets $V_i^l(P_A, 0, B)$. Hence his payoff is

$$V_i^l(0, P_B, A) = X - p + \beta(\pi(l)V_i^l(P_A, 0, A) + (1 - \pi(l))V_i^l(P_A, 0, B)). \quad (2)$$

When politician A was the incumbent and wins political power his core supporters will be refinanced. Thus in this case the first period static payoff to the incumbent also includes the return R net of the refinancing cost for his p core supporters.

$$\begin{aligned} V_i^l(P_A, 0, A) &= p(R - 1) + X - p + \beta(\pi(l)V_i^l(P_A, 0, A) + (1 - \pi(l))V_i^l(P_A, 0, B)) \\ &= V_i^l(0, P_B, A) + p(R - 1), \end{aligned} \quad (3)$$

where the second line follows immediately from (2).

Should politician B win political power the static payoff for politician A is 0 regardless of whether he was the incumbent or not, as he receives neither rents nor payoffs from projects. Furthermore, when politician B wins power the next period

⁷ Note that these conditions are not the same as those for social efficiency. These would also include the benefits to the entrepreneurs E . Nevertheless, the interesting feature of the soft budget constraint seems to understand how policymakers fund loss making enterprises and the private benefits are not relevant to whether or not a project make losses for the government since they cannot be expropriated.

probability of politician *A* winning political power becomes that of an opponent; $1 - \pi(l)$. Hence we have

$$V_l^A(P_A, 0, B) = V_l^A(0, P_B, B) = \beta((1 - \pi(l))V_l^A(0, P_B, A) + \pi(l)V_l^A(0, P_B, B)). \tag{4}$$

From (2)–(4) we then find

$$V_l^A(0, P_B, A) = \frac{(1 - \beta\pi(l))(X - p + \beta\pi(l)p(R - 1))}{1 - \beta(\beta + 2\pi(l)(1 - \beta))}. \tag{5}$$

Symmetric equations hold for politician *B*.

Note that poor projects are always economically loss making to initiate; the expected payoff of a project is $-1 + \beta\pi(l)(R - 1)$ which must always be negative when $\beta R < 1 + \beta$. However, they can still be politically efficient and to show this we proceed to determine $\pi(l)$.

There are three groups of entrepreneurs—the two groups of core supporters each of size p and the group of entrepreneurs of size $1 - 2p$ that are not core supporters of either politician. Consistent with the above notation, let $U_l^A(a, b, B)$ denote the return to a core supporter of politician *A* when politicians follow policy l , $a = P_A$ if core the supporters of politician *A* have non-completed projects and $a = 0$ otherwise, $b = P_B$ if the core supporters of politician *B* have non-completed projects and $b = 0$ otherwise, and politician *B* wins political power. The expected future value of the aggregate shock ψ is 0. Consider an entrepreneur with ideological bias δ^j in the core support group of politician *A*. If politician *A* is the incumbent the next period expected static payoff for the entrepreneur is $W(w) + E + \delta^j$ if the incumbent keeps power. Furthermore, the present incumbent will also be the next period incumbent with the reelection or survival probability $\pi(l)$, while the probability of losing power will be $1 - \pi(l)$. Thus

$$U_l^A(P_A, 0, A) = W(w) + E + \delta^j + \beta(\pi(l)U_l^A(P_A, 0, A) + (1 - \pi(l))U_l^A(P_A, 0, B)). \tag{6}$$

In case the incumbent loses power, a core supporter of politician *A* is not refinanced and since we measure the ideological bias in favor of politician *A*, his next period expected static return is $W(w)$. Furthermore, the probability that politician *A* wins political power at the end of next period is the probability that an opposition politician wins, namely $1 - \pi(l)$. Thus

$$U_l^A(0, 0, B) = W(w) + \beta((1 - \pi(l))U_l^A(0, P_B, A) + \pi(l)U_l^A(0, P_B, B)). \tag{7}$$

In case politician *B* is the current incumbent the expected payoffs are

$$U_l^A(0, P_B, A) = U_l^A(P_A, 0, A) - E \tag{8}$$

and

$$U_l^A(0, P_B, B) = U_l^A(P_A, 0, B). \tag{9}$$

Consider first the case where politician *A* is the incumbent. The expected future net gain in utility of a core supporter of politician *A* if *A* remains in power is

$$U_l^A(P_A, 0, A) - U_l^A(P_A, 0, B) = \frac{(1 + \beta(1 - \pi(l)))E + \delta^j}{1 - \beta(2\pi(l) - 1)}. \tag{10}$$

Consider next the case where politician *B* is the incumbent. In this case the net gain for a group *A* core supporter should politician *A* rather than politician *B* take power is given by

$$U_l^A(0, P_B, A) - U_l^A(0, P_B, B) = \frac{\beta\pi(l)E + \delta^j}{1 - \beta(2\pi(l) - 1)}. \tag{11}$$

Note that the right-hand side of (10) is higher than the right-hand side of (11). This is intuitive. The difference between them stems from the fact that if *A* is the incumbent then he chooses to implement projects in the current period. This implies that if he wins political power then a member of his core group will get E next period. In addition if *A* retains power tomorrow he will initiate further projects in the next period, which are again refinanced should he also win power in the next round, and so on. However, if *B* is in power in the current period, then even if *A* is in power tomorrow, since no projects benefitting members of *A*'s core group will have been started in the current period, there cannot be any payoff E tomorrow. However, if *A* gets back in power tomorrow he will then initiate projects, generating possible future benefits. This argument explains why the right-hand side of (10) is higher than the right side of (11). This immediately implies that even in a democracy the reelection probability $\pi(l)$ will be different from the election probability of an opposition politician, $1 - \pi(l)$.

The symmetric equations for core supporters of politician *B* can easily be found (remembering that δ^j is defined as the ideological bias toward politician *A*). Also, by inserting $E = 0$, the corresponding equations for non-core supporters can be found.

We then reach the following proposition:

Proposition 1. *A strategy where the politician in power launches poor projects with $1 < R < 1 + \theta$ for core supporters only, and refinances core supporters only, increases his probability of remaining in power compared to a strategy of not launching and refinancing projects.*

Proof. Assume that politician A is the incumbent. Denote by N_A^A the number of core supporters of the incumbent that also support him. From (10) we know that those politician A core supporters that support politician A are those with a higher ideological bias than the δ^j defined by $-\psi = ((1 + \beta(1 - \pi(l)))E + \delta^j)/(1 - \beta(2\pi(l) - 1))$. N_A^A is then given by

$$p \int_{-(1+\beta(1-\pi(l)))E-(1-\beta(2\pi(l)-1))\psi}^{1/2s} s \, di = p \left(\frac{1}{2} + s(1 + \beta(1 - \pi(l)))E + s(1 - \beta(2\pi(l) - 1))\psi \right) \quad (12)$$

The number of core supporters of politician B that support incumbent A is given by

$$N_A^B = p \int_{\beta\pi(l)E-(1-\beta(2\pi(l)-1))\psi}^{1/2s} s \, di = p \left(\frac{1}{2} - s\beta\pi(l)E + s(1 - \beta(2\pi(l) - 1))\psi \right). \quad (13)$$

The number of non-core supporters that support the incumbent, N_A , is given by

$$N_A = (1 - 2p) \int_{-[\beta(2\pi(l)-1)]\psi}^{1/2s} s \, di = (1 - 2p) \left(\frac{1}{2} + s(1 - \beta(2\pi(l) - 1))\psi \right). \quad (14)$$

The reelection or survival probability, $\pi(l)$, is given by the probability that the total number of supporters exceeds the minimum winning coalition Q .

$$\pi(l) = \Pr\{N_A^A + N_A^B + N_A \geq Q\},$$

which can be simplified to

$$\pi(l) = \Pr \left\{ \psi \geq -pE - \frac{\frac{1}{s} \left(\frac{1}{2} - Q \right)}{1 - \beta(2\pi(l) - 1)} \right\} = \frac{1}{2} + phE + \frac{\frac{h}{s} \left(\frac{1}{2} - Q \right)}{1 - \beta(2\pi(l) - 1)}. \quad (15)$$

From this the probability can be found as

$$\pi(l) = \frac{1}{2} + \frac{1 + 2\beta phE - \sqrt{(1 - 2\beta phE)^2 - 8\frac{h}{s} \left(\frac{1}{2} - Q \right)}}{4\beta}, \quad (16)$$

where we show in Appendix A that stability implies $(1 - 2\beta phE)^2 - 8(h/s)((1/2) - Q) > 0$.

Consider next the case where politicians do not finance any projects, and denote the reelection or survival probability in this case $\pi(0)$. Now the post election income of all entrepreneurs is independent of the election outcome. The probability of political survival can then be found as

$$\pi(0) = \frac{1}{2} + \frac{1 - \sqrt{1 - 8\frac{h}{s} \left(\frac{1}{2} - Q \right)}}{4\beta}. \quad (17)$$

It is easy to see that $\pi(l) > \pi(0)$, and the proposition follows. \square

To make the intuition behind Proposition 1 transparent, consider first the special case of democracy, i.e. $Q = \frac{1}{2}$. Then the reelection probability is simply given by $\frac{1}{2} + phE$. The reelection probability is affected in three ways by financing poor projects for core supporters. First, the reelection probability of the incumbent politician A increases as the next period income for core supporters of A is higher if he rather than the opposition politician B wins the election. In the first case they are refinanced, in the second they are not.

Second, core supporters see that an increased reelection probability has value also for future periods. In addition to a higher next period static payoff the election of politician A has the effect of increasing the probability of being financed in the future. This effect is stronger the more core supporters that are financed, as this makes the reelection probability higher. For the core supporters of politician A it is thus good news if many poor projects are launched. This dynamic effect adds to the increased next period static payoff, and thus increases the reelection probability further.

Third, core supporters of the opposition politician realize that a higher probability of reelection of the incumbent decreases the chance that they will receive financing of poor projects in later periods. For the core supporters of politician B it is thus bad news if many poor projects are launched by an incumbent politician A . This dynamic effect decreases the reelection probability of the incumbent.

However, since the group of politician A and politician B core supporters is of the same size p , these two latter dynamic effects are of exactly the same size, and the net effect on the reelection probability constitutes the first static effect of increased next period income for core supporters.

Next, consider the case of non-democracy, i.e. $Q < \frac{1}{2}$. Then, since incumbents need less supporters to survive politically, the “reelection” or survival probability increases compared to that under democracy. We note that the increase in the survival probability is stronger the more ideologically heterogenous the population is (s low). The intuition for this is that an ideologically heterogenous population increases the number of “extreme supporters” for both the dictator and the

challenger. Under democracy this does not affect the reelection probability as the effect is symmetric, but under autocracy such an increase in “extreme supporters” on both sides is to the advantage of the dictator. The reason for this is that the minimum winning coalition Q is less than $\frac{1}{2}$, and thus the probability that the number of supporters exceeds Q is higher the more extreme supporters there are.

It is worth noting how the formula for (16) is influenced by our simplifying assumption that all members of both core groups have poor projects to be financed. Imagine that only a fraction q of them did, with a fraction $1 - q$ having good projects. In this case under democracy (16) would be $\pi(l) = \frac{1}{2} + qphE$ emphasizing that the presence of good projects does not influence the reelection probability. Intuitively, it is only the poor projects which will influence the election outcome since they will only be refinanced by one of the politicians. Good projects will be financed (and refinanced) by both types of politicians and will therefore not influence the election outcome (which we show in Proposition 4).

Also, note that in the model the incumbent pays the full cost of financing bad projects which means that the financing is not hurting other voters through lower spending or higher taxation. If voters had to pay part of this cost our mechanism would still be valid, and could actually produce a stronger incumbency bias. The reason for this is the combination of sunk costs and rational forward looking voters. Whichever politician is elected the cost of launching bad projects would have to be paid. However, by electing the incumbent the net cost is lower as he will make a surplus on refinancing existing projects in case he wins political power while the opposition will not. Finally, if a politician without any core support group entered into political competition he would in such a setting have a political advantage among non-core supporters, which would weaken the political advantage of politicians with core supporters. However as politicians with core supporters could still have an advantage among the core supporters, the political survival probability may still be higher by launching bad projects. Thus our mechanism could be present also in such a case.

We now proceed to show that the only poor projects that can affect the reelection or political survival probability are those with $1 < R < 1 + \theta$. First, note that so far we have only assumed that politicians play the strategies associated with policy l and drawn the implications for the reelection or survival probability. We now need to justify that (i) it is credible for an incumbent to promise refinancing of the loss making projects he initiates, (ii) it is not credible for the opposition to promise to refinance these projects, and (iii) no other poor projects can affect the political survival probability.

- (i) A promise by the incumbent to refinance projects should he remain in power is credible. Given that he launches a project a politician will refinance (if in power) when $R > 1$ given that previous costs are sunk.
- (ii) A promise by the opposition to refinance is not credible. Given that $R < 1 + \theta$ refinancing non-core supporters is loss making. Entrepreneurs realize that a promise of refinancing should the opposition take power is not ex post optimal for the opposition, and hence such promises are not credible.
- (iii) Consider first a poor project where $R < 1$. It is not credible for any politician to promise to refinance such a project. Consider next a poor project with $R > 1 + \theta$. If launched in a period such a project will be refinanced by any politician winning power, as the investment cost from the previous period is sunk. Hence when poor projects have $R < 1$ or $R > 1 + \theta$ the decision to refinance is independent of who is in power. It is then straightforward to show that the political survival probability is $\pi(0)$.

The following proposition is now evident:

Proposition 2. *The only way for an incumbent to increase the probability of keeping power by poor projects is to launch projects with $1 < R < 1 + \theta$.*

Thus, launching poor projects for core supporters may be an efficient political strategy to increase the probability of political survival. Such projects allow the incumbent to credibly promise to some entrepreneurs that their income will be higher if the incumbent rather than the opposition wins political power. In this way the incumbent is able to tie the continuation utility of some entrepreneurs to his own political success. The gain in supporters from own core supporters is higher than the loss in supporters from the core supporters of the opposition politician — the incumbent is able to utilize the advantage of deciding policy to produce an incumbency bias.

This mechanism is also valid under autocracy, and is a formalization of the intuition in Bueno de Mesquita et al. (2003, p. 59) who note that “To depose an incumbent, a challenger needs to convince a sufficient number of members of the winning coalition to defect him. On the surface this appears to be a relatively easy task. All the challenger has to do is to promise these members of the existing coalition more rewards than they currently receive. Unfortunately for the challenger, such a promise lacks long-term credibility.” Furthermore (p. 60) “The incumbent leader does not face this problem of credibility as severely, because her current supporters understand that they will continue to receive private benefits as long as they remain loyal”.

Note, however, that for poor projects to produce an incumbency bias they have to be sufficiently poor. Marginally poor projects in the sense that $1 + \theta < R < ((1 + \beta)/\beta)$ do not suffice to increase the reelection probability as they will be refinanced by both politicians should they win power.

The incumbency bias rests on the fact that redistribution will be shifted from core supporters of the old politician to core supporters of the new politician when there is a change in power. Much case study evidence supports this result. The regressions in Gimpelson and Treisman (2002) shows that (p. 149) “Public employment tended to fall after the election of a

new governor, who presumably trimmed the patronage appointments of his predecessor.” With the change of political power in Ghana in 1966 Killick (1978, p. 238) notes that the new government decided “to lay off nearly 40,000 redundant workers in various state agencies”.⁸ There is also direct evidence that the policy of patronage indeed raises the reelection probability. According to the analysis in Treisman (1999, p. 81) “Where regional government spending increased relatively more, the vote was subsequently higher for Yeltsin and his reformist allies, controlling for the previous level of regional support for them.”

Whether or not he wins or loses political power, the incumbent incurs an economic loss on poor projects. However, they may still be rational to undertake because the probability of remaining in power increases and when in power the politician receives rents. Consider the incumbents’ alternative strategy of not financing the projects. We have already denoted this by policy 0. In this case the per period return from winning power is independent of history and given by X . $V_0^A(A)$ is the payoff to politician A from winning political power, $V_0^A(B)$ the payoff to politician A from losing political power, and $\pi(0)$ the political survival probability. Then

$$V_0^A(A) = X + \beta(\pi(0)V_0^A(A) + (1 - \pi(0))V_0^A(B)) \quad (18)$$

and

$$V_0^A(B) = \beta((1 - \pi(0))V_0^A(A) + \pi(0)V_0^A(B)). \quad (19)$$

Consequently

$$V_0^A(A) = \frac{(1 - \beta\pi(0))X}{1 - \beta(\beta + 2\pi(0)(1 - \beta))}. \quad (20)$$

Note that from (5) and (20) it follows that if $\pi(l) = \pi(0)$ poor projects will never be launched (as $X - p + \beta\pi(l)p(R - 1)$ is always less than X). However, we already know that $\pi(0) < \pi(l)$, since when no projects are launched, the income of all entrepreneurs is independent of who wins political power. This leads to the following proposition:

Proposition 3. *Poor projects with $1 < R_l < 1 + \theta$ are more likely to be launched for core supporters of the incumbent*

- (i) *the higher the rents of power X ,*
- (ii) *the more responsive voters are to economic policy (high h),*
- (iii) *the poorer the country (high E),*
- (iv) *the less democratic the country (low Q), and*
- (v) *the more ideologically heterogenous the population is (low s) given that democracy is imperfect ($Q < \frac{1}{2}$).*

Proof. Consider $V_l^A(0, P_B, A)$ from (5) and $V_0^A(A)$ from (20). These both include the rents from being in power today, the eventual costs of financing projects today, and the future expected utility from following policy l or 0 respectively. Since the rents from power are already secured an incumbent will follow policy l instead of policy 0 when the net gain of doing so is positive, i.e. $V_l^A(0, P_B, A) - X > V_0^A(A) - X$. By substituting from (5) and (20) and then for $\pi(l)$ and $\pi(0)$ from (16) and (17), the proposition follows by straight forward calculations that we relegate to Appendix A. \square

In the existing economics literature the soft budget constraint is viewed as the outcome of a commitment problem; if bad projects are financed initially politicians cannot credibly commit not to refinance them as long as returns cover next period costs. Thus, since bad entrepreneurs know that they will be refinanced, they submit poor projects in the first place. If politicians knew that the projects were poor, they would never have been financed. By contrast, in our theory politicians finance poor projects exactly because they are known to be poor. This is also the result of commitment, but in our case this is viewed as an opportunity rather than as a problem by the politicians; by financing bad projects for core supporters politicians can credibly commit to refinance the projects in case they win political power while the opposition cannot.

As seen from Proposition 3 poor projects are more likely to be chosen, and the soft budget constraint more prevalent, when the rents of being in power X are high. Then there is more to gain by influencing the probability of political survival. This may explain why the soft budget constraint is typically a problem in countries with bad institutional quality. In such countries the rents from being in power may be high as politicians tend to view the state finances as their own resources. Also, it may explain the serious problem of soft budget constraints in natural resource abundant countries.

It is interesting to note that the higher is h , the more likely it is that poor projects are financed. Thus, the more responsive entrepreneurs are to economic factors, the worse economic outcomes may be. The reason for this is that when entrepreneurs are responsive they are easier to buy with inefficient redistribution. This result contrasts with most other

⁸ What first seemed to be a shift in policy away from state enterprises towards laissez faire, however, turned out not to be. Soon after the ratio of public to private sector employees was back to the levels seen during the Nkrumah administration, and when the NRC came to power in 1972 Killick (1978, p. 317) reports that “The government announced its intention to reactivate various state enterprises left uncompleted or abandoned after the overthrow of Nkrumah, but of far greater significance for the role of the state was the compulsory acquisition of a 55 percent shareholding in the timber, mining and oil industries ... It seemed, then, that economic policy had become full circle. The expansion of state control and participation begun under Nkrumah was resumed”.

theories of the efficiency of electoral competition, where politicians are more strongly inclined to adopt efficient economic policies the more responsive voters are to economic policy, see e.g. Persson and Tabellini (2000).

In the same manner standard political economy models suggest that if utility is concave in income then electoral competition shall be stronger, and policy more efficient, in poor countries. Part (iii) of Proposition 3 delivers the opposite result. If in a poor country the utility gain of being financed is high, it makes inefficient redistribution attractive because it strongly affects the political survival probability. Thus poor countries may be especially prone to soft budget constraints emerging as a political strategy.

Part (iv) of Proposition 3 suggests that the less democratic the regime the more likely that soft budget constraints emerge. A regime that maintains power despite of little support in the population has a high survival probability. But why should a regime less likely to loose political power use more inefficient redistribution? There are, as can be seen from the discussion of Eq. (29) in Appendix A, two reasons for this: first, the higher is the probability of staying in power, the higher is the expected payoff for the incumbent—and in turn when the expected rent of political power is high a marginal increase in the political survival probability is more valuable. Second, the higher is the probability the incumbent stays in power, the more likely the projects launched this period are refinanced and the higher is the expected payoff for core supporters. In turn, when the expected payoff for core supporters is high, a marginal increase in the survival of the incumbent has a large effect on their utility. Thus the higher is the probability the incumbent keeps power in the first place, the stronger is the marginal effect on this probability of adopting policy l relative to policy 0.

A more ideologically heterogenous population does not affect the decision to launch poor projects in a democracy. A smaller s has no effect on the reelection probability since the effect is symmetric. However, as stated in part (v) of Proposition 3 in a non-democratic regime ($Q < \frac{1}{2}$) a more ideologically heterogenous population makes poor projects more likely. The intuition for this is that a more heterogenous population increases the number of “extreme supporters” of the autocrat and the opposition by an equal amount. But since autocrats need support of less than half of the population to stay in power, this increase in “extreme supporters” is to the largest advantage of the autocrat, and his survival probability increases. Thus a lower s sparks off a rise in the survival probability, and the same effect as with a lower Q comes into play, making poor projects more politically attractive.

Finally, note that, as we discussed earlier, the presence of good projects makes it more valuable to be in power and has the same effect as an increase in X . Thus the presence of rents from good projects makes it more attractive for incumbents to launch bad projects.

We now turn attention to good projects. We then have the following:

Proposition 4. *Good projects cannot affect the political survival probability.*

Proof. If a good project is launched in a period it will be refinanced by any politician holding power in the next period since $R > (1 + \beta)/\beta \Rightarrow R > 1 + \theta$. Thus for good projects the decision to refinance is independent of who wins political power.

The decision to launch projects may differ between politicians. Politician A faces a lower cost of projects to his core supporters, and vice versa for politician B . Thus for a sufficiently low payoff of good projects, there exists an equilibrium path where politicians only launch projects for core supporters, but projects are always refinanced independent of who wins political power.

Consider first the case where projects are sufficiently profitable that they will be launched by all politicians. In this case the income of all entrepreneurs in all periods is independent of who wins power, and the political survival probability is $\pi(0)$. Consider next the case where politicians only launch projects toward core supporters. The decision to refinance is still the same for both politicians. Thus in any period next period income is independent of who wins political power. Future income, however, is not. Politician A core supporters will be better off if politician A wins as then they have additional projects launched in the future, and vice versa for politician B core supporters. Politician A core supporters are thus more likely to support politician A , while politician B core supporters are more likely to support politician B . The point to note, however, is that these effects are symmetric; what politician A wins among his core supporters he loses among the politician B core supporters, and vice versa. It can be verified that this intuition is correct by using the same techniques as those used to prove Proposition 1 to find that also in this case the political survival probability is $\pi(0)$, which is the same as if no good projects had been financed. The proposition then follows. \square

Thus it is exactly the bad quality of poor projects that makes them politically appealing.⁹ By adopting poor projects, an incumbent ensures that he can credibly offer to refinance them, while the opposition cannot. Good projects do not have this asymmetric feature since all politicians can credibly commit to refinance them and they thus have a symmetric effect on political support.

⁹ Proposition 4 as stated does depends on the assumption that $\theta < 1$. The incentive to fund inefficient projects comes from the fact that the politicians are competing, which can only happen if they are not too dissimilar. If they are very dissimilar, so that it is very costly for one politician to deliver resources to the supporters of the other, then in effect there is no competition and Proposition 4 would need to be re-stated. For example, if politician A is not threatened with politician B trying to redistribute to his supporters, then he may be able to reward his supporters with socially efficient projects. Our main mechanism still applies but in this case the model implies that relatively poor projects would be preferred to relatively better ones. Here, relatively poor projects would be adopted, but not necessarily loss making projects.

Finally, consider two groups of projects for core supporters that for simplicity only differ in their second period return; poor projects with $R = R^p$ and good projects with $R = R^g$. Assume now in contrast to above that each politician can only launch p projects each period. Politicians must choose between financing the poor or the good projects. We term the policy of launching good projects g , with the corresponding political survival probability $\pi(g)$, and the value of coming into power $V_g^A(0, P_B, A)$. We then have:

Proposition 5. *Poor projects are more likely to crowd out good projects*

- (i) *the higher the rents of power X , and*
- (ii) *the poorer the country (high E).*

Proof. From Proposition 4 it follows that since good projects will be refinanced by both politicians, $\pi(g) = \pi(0)$. By the appropriate Bellman equations we find

$$V_g^A(0, P_B, A) = \frac{(1 - \beta\pi(0))(X - (2 + \theta)p + pR^g + \beta\pi(0)p\theta)}{1 - \beta(\beta + 2\pi(0)(1 - \beta))}. \quad (21)$$

By comparing this with $V_l^A(0, P_B, A)$ part (i) of the proposition follows as the effect of X is also in this case given by Eq. (25) in Appendix A. Part (ii) of the proposition follows as $V_l^A(0, P_B, A)$ is increasing in E while $V_g^A(0, P_B, A)$ is independent of E . \square

Thus when the rents of being in office X are high and voters are poor, politicians end up picking losers rather than winners. The standard result in models of electoral competition is the opposite (see for instance the overview in [Persson and Tabellini, 2000](#), Chapters 3 and 4); when ego rents are high or voters care a lot about their income, electoral competition is stiffer and economic inefficiency reduced. In our model, by contrast, stiffer competition increases the political incentives to undertake inefficient redistribution which manifests itself in the soft budget constraint. Launching poor rather than good projects is more tempting the more that is at stake and the more responsive voters are.

Finally, an increased h , decreased Q , or decreased s may make it more or less likely that poor projects crowd out good ones. To see the intuition behind this consider the effects of a less democratic regime, i.e. a lower Q . This has the same two effects as those discussed in relation to Proposition 3 that makes poor projects more likely to crowd out good projects. However, now a third effect pulling in the opposite direction comes into play. Although the survival probability $\pi(0)$ still increases less than $\pi(l)$ with a lower Q , now the higher reelection probability in the case with good projects has the additional effect that it makes it more likely that the ones who are being refinanced in the future are own core supporters rather core supporters of the other politician. This saves the cost θ .¹⁰

3. Concluding remarks

The conventional wisdom in the economics literature, following the seminal paper by [Dewatripont and Maskin \(1995\)](#), is that the soft budget constraint arises because well-meaning politicians face a dynamic commitment problem—they cannot commit not to bail out bad projects ex post. Interestingly however, the preponderance of case study evidence on the soft budget constraint links it to political incentives—firms or groups are bailed out for political reasons. In this paper we have developed a political economy model to try to link these insights and show how the soft budget constraint may arise as an efficient political strategy. We believe this is critical to understanding why soft budgets are so hard to eradicate.

In an environment where politicians cannot commit to arbitrary forms of redistribution the presence of the sort of commitment problem isolated by Dewatripont and Maskin may be politically advantageous because it allows politicians to deliver benefits to potential supporters. While in standard theories of the soft budget constraint politicians would never finance a project known to be poor, in our theory this is exactly the reason it is financed in the first place because it is the only way to deliver redistribution which can influence electoral outcomes. This follows because of linkages between politicians and certain groups, who we call their core constituencies. Such linkages create asymmetries in what politicians can promise to different groups. In particular politicians will only bail out poor projects operated by their own core groups and this heightens the desire of the core group to see them remain in power.

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¹⁰ By undertaking the analogous calculations to those used to prove Proposition 3 in Appendix A, one can verify that the expressions (27), (29), and (30) are exactly the same (with $V_0^A(A)$ replaced by $V_g^A(0, P_B, A)$) except for the additional term $((1 - \beta\pi(0))\beta p\theta)/(1 - \beta(\beta + 2\pi(0)(1 - \beta)))$ multiplied by the derivative of $\pi(0)$ with respect to the variable under investigation, and that this term pulls in the opposite direction from the two previous effects.

Appendix A

In this appendix we first discuss the stability condition of the survival probability under autocracy and show that this implies $(1 - 2\beta phE)^2 - 8(h/s)((1/2) - Q) > 0$. The potential instability in the reelection probability under autocracy stems from the following mechanism: a more autocratic regime increases the survival probability. This increased incumbency advantage means that ideology becomes more important relative to short term popularity (as one is more likely to be stuck with the politician in office). Entrepreneurs are thus more concerned with their ideology and are less concerned with short term popularity. In turn this makes the number of supporters for both politicians more stable. More stable support for both politicians is to the advantage of the incumbent, because the probability that the number of supporters falls short of $Q < \frac{1}{2}$ decreases. This increases the survival probability further, and so on. If this positive feedback on the survival probability is too strong, we have instability. For stability the derivative of the right-hand side of (15) with respect to $\pi(l)$ needs to fall short of one:

$$\frac{2\beta \frac{h}{s} (\frac{1}{2} - Q)}{(1 - \beta(2\pi(l) - 1))^2} < 1. \tag{22}$$

By utilizing (15) this can be restated as

$$1 + 2\beta - 4\beta\pi - 2\beta phE > 0. \tag{23}$$

By utilizing (16) this is equivalent to $(1 - 2\beta phE)^2 - 8(h/s)((1/2) - Q) > 0$.

We now proceed to show the calculations behind Proposition 3. The politician in power is indifferent between following policy l and policy 0 if

$$D = V_l^A(0, P_B, A) - V_0^A(A) = 0. \tag{24}$$

If $D > 0$ policy l is preferred to policy 0, and vice versa. By (5) and (20), and the fact that $\pi(l)$ and $\pi(0)$ are independent of X we then find

$$\frac{dD}{dX} = \frac{\beta(\pi(l) - \pi(0))(1 - 2\beta + \beta^2)}{(1 - \beta(\beta + 2\pi(l)(1 - \beta)))(1 - \beta(\beta + 2\pi(0)(1 - \beta)))}. \tag{25}$$

From this and recalling that $\pi(l) > \pi(0)$ it follows that $dD/dX > 0$ and part (i) of Proposition 3 is evident.

To find the effect of an increased h , note that

$$\frac{dD}{dh} = \frac{dV_l^A(0, P_B, A)}{d\pi(l)} \frac{d\pi(l)}{dh} - \frac{dV_0^A(A)}{d\pi(0)} \frac{d\pi(0)}{dh}. \tag{26}$$

By (5) and (20) we find after some calculation that

$$\begin{aligned} \frac{dD}{dh} &= \frac{\beta V_l^A(0, P_B, A)(1 - 2\beta + \beta^2)}{(1 - \beta\pi(l))(1 - \beta(\beta + 2\pi(l)(1 - \beta)))} \frac{d\pi(l)}{dh} - \frac{\beta V_0^A(A)(1 - 2\beta + \beta^2)}{(1 - \beta\pi(0))(1 - \beta(\beta + 2\pi(0)(1 - \beta)))} \frac{d\pi(0)}{dh} \\ &+ \frac{\beta(1 - \beta\pi(l))p(R - 1)}{(1 - \beta(\beta + 2\pi(l)(1 - \beta)))} \frac{d\pi(l)}{dh}. \end{aligned} \tag{27}$$

As $\pi(l) > \pi(0) \Rightarrow (\beta(1 - 2\beta + \beta^2))/((1 - \beta\pi(l))(1 - \beta(\beta + 2\pi(l)(1 - \beta)))) > (\beta(1 - 2\beta + \beta^2))/((1 - \beta\pi(0))(1 - \beta(\beta + 2\pi(0)(1 - \beta))))$ and it can be verified from (16) and (17) that $d\pi(l)/dh > d\pi(0)/dh \geq 0$ it follows that evaluated at $D = 0 \Rightarrow V_l^A(0, P_B, A) = V_0^A(0)$ the sum of the two first terms on the right-hand side of (27) is positive, and since the third term on the right-hand side of (27) is also positive part (ii) of Proposition 3 follows.¹¹

Next we investigate the effect of E . Observe that $V_0^A(A)$ is independent of E , while the effect of a higher E on $V_l^A(0, P_B, A)$ is given by

$$\frac{dV_l^A(0, P_B, A)}{dE} = \frac{\beta(1 - 2\beta + \beta^2)(X - p + \beta\pi(l)p(R - 1))}{(1 - \beta(\beta + 2\pi(l)(1 - \beta)))^2} \frac{d\pi(l)}{dE} + \frac{\beta(1 - \beta\pi(l))p(R - 1)}{1 - \beta(\beta + 2\pi(l)(1 - \beta))} \frac{d\pi(l)}{dE}. \tag{28}$$

From (16) it is easy to see that $d\pi(l)/dE > 0$, and since by the strict concavity of W the change in E is larger in a poor than in a rich country, part (iii) of Proposition 3 follows.

We find the effect of a more autocratic regime (lower Q) in a similar way as with the effect of h as

$$\frac{dD}{-dQ} = \frac{\beta V_l^A(0, P_B, A)(1 - 2\beta + \beta^2)}{(1 - \beta\pi(l))(1 - \beta(\beta + 2\pi(l)(1 - \beta)))} \frac{d\pi(l)}{-dQ} - \frac{\beta V_0^A(A)(1 - 2\beta + \beta^2)}{(1 - \beta\pi(0))(1 - \beta(\beta + 2\pi(0)(1 - \beta)))} \frac{d\pi(0)}{-dQ}. \tag{29}$$

As $\pi(l) > \pi(0)$ and it can be verified from (16) and (17) that $d\pi(l)/-dQ > d\pi(0)/-dQ > 0$ it is evident that $dD/-dQ > 0$, and part (iv) of Proposition 3 follows.

¹¹ Obviously dD/dh is positive also for $V_l^A(0, P_B, A) > V_0^A(0)$ as well as in the region where $V_l^A(0, P_B, A)$ is marginally lower than $V_0^A(0)$.

Finally, the effect of a more ideologically heterogeneous population (lower s) can in a similar way be found as

$$\frac{dD}{-ds} = \frac{\beta V_1^A(0, P_B, A)(1 - 2\beta + \beta^2)}{(1 - \beta\pi(l))(1 - \beta(\beta + 2\pi(l)(1 - \beta)))} \frac{d\pi(l)}{-ds} - \frac{\beta V_0^A(A)(1 - 2\beta + \beta^2)}{(1 - \beta\pi(0))(1 - \beta(\beta + 2\pi(0)(1 - \beta)))} \frac{d\pi(0)}{-ds}. \quad (30)$$

As when $Q < \frac{1}{2}$ it follows that $d\pi(l)/-ds > d\pi(0)/-ds > 0$ it is evident that in an imperfect democracy $dD/-dQ > 0$, and part (v) of Proposition 3 follows.

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