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**Foreign Aid and Domestic Politics**
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by

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**Abstract**

The links between foreign aid and policies in developing countries have been at the forefront of the policy debate for decades. An emerging consensus touts aid selectivity as the solution to the failures of conditionality. In recent years, many recipients have implemented political reforms resulting in more democratic regimes. I show that donor influence depends on the aid budget being large enough relative to the recipient. I also demonstrate that if aid influences policies, the political equilibrium in democratic recipient countries is likely to change to the disadvantage of the political alternative favoured by the donor. This implies that aid selectivity should be applied cautiously.

JEL codes: D72, D78, F35, O19.

Keywords: foreign aid, policy, voting.

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# 1 Introduction

In the last couple of decades, the relationship between bilateral donors and multilateral financial institutions on the one hand and developing country governments on the other has been plagued by disagreements over the economic policies to be pursued by the latter. These conflicts originated in the 1970s with the former actors' incipient perception of a micro-macro paradox of economic development: rates of return on individual aid projects were generally deemed satisfactory whereas the growth performance of the recipients in many cases were not. The blame was put on the policy framework in developing countries, where governments in many cases clearly had followed unsustainable macroeconomic policies while at the same time over-extending the public sector. This was only reluctantly conceded by some of these governments, and others refused to mend their ways in the face of mounting problems. However, during the debt crisis of the 1980s developing countries saw their ability to borrow internationally severely restricted, real interest rates rose, and arrears on debt payments mounted. Such external financing problems forced quite a few governments to turn to the multilateral financial institutions and bilateral donors as substitute sources of capital. To provide funds, these actors demanded policy changes in return. The reluctance to reform on the part of governments receiving public external funding resulted in a proliferation of conditions attached to both grants and loans.

The track record of conditionality in terms of instigating comprehensive and lasting reforms of policies is far from impressing.[1] This has lead some observers to advocate local "ownership" of policies, i.e., that changes should not be forced through by foreigners and should only be supported if the political will to reform is present domestically. The ongoing democratisation process in developing countries have probably strengthened the hand of this camp as it is more difficult to defend compelling democratically elected governments to adopt policies that are not on their own agenda. Figure 1 shows regional averages for groups of developing and transition countries over the last twenty-five years.[2] We see that in most regions, there is a downward

[1] Empirical studies of conditionality include Mosley, Harrigan, and Toye (1991), Killick (1995, 1998), Devarajan, Dollar, and Holmgren (2001a), and the World Bank (1998). I return to this issue in the conclusion.

[2] The starting period of 1976-77 approximately corresponds to the onset of what Huntington (1991) has termed "the third wave" of democratisation.

trend, implying that the degree of democracy has increased.[3] The downward turn started earlier in Latin America than in the other regions, and is most pronounced in Eastern Europe and Central Asia after the end of the Cold War. In the most aid-dependent region, Sub-Saharan Africa, the average started out at 5.5 before increasing slightly over the next decade (to 5.9 in 1985-86). It then started to fall with a pace that fastened notably following the fall of the Berlin Wall, reaching 4.4 in 2000-01.

[Figure 1 about here]

Yet, even those who advocate ownership of domestic policies will have a hard time arguing that all conflicts will go away with the focus on "partnership" between donors and recipients. Indeed, even as it speaks of ownership and partnership, the World Bank recommends aid selectivity, i.e., concentrating aid on recipients pursuing "good" policies.[4] This implicitly implies that there are some countries with governments choosing "bad" policies - at least from the donors' perspective. With the recent wave of democratisation in recipient countries, it has become more likely that governments and policies in these countries change over time. Aid selectivity thus requires a greater understanding of the political economy of recipient countries in order to be able to predict the impact of aid on the domestic political equilibrium that determines what policies will be pursued. In this paper, I contribute to accumulating such knowledge by analysing a game between a donor and a recipient government with conflicting policy objectives when the type of government is determined through elections. I show that donor influence over outcomes is feasible if it possesses a large enough budget compared to the recipient. However, if influence is achieved, this tends to reduce the likelihood that the political alternative most closely aligned with the donor wins the election.

None of the few existing papers that formally model the political economy of aid covers this ground. Pedersen (1997), Svensson (2000a), and Lahiri and Raimondos-Møller (2003) all look at how interest groups may affect the impact of aid, whereas Boone (1996) studies a bureaucratic-

[3] I have calculated these averages from data obtained from Freedom House (at http://www.freedomhouse.org/ratings/index.htm), which publishes the most commonly used indices of democratic rights. Countries are ranked on a 1-7 scale on political and civil rights, with 1 being the best (i.e., most democratic) score (for more information on these rankings, see Gastil 1991). I have taken the average of these two scores for each country in each period. The regional averages are the simple averages of these.

[4] See World Bank (2002) for a recent statement of these views.

authoritarian model of policy determination where the share of the population taken into account varies across regimes.[5] By investigating the effect of aid on election outcomes, I extend this literature in a new direction.[6]

The model is set up in section 2 and analysed in section 3. Sections 4 and 5 contain the results with respect to the effect of aid on the electoral outcome in the recipient country. Section 6 concludes the paper.

# 2 The Model

Conditionality may be viewed as a contracting approach to aid and policy, with foreign economic assistance being the payment made to recipient country governments in return for agreeing to pursue a certain set of policies. Given the mixed record of conditionality, I prefer to use a game-theoretic approach to the interaction between donors and recipients in which each party chooses its best strategy given the other party's choices. More specifically, the vehicle for analysing the electoral politics of foreign aid in recipient countries is the budgetary game analysed in more detail in Hagen (2002, 2004). The game is simple, but rich in implications for the potential impact of aid on election outcomes in recipient countries.

The actors are a donor agency ($D$) and a recipient country government. The latter can be of two different types, $R$ and $S$, differentiated by their preferences over the consumption vector $\mathbf{G} = \{g_1, g_2\}$ in the recipient country:

$$F^j(\mathbf{G}) = \beta^j \ln g_1 + \left(1 - \beta^j\right) \ln g_2, j = R, S, \beta^j \in (0, 1). \tag{1}$$

The donor also has Cobb-Douglas preferences defined over $\mathbf{G}$, the weight attached to the utility of $g_1$ being $\alpha$, and a fixed aid budget for the recipient in question, $A$. Moreover, it cannot tax the recipient, so the funds allocated to spending on each good must be non-negative. Similar

[5] Mayer and Raimondos-Møller (2003) use a median voter model to study the political economy of foreign aid in the donor country, which is a quite different issue.

[6] A further distinction between the model presented here and the work of Boone (1996) and Pedersen (1997) is that they do not consider the donor as a strategic actor.

restrictions apply to the recipient country government, which has a total budget of $B$.[7] The combined budget of the two players is thus $C = A + B$.

I choose units so that the prices of the goods are both unity.[8] For any combination of budgetary allocations by the donor ($a_k$) and the government ($b_k$), the consumption of good $k$ is then

$$g_k = a_k + b_k, k = 1, 2. \tag{2}$$

It is well-known that Cobb-Douglas preferences yield constant budget shares for each good which are equal to their weights in the objective function. The "first-best" allocations of the actors - the allocation that they would have chosen if they could dictate how $C$ should be spent - is therefore

$$\mathbf{G}^{D*} = \left\{g_1^{D*}, g_2^{D*}\right\} = \{\alpha C, (1-\alpha) C\} \tag{3a}$$

$$\mathbf{G}^{j*} = \left\{g_1^{j*}, g_2^{j*}\right\} = \left\{\beta^j C, \left(1-\beta^j\right) C\right\}, j = R, S. \tag{3b}$$

Both $g_1$ and $g_2$ can be thought of as collective goods for the players. However, the benefits of these are judged differently if the weight attached to the utility of $g_1$ varies among the actors. As this is the most realistic case, a conflict of interest is assumed.[9] More specifically, I always assume $\beta^R > \beta^S$. The donor is first assumed to put more emphasis on the supply of $g_1$ than an $R$-government, i.e., $\alpha > \beta^R$. Given the conditionality debacle that has characterised North-South relations since the onset of the debt crisis, readers may then for the sake of concreteness think

[7] The non-negativity assumption is perhaps a bit more restrictive for the recipient, but it ensures symmetry between the players. Moreover, it is empirically reasonable: empirical studies of fungibility rarely find that an increase in aid results in lower total spending on the activity in question. Given the assumption, one could think of the transfers analysed here as project aid, or, even more precisely, aid in kind: once $D$ has allocated funds for some purpose in the recipient country, these are turned into actual units of goods and services. However, one could easily extend this to programme aid as long as the recipient's ability to tax or transfer resources across budget categories is limited relative to $D$'s budget.

[8] As long as prices are constant, all the results in this paper generalise straightforwardly to other kinds of separable homothetic preferences and more than two goods, c.f. Hagen (2004).

[9] According to Killick (1998: 171), for instance, "Our country survey attested to the frequency with which differences of interest [between international financial institutions and governments in recipient countries] occurred."

of $R$ as short-hand for "reform" and $S$ as standing for "status-quo". The case of a "moderate" donor - $\beta^R > \alpha > \beta^S$ - is considered afterwards.[10] It turns out that even though the political impact of aid is much more complex in the second case, the general lessons are much the same.

# 3 Nash-Equilibria

The donor and the government are assumed to play a simultaneous move game.[11] Given (2) and (3), one can construct the players' "first-best" strategies from $g_k^{j*} = a_k + b_k$. This means that given the other player's strategy, the budgetary allocations that achieves the "first-best" outcome of $D$ and the two types of recipient are simply

$$
\begin{aligned}
A^* &= \{a_1^*, a_2^*\} = \left\{g_1^{D*} - b_1, g_2^{D*} - b_2\right\} && \text{(4a)}\\
B^{R*} &= \left\{b_1^{R*}, b_2^{R*}\right\} = \left\{g_1^{R*} - a_1, g_2^{R*} - a_2\right\} && \text{(4b)}\\
B^{S*} &= \left\{b_1^{S*}, b_2^{S*}\right\} = \left\{g_1^{S*} - a_1, g_2^{S*} - a_2\right\} && \text{(4c)}
\end{aligned}
$$

It should now be clear that $\left\{A^*, B^{R*}\right\}$ or $\left\{A^*, B^{S*}\right\}$, as the case may be, cannot constitute Nash-equilibrium strategy profiles. By construction these strategies attain a player's "first-best" allocation of $C$, and as these are assumed to be distinct, two players' "first-best" allocations cannot be simultaneously realised. The main issue is therefore when one of the players can use its "first-best" strategy.

Consider the options of $D$. By the budget constraints, these strategies may be written as functions of a the other player's funding of good 1, e.g. $A^* = \left\{g_1^{D*} - b_1, A - g_1^{D*} + b_1\right\}$. To ask when $A^*$ is feasible is to thus ask for which parameter values $a_1^* \in [0, A]$ given $b_1$. Since $g_1^{D*} > g_1^{R*} > g_1^{S*}$, it is not optimal for any of the recipient types to spend more than $g_1^{D*}$ on $g_1$. The non-negativity constraint on $a_1^*$ will therefore never be binding in equilibrium. Moreover, if $A \geq g_1^{D*}$ $D$ can single-handedly ensure that $\mathbf{G}^{D*}$ is the outcome. Setting $a_1 = g_1^{D*}$

[10]The case $\alpha = \beta^R$ is not of great interest, for obvious reasons. If, for some reason, $\alpha < \beta^S$, the outcomes would be mirror-images of the ones presented below.

[11]As shown in Hagen (2002, 2004), in the present set-up the order of moves does not matter for outcomes. Thus, what follows also applies to sequential games.

means that the optimal response of a type $j$ government is $b_1 = 0$. Therefore, $g_1^N = g_1^{D*}$ and $g_2^N = A - a_1 + b_2 = A - g_1^{D*} + B = C - g_1^{D*} = g_2^{D*}$. Rewriting the condition $A \geq g_1^{D*}$ as $A \geq \left(\frac{\alpha}{1-\alpha}\right) B \equiv \overline{\overline{A}}$ we see that this equilibrium results if $D$ has a large enough budget relative to the recipient.

Once $A < g_1^{D*}$, the influence $D$ has over the outcome is diminished, as it needs the recipient to contribute to the provision of $g_1$ if its "first-best" allocation is to be realised. However, since they find $g_1^{D*}$ too high for their tastes, neither government type has an incentive to do so. As long as $g_1^{D*} > A \geq g_1^{j*}$, $D$ will find it optimal to spend its entire budget on $g_1$ and the optimal response of $j$ will be to spend only on $g_2$. For such a parameter configuration, when $g_1 = A$ and $g_2 = B$, both parties consider the good for which they have the strongest relative preference to be undersupplied and so they will not move away from the extreme strategies of spending only on this good. Hence, the Nash-equilibrium outcome is $\mathbf{G}^N = \{A, B\}$, which is an allocation intermediate to the "first-best" allocations of the two actors.

By now, it should come as no surprise that when $A < g_1^{j*}$, the outcome is a mirror image of the first type of equilibrium described, with the recipient calling the shots. $D$ is no longer able to oversupply $g_1$ from $j$'s perspective, or, what amounts to the same thing with only two goods, $j$ can now unilaterally bring about $\mathbf{G}^{j*}$. If it chooses $b_1 = B - g_2^{j*}$, $j$ knows that $D$'s response will be $a_1 = A$, and so $g_1^N = A + B - g_2^{j*} = C - g_2^{j*} = g_1^{j*}$ and $g_2^N = g_2^{j*}$. Rewriting $A < g_1^{j*}$ to derive the second critical value for the aid budget relative to the government's budget, we find that it is $A < \left(\frac{\beta^j}{1-\beta^j}\right) B \equiv \overline{A}^j$. Note that this condition depends on the type of government playing the game with $D$. Given the assumption $\alpha > \beta^R > \beta^S$, $\overline{\overline{A}} > \overline{A}^R > \overline{A}^S$. That is, $D$ starts to have some influence over the final allocation at a lower relative budget when it is facing an $S$-government. This is the key to the potential impact of aid on the election result in the recipient country that I will analyse in the next two sections.

The results derived so far is summarised in the following proposition:

**Proposition 1**

When $\alpha > \beta^R > \beta^S$, there are three regions with different Nash-equilibria of the budgetary game between the donor and the recipient delimited by critical values of the relative budgets of the players. The equilibrium budgetary allocations and outcomes are

$$
\begin{aligned}
i)\ A &\in \left(0, \overline{A}^j\right] : \left\{\left\{a_1^N, a_2^N\right\}, \left\{b_1^N, b_2^N\right\}\right\} = \left\{\left\{A, 0\right\}, \left\{\beta^j C - A, \left(1-\beta^j\right) C\right\}\right\}, \mathbf{G}^N = \mathbf{G}^{j*}; \\
ii)\ A &\in \left(\overline{A}^j, \overline{\overline{A}}\right] : \left\{\left\{a_1^N, a_2^N\right\}, \left\{b_1^N, b_2^N\right\}\right\} = \left\{\left\{A, 0\right\}, \left\{0, B\right\}\right\}, \mathbf{G}^N = \left\{A, B\right\}; \\
iii)\ A &> \overline{\overline{A}} : \left\{\left\{a_1^N, a_2^N\right\}, \left\{b_1^N, b_2^N\right\}\right\} = \left\{\left\{\alpha C, \left(1-\alpha\right) C - B\right\}, \left\{0, B\right\}\right\}, \mathbf{G}^N = \mathbf{G}^{D*}.
\end{aligned}
$$

That is, the degree of influence that each player has is a weakly monotonicly increasing function of the relative resources that it commands, a player being in full control if it is possible for it to unilaterally finance the optimal level of supply of the good for which it has the highest first-best budgetary share. Hence, donor influence is feasible if it has pockets deep enough.

[Figure 2 about here]

Figure 2 maps out the results described in Proposition 1. It also illustrates that we do not have to worry about whether the recipient government would like to exercise its option of refusing to accept foreign assistance if it is made worse off by it. Because $D$ and the government types do not concur in the optimal distribution of resources, it is conceivable that $D$'s offer would entail such a "bad" distribution of resources from the perspective of a recipient government that the extra income does not compensate for it. However, at low levels of aid, where one could suspect that the transfer could be inadequate to compensate for any "distortion" in outcomes due to donor influence, $D$ has in fact no leverage. And when $D$ provides resources at a level sufficient to have an impact on outcomes, the government is more than compensated by the increase in the budget available for spending on goods 1 and 2.

# 4 Domestic Political Equilibrium and Aid

Let us now assume that the government is chosen through democratic elections. That is, before the aid game starts, there is an election in which voters vote for either $R$ or $S$. This choice is determined by comparing the equilibrium allocations with the two governments in power. Hence aid will affect the domestic political equilibrium if $D$ influences outcomes. Table 1 summarises the results, given $A$ and the government's type.

[Table 1 about here]

There is a continuum of voters of measure 1. They have utility functions $U^i\left(\mathbf{G}\right)$ which are analogous to the objective functions of the government and the donor, the weight attached to the utility of consuming good 1 being $\nu^i \in [\underline{\nu}, \overline{\nu}] \subset [0,1]$. As already mentioned, voters are assumed to be forward looking and thus to evaluate outcomes under the two potential governments before casting their ballott. With a continuum of voters, voting is sincere as the probability of affecting the election outcome is zero. Hence, voter $i$ votes for $R$ if $U^i\left(\mathbf{G}^N(R)\right) > U^i\left(\mathbf{G}^N(S)\right)$, where $\mathbf{G}^N(j)$ is the Nash-equilibrium outcome of a game between $D$ and a government of type $j$. If $U^i\left(\mathbf{G}^N(R)\right) = U^i\left(\mathbf{G}^N(S)\right)$, $i$ flips a fair coin to decide how to cast his vote.

Let us first analyse what would happen if the recipient country receives no aid. Lemma 1 is useful in this respect:[12]

**Lemma 1**

If $A = 0$, there exists a voter that is indifferent between the two political alternatives,[13] i.e., defined by $U^I\left(\mathbf{G}^N(R)\right) \equiv U^I\left(\mathbf{G}^N(S)\right)$. The indifferent voter $I$ has a weight on the utility of $g_1$ equal to $\nu_0^I = \frac{\ln\left(1-\beta^S\right)-\ln\left(1-\beta^R\right)}{\left[\ln\beta^R - \ln\beta^S\right]+\left[\ln\left(1-\beta^S\right)-\ln\left(1-\beta^R\right)\right]} \in \left(\beta^S, \beta^R\right)$.

The result is intuitive. All voters for which $\nu^i \leq \beta^S$ of course prefer $S$ to $R$. Likewise, if $\nu^i \geq \beta^R$ one votes for $R$. Hence, the indifferent voter must be an individual whose preferences are intermediate to the ideology of the political alternatives.[14] As should be clear from Table 1, Lemma 1 still applies when $A < \overline{A}^S$. This is simply due to $D$ being without influence over outcomes regardless of the type of government it faces.

Let us start the analysis of situations where $A \geq \overline{A}^S$ by applying the median voter theorem. The conditions ensuring that the median voter is decisive are clearly satisfied here (in particular, preferences are single-peaked) even though he cannot choose his most preferred levels of provision of the collective goods. Of course, the standard median voter model is unrealistic for national elections, three notable features of which are a fixed set of alternatives (parties or candidates with party labels), uncertainty about voter preferences, and voter uncertainty about what policies will result from the election of a particular alternative. However, it is useful in the current setting because it will demonstrate the possible impact of aid on elections in the clearest possible manner.

[12] Lemma 1 and the lemmas, propositions, and corollaries that follow are proven in the appendix.

[13] For the sake of simplicity, I speak of this voter in the singular even though there is likely to be a group of voters with the same preferences.

[14] I assume that the distribution of voter preferences is non-degenerate and, moreover, such that not all voters prefer one of the political alternatives.

Moreover, I will add the second feature to the first below.

If the preferences of the median voter are such that $\nu^M < \nu_0^I$, $S$ wins the election if $A = 0$. On the other hand, for $\nu^M > \nu_0^I$ $R$ is the winner. Only in the unlikely case $\nu^M = \nu_0^I$ would the outcome of the election be indeterminate if $D$ was not present in the recipient country. Yet it is immediate from Table 1 that for $A \geq \overline{A}^R$, *all* voters are indifferent between $R$ and $S$ because the outcome is the same regardless of the choice of government. This is so even if the election would produce a clear-cut winner in the absence of foreign aid. Hence, in the case of $A \geq \overline{A}^R$ and $\nu^M > \nu_0^I$, assuming the median voter resolves his indifference by flipping a fair coin the entry of $D$ turns a certain victory for an $R$-government into a mere 50-50 chance of winning! The giving of aid, however, can even turn the domestic political equilibrium upside down when $A \in \left[\overline{A}^S, \overline{A}^R\right]$.

To see this, we must find the indifferent voter for these levels of the aid budget. As will become clear, in this region his identity is a function $A$ that I denote by $\nu^I(A)$. When $A = \overline{A}^S$, $\nu^I(A)$ is still equal to $\nu_0^I$, since in this borderline case $S$ achieves its optimal allocation even though it has to choose the extreme strategy $b_1 = 0$. For $A > \overline{A}^S$, the calculation is complicated by the fact that it is no longer only the ideology of the two alternatives that matter. $S$ is then at a corner solution in the post-election game, and the level of $A$ therefore plays a role. The problem is best solved by defining a "virtual" opponent of $R$, that is, a government with preferences such that the outcomes produced under an $S$-government equal its "first-best" outcomes. $\nu^I(A)$ can then be calculated in the manner used for deriving Lemma 1. Lemmas 2 and 3 contain the results.

**Lemma 2**

For $A \in \left[\overline{A}^S, \overline{A}^R\right]$, an $S$-government is equivalent to a $\sigma$-government. A $\sigma$-government is defined by its "first-best" allocation being equal to the Nash-equilibrium outcome under an $S$-government, i.e., by $\mathbf{G}^{\sigma *} = \mathbf{G}^N(S)$. The weight $\sigma$ attaches to the utility of consumption of $g_1$ is $\beta^\sigma(A) = \frac{A}{C} \in \left[\beta^S, \beta^R\right]$.

Note that $\frac{\partial \beta^\sigma(A)}{\partial A} > 0$: the more aid is given in this range, the higher is $g_1$. Thus, to make the Nash-equilibrium outcome a "first-best" allocation for $\sigma$ when $A$ goes up, it must attach a greater weight to the utility from consuming this good. Moreover, $\beta^\sigma\left(\overline{A}^S\right) = \beta^S$ as the Nash-equilibrium outcome for $A = \overline{A}^S$ is $\mathbf{G}^{S*}$. Similarly, $\beta^\sigma\left(\overline{A}^R\right) = \beta^R$ because the final allocation is

$\{A, B\} = \mathbf{G}^{R*}$ when $D$ plays $S$ and $A = \overline{A}^R$.

**Lemma 3**

For $A \in \left[\overline{A}^S, \overline{A}^R\right]$, the preferences of the indifferent voter are described by the function $\nu^I(A) = \frac{\ln(1-\beta^\sigma)-\ln\left(1-\beta^R\right)}{\left[\ln\beta^R - \ln\beta^\sigma\right]+\left[\ln(1-\beta^\sigma)-\ln\left(1-\beta^R\right)\right]}$.

In the appendix, it is demonstrated that $\frac{\partial\nu^I(A)}{\partial A} > 0$, with $\lim_{A\to\overline{A}^R} \nu^I(A) = \beta^R$. That is, the identity of the indifferent voter is moved "to the right" as $A$ goes up, and in the limit (in this range of aid budgets), even a voter with a weight on the utility of $g_1$ equal to $\beta^R$ is indifferent between the two types of government! The latter is due to the fact that in the borderline case of $A = \overline{A}^R$, the outcome is $\{A, B\}$ regardless of which government is in power. What is happening is that as $A$ increases, the outcomes under the two types of governments are converging, c.f. Figure 3. In the end, they are the same and the label of the government does not matter for outcome-oriented voters. The country is effectively under foreign administration, and domestic politics therefore is devoid of any real content.

[Figure 3 about here]

If $\nu^M \in \left(\nu^I\left(\overline{A}^S\right), \nu^I\left(\overline{A}^R\right)\right)$, an $R$-government would have won in the absence of aid. $\nu^I\left(\overline{A}^S\right) = \nu^I_0$, which in turn lies between $\beta^S$ and $\beta^R$. Therefore, if $\nu^M > \nu^I\left(\overline{A}^S\right)$, $R$ would have been preferred to a $S$ by a majority of the voters if no aid was forthcoming. But with aid, there exists an aid budget $A' \in \left(\overline{A}^S, \overline{A}^R\right)$ such that $\nu^M = \nu^I(A')$ (since $\nu^I\left(\overline{A}^R\right) = \beta^R$, $\nu^M < \beta^R$, and $\frac{\partial\nu^I(A)}{\partial A} > 0$), c.f. Figure 4. Hence, for $A \in \left(A', \overline{A}^R\right)$, $R$ will now certainly lose the election!

[Figure 4 about here]

While this need not happen, it is clear that if aid decisively affects the domestic political equilibrium, it is in this direction. For $A \geq \overline{A}^R$, the electoral prospects of the two alternatives are always identical. If $\nu^M < \nu^I\left(\overline{A}^S\right)$, $R$ loses the election $\forall A < \overline{A}^R$. If $\nu^M > \nu^I\left(\overline{A}^R\right)$, $R$ wins the election when $A < \overline{A}^R$. Finally, as just noted, if $\nu^M \in \left(\nu^I\left(\overline{A}^S\right), \nu^I\left(\overline{A}^R\right)\right)$, $R$ is victorious as long as $A < A'$, has a 50% chance of winning at $A'$, and none for $A \in \left(A', \overline{A}^R\right)$.

Such an outcome would make $D$ worse off. Even though it has some influence with an $S$-government compared to none with an $R$-government, outcomes are still better under the latter from $D$'s point of view. In Figure 3, it is easily seen that for any $A$ in the region $\left[\overline{A}^S, \overline{A}^R\right)$, the point on $R$'s expansion path, which will be the outcome if it is in power, is closer to the corresponding point on $D$'s expansion path than $\{A, B\}$ is.

As already mentioned, the median voter model effectively demonstrates the mechanisms at work here. However, it is more realistic to assume that there is uncertainty about the distribution of voter preferences, for example because turn-out on election day is random. We can model this by letting $\nu^M$ be distributed according to $M(z)$, with $\frac{\partial M(z)}{\partial z} \equiv m(z) > 0 \; \forall z \in [\underline{\nu}, \overline{\nu}]$. Then the probability that $R$ wins the election, $p$, is the probability that $\nu^M > \nu^I$: $p = 1 - M\left(\nu^I\right)$. Let $p_0$ be the probability that $R$ is victorious when $A = 0$, i.e., $p_0 = 1 - M\left(\nu_0^I\right)$. From the above, it follows that

$$p(A) = \begin{cases} p_0, A < \overline{A}^S, \\ p\left(\nu^I(A)\right), A \in \left[\overline{A}^S, \overline{A}^R\right), \\ 0.5, A \geq \overline{A}^R. \end{cases} \tag{5}$$

Hence, $p(A)$ has two segments where it is constant, whereas for $A \in \left(\overline{A}^S, \overline{A}^R\right)$ $\frac{\partial p(A)}{\partial A} = -m\left(\nu^I(A)\right) \frac{\partial \nu^I(A)}{\partial A} < 0$. The reason $p(A)$ is declining over this particular range is that, as already mentioned, outcomes are converging for these values of $A$. More precisely, what is happening is that outcomes under an $S$-government ("represented" by $\sigma$) are converging to those under an $R$-government when $A$ goes up. This benefits $S$ as it moves the indifferent voter closer to $R$: someone who was previously indifferent must strictly be preferring an $S$-government when the Nash-equilibrium outcome under that type moves closer to its optimal allocation. Hence, the new indifferent voter must be someone whose preferences are closer to $\beta^R$, and so the likelihood that $\nu^M < \nu^I(A)$ rises. The lesson to be had is therefore that in terms of winning the election, it is advantageous to play the aid game if $D$ has partial influence over the equilibrium allocation only when you are in power.

It is interesting to compare this result to the ones generated by standard voting models.[15] In median voter models with two political alternatives and no uncertainty, there is complete convergence of positions when candidates can commit to post-election policies. This is due to the fact that electoral prospects can be increased discontinuously by moving closer to the median voter's most preferred policy. If the other alternative is located there, any other position would result in a certain loss come election day. In probabilistic voting models with policy-motivated candidates, there is no convergence if they cannot commit to specific post-election policies since

[15] See e.g. Persson and Tabellini (2000) for a survey.

voters can figure out that after the election they have no incentive to pursue any policy other than their most preferred one. Hence, promises to the contrary are not credible. However, if such commitment is possible there will be partial convergence because candidates will trade off the loss from having to implement a policy that is less than perfect from their perspective against the gain from increasing the probability of being able to choose policies instead of the opponent, who has other ideological proclivities. Here, even though the political alternatives are assumed not to be able to make binding election promises, and so will not by themselves bring about neither full nor partial convergence of positions, donor influence can result in either.

Returning to the model, let us say that the electorate is $R$-leaning if $p_0 > 0.5$ and $S$-leaning if $p_0 < 0.5$. The impact of aid on the probability that $R$ wins the election may now be summarised as follows:

**Proposition 2**

In the case of $\alpha > \beta^R > \beta^S$, the effect of aid on the likelihood that an $R$-government comes to power depends on the the amount of resources the donor possesses relative to the recipient country government:

a) When $A \leq \overline{A}^S$, aid has no impact on $p$.

b) When $A \in \left(\overline{A}^S, \overline{A}^R\right)$, playing the aid game reduces $p$.

c) When $A \geq \overline{A}^R$, $D$'s involvement reduces $p$ if the electorate is $R$-leaning, increases it if voters are $S$-leaning, and leaves it unaffected if none of the political alternatives has an electoral advantage when no aid is given.

We also have

**Corollary 1**

If $p_0 \geq 0.5$, then $p(A) \leq p_0 \; \forall A > 0$.

That is, only in the special case where $p_0 < 0.5$ and $A \geq \overline{A}^R$ does $D$ strenghten $R$'s chances of winning the election. This must be considered a special case, not only because it probably takes a lot of resources for $D$ to achieve complete control over outcomes but also because it seems highly detrimental to the long-run development of democracy in the recipient country. Why would anyone bother to run for office, let alone vote, when $D$ is effectively running the country's affairs?[16] This cannot be expected to be a stable long-run outcome. In the more realistic case of

[16]Of course, if there are non-policy benefits from being in power (due to e.g. valuing power for its own sake,

partial donor influence on outcomes, we have an unambiguous conclusion: the involvement of $D$ reduces the probability that its preferred political alternative comes to power.

## 5 The Case of the "Moderate" Donor

What happens when $D$ is a "moderate", its preferences being intermediate to the two potential recipient country governments, i.e., $\beta^R > \alpha > \beta^S$? Recall that in deriving the critical values of aid we are asking two questions: When can $D$ overfund its "favourite" good - the good for which it has the strongest relative preference - according to $j$'s tastes? When can $D$ secure the optimal level of provision of it? As the game played if $S$ is in power is the same as the one just discussed, the answers to these questions are obviously not affected by the change in the assumption on preferences. However, the second critical value of $A$ now needs to be indexed by $j$ because the corresponding cut-off rate will in this case be different if the game is played between $D$ and $R$. The roles of $D$ and $R$ are reversed, with the latter now seeking a share of $g_1$ in $C$ that is higher than the "first-best" level from the former's perspective. Accordingly, the critical level of the aid budget below which $R$ controls the outcome of the game is defined by $A = g_2^{R*}$, yielding $\overline{A}^R = \left(\frac{1-\beta^R}{\beta^R}\right) B$. The second cut-off rate may be calculated from $A = g_2^{D*} \Leftrightarrow A = \left(\frac{1-\alpha}{\alpha}\right) B \equiv \overline{\overline{A}}^R$.

Post-election outcomes still depend on the relative budgets of $D$ and $j$, but assuming $\beta^R > \alpha > \beta^S$ only ensures that $\overline{\overline{A}}^j > \overline{A}^j$. The ranking of the cut-off rates across aid games is now not uniquely pinned down. The reason is that, loosely speaking, the game is played in different dimensions with each possible government. Not only is the answer to the first question dependent on the type of government that is in power, $D$ also has a different "favourite" good in the two games: $g_2$ if it interacts with $R$, $g_1$ if its opponent is $S$. Formally, $\beta^R > \alpha > \beta^S$ implies $1-\beta^S > 1-\beta^R$, but $\overline{A}^R \gtreqless \overline{A}^S \Leftrightarrow 1-\beta^S \gtreqless \beta^R$. And the answer to the second question in this case also hinges on whether $D$ plays $R$ or $S$: $\overline{\overline{A}}^R \gtreqless \overline{\overline{A}}^S \Leftrightarrow \frac{1}{2} \gtreqless \alpha$.

The fact that the ranking of the cut-off rates is not unique in this case means that the political impact of aid is more complex. Potentially, there are two new real electoral alternatives. Firstly, when $\alpha \neq \frac{1}{2}$, either $\overline{\overline{A}}^R > \overline{\overline{A}}^S$ or $\overline{\overline{A}}^R < \overline{\overline{A}}^S$. In both cases $\mathbf{G}^{D*}$ is a Nash-equilibrium

lavish salaries, or possibilities of corruption), there would still be candidates for office. But this would do nothing to entice voters to take the trip to the polling stations.

outcome under one of the types of recipient government for levels of $A$ between these two critical values. Hence, if this type wins the election outcomes correspond to those that would occur if a government with the same preferences as $D$ - a $D$-government - was unilaterally deciding on how to allocate $C$. Secondly, when $A \in \left[\overline{A}^R, \overline{\overline{A}}^R\right]$ $\mathbf{G}^N(R) = \{B, A\}$. In analogy with Lemma 2 we then have

**Lemma 4**

When the Nash-equilibrium outcome under an $R$-government is $\{B, A\}$, it is equivalent to a $\rho$-government. The weight $\rho$ attaches to the utility of consuming $g_1$ is $\beta^\rho(A) = \frac{B}{C} \in \left[\alpha, \beta^R\right]$, with $\frac{\partial \beta^\rho(A)}{\partial A} < 0$.

Of course, it is still the case that if $D$ enters the game with a large enough relative budget all voters are indifferent to the type of government elected. This is now true for $A \geq Max\left\{\overline{\overline{A}}^R, \overline{\overline{A}}^S\right\}$. Thus in the following I mainly focus on situations where $A < Max\left\{\overline{\overline{A}}^R, \overline{\overline{A}}^S\right\}$. Table 2 lists the possible true political alternatives facing voters when $A$ takes on values for which the election process is meaningful, as well as $\nu^I(A)$ and $\frac{\partial \nu^I(A)}{\partial A}$ in each case.

[Table 2 about here]

The values of $\nu^I(A)$ follows from the fact that the indifferent voter must be someone with preferences intermediate to those of the true electoral choices. In turn, these are found by noting that for $A < \overline{A}^j$ the choice $j$ listed on the ballott is the real one, whereas it is represented by $\rho$ or $\sigma$, as the case may be, for $A \in \left[\overline{A}^j, \overline{\overline{A}}^j\right)$ and equivalent to $D$ when $A > \overline{\overline{A}}^j$. Since all voters are indifferent between $R$ and $S$ for $A > Max\left\{\overline{\overline{A}}^R, \overline{\overline{A}}^S\right\}$ there are eight possible combinations of true election alternatives for which $\nu^I(A)$ is defined (three times three minus one). For example, when $A \leq Min\left\{\overline{A}^R, \overline{A}^S\right\}$, aid has no impact on outcomes under either "official" alternative. Therefore, the choices presented to voters at the polling stations are the real ones and so $\nu^I(A) = \nu_0^I$. More generally, whenever the true alternatives are "fixed", $\nu^I(A)$ is constant, whereas $\frac{\partial \nu^I(A)}{\partial A}$ is non-zero whenever a change in $A$ alters outcomes under one of them. The special case of $\rho$ vs. $\sigma$ yields outomes of $\{B, A\}$ and $\{A, B\}$, respectively, making the true alternatives mirror images of one another.[17] Hence, only someone putting equal weight on the utility derived from each of the two goods can be indifferent to them.

[17] This may also be deduced from the fact that $\beta^\rho(A) = 1 - \beta^\sigma(A)$.

Letting $-j$ denote the other type of government, i.e., if $j = S$ then $-j = R$, we can now state the first results:

**Proposition 3**

If $\overline{A}^{j} \leq \overline{A}^{-j} < \overline{\overline{A}}^{-j} \leq \overline{\overline{A}}^{j}$, $\frac{\partial\left|\nu^{I}(A)-\beta^{j}\right|}{\partial A} \geq 0$. Then $j$'s electoral prospects are not hurt by increases in $A$ on $\left[0, Max\left\{\overline{\overline{A}}^{R}, \overline{\overline{A}}^{S}\right\}\right)$.

**Corollary 2**

If $\overline{A}^{j} \leq \overline{A}^{-j} < \overline{\overline{A}}^{-j} \leq \overline{\overline{A}}^{j}$, with at least one inequality strict, $\exists\widetilde{A}$ such that $p(A) > p_0$ $\forall A \in \left(\widetilde{A}, Max\left\{\overline{\overline{A}}^{R}, \overline{\overline{A}}^{S}\right\}\right)$ for $j = R$ and $p(A) < p_0$ $\forall A \in \left(\widetilde{A}, Max\left\{\overline{\overline{A}}^{R}, \overline{\overline{A}}^{S}\right\}\right)$ for $j = S$.

In plain English: the best possible ranking of cut-off rates in terms of winning the election for type $j$ is $\overline{A}^{j} < \overline{A}^{-j} < \overline{\overline{A}}^{-j} < \overline{\overline{A}}^{j}$. That is, it pays to be a type against which $D$ rather easily gains some influence over outcomes (i.e., to have a relatively low $\overline{A}^{j}$) but finds it harder to dominate completely (i.e., to have a relatively high $\overline{\overline{A}}^{j}$). This will create two segments of the domain ($\left[\overline{A}^{j}, \overline{A}^{-j}\right)$ and $\left[\overline{\overline{A}}^{-j}, \overline{\overline{A}}^{j}\right)$) over which you are forced to converge towards the outcome under the other type of government, moving $\nu^{I}(A)$ away from you. Recalling that in terms of winning the election this is beneficial as it increases the likelihood that the median voter is located on your side of $\nu^{I}(A)$, such a parameter configuration is advantageous to $j$. And as long as the ranking of the two kinds of critical values is not reversed, at the very least your opponent cannot gain politically from playing the post-election game with $D$ for values of aid for which the electoral process is still meaningful.

I now assume $\alpha > \nu_0^I$, which amounts to saying that the preferences of a type $R$ government are more closely aligned with those of $D$ in this case too.[18] In this case, however, such an assumption is not sufficient to ensure that donor influence will hurt $R$'s electoral prospects. This is due to the above mentioned fact that $R$ and $S$ now play $D$ in different dimensions. In order to make outcomes under the two preference configurations directly comparable, we will have to do away with this additional aspect of the games played when the donor is a "moderate". If we

[18] The case $\alpha < \nu_0^I$ is analogous to $\alpha > \nu_0^I$, the only change being the reversal of the roles of the two types of recipient government. Also note that the results below go through if I make the alternative assumption $\alpha > \frac{1}{2}\left(\beta^{R} + \beta^{S}\right)$. This would be equivalent to assuming that the Euclidean distance between $\mathbf{G}^{D*}$ and $\mathbf{G}^{R*}$ is smaller than that between $\mathbf{G}^{D*}$ and $\mathbf{G}^{S*}$, i.e., that the expansion paths of $D$ and $R$ are located closer in $\{g_1, g_2\}$-space than those of $D$ and $S$.

do so, Proposition 4 follows:

**Proposition 4**

If $\beta^S = 1 - \beta^R$, $\alpha > \nu_0^I$, and $p_0 \geq 0.5$, then $p(A) \leq p_0 \; \forall A > 0$.

The assumption $\beta^S = 1 - \beta^R$ equates the possibilities for D to have partial impact on outcomes under the two types of government by locating them symmetrically around $\frac{1}{2} = \nu_0^I$. Hence, $\overline{A}^S = \overline{A}^R$ and the assumption $\alpha > \nu_0^I$ then ensures that $\overline{\overline{A}}^R < \overline{\overline{A}}^S$. In this case it is easier for D to gain complete control over outcomes when facing $R$, and so $p(A)$ is decreasing in $A$ on $\left[\overline{\overline{A}}^R, \overline{\overline{A}}^S\right)$. Assuming that $R$ is not at an electoral disadvantage if no aid is forthcoming means that even when all voters are indifferent between the two formal political alternatives $R$ cannot gain politically from playing the aid game.

The general lessons from this section and the last are thus first of all that whenever $D$ has at least some leverage over outcomes aid affects the election outcome in a probabilistic sense[19]. Secondly, other things being equal this tends to be to the disadvantage of the political alternative in the recipient country that is closer to $D$ politically.

# 6 Concluding Discussion

When discussing the links between foreign aid and recipient country politics, there are two important questions that need to be addressed: Is donor influence feasible? Is it desirable? I demonstrate that even in the absence of conditionality, donor influence is a theoretical possibility. I have not explicitly modelled conditionality because it cannot be expected to work well. It is clearly possible to design "contracts" which would hold governments to their participation constraints,[20] but there are no courts in which to enforce these. Thus one is left with the carrot and stick of giving or withholding financial assistance. Whether such threats and promises are

[19] The only exception to this statement is for $\beta^S = 1 - \beta^R$, $\alpha = \frac{1}{2}$, and $p_0 = 0.5$. For this knife-edge parameter configuration $\overline{A}^R = \overline{A}^S < \overline{\overline{A}}^R = \overline{\overline{A}}^S$, and so $p(A) = 0.5 \; \forall A \geq 0$. The reason is that in this special case $\alpha = \nu_0^I$ and the two potential governments are symmetrically located around this point, making them converge towards $G^{D*}$ at identical rates for $A \in \left[\overline{A}, \overline{\overline{A}}\right]$. Assuming $\alpha > \nu_0^I$ rules out this possibility.

[20] On the design of formal aid contracts, see Azam and Laffont (2003), Pedersen (1995a,b), Svensson (2000b), and Torsvik (2002). Killick (1998) discusses the principal-agent approach to multilateral lending based on an extensive review of the empirical literature and new country case studies from South-East Asia and Latin-America.

credible, and if credible, sufficient, to affect policies in recipient countries must then be examined. The literature on the Samaritan's Dilemma in foreign aid leads one to conclude that on theoretical grounds one should not expect this to be the case.[21]

Empirically, as mentioned in the introduction, reviews of the effectiveness of conditionality in inducing policy reform are generally negative. In a large cross-country sample, Burnside and Dollar (2000) find that aid seems to have had little impact on economic policies in recipient countries.[22] Relying on case studies, Killick (1998: 171-172) reaches a similar conclusion: "[D]omestic political forces normally carry the day in decisions about economic policy."[23] These findings have contributed to an emerging consensus expressed well by the following quotation from Dollar and Svensson (1998: 4): "[T]he role of adjustment lending is to identify reformers not to create them."[24]

While not directly contradicting the potential benefits of aid selectivity, my results provide a cautionary note to donors seeking them. First of all, neither conclusions based on averages nor general impressions from specific country studies rule out contrarian findings in some countries at some points in time.[25] More importantly, if donors starts to apply aid selectivity, and there is some evidence that this is the case (see Dollar and Levin 2004), for given total budgets some

[21] See e.g. Hagen (2003), Pedersen (1996, 2001) and Svensson (2000b).

[22] Admittedly, much can be said about the construction of their "policy index", consisting of measures of inflation, budget surplus, and trade openness, even beyond the obvious that strictly speaking none of the components are policy variables.

[23] This viewed is also echoed by Devarajan, Dollar, and Holmgren (2001b: 34-35) in their summary of a set of African case studies: "All of the case studies agree that economic policy is primarily driven by domestic politics, not by outside agents. [...] In the pre-reform phase in which the government is not committed to reform, conditional loans have generally been a farce in which the government agrees to measures it does not believe in as a way to get funding, fail to carry them out, and then receives the funding from donors anyway."

[24] These authors consider a range of political variables such as regime type and degree of political instability, as well as input variables under the control of the World Bank (e.g. amount of resources allocated to loan preparation and supervision). They find that the former predicts reform success (as defined by the Operations Evaluation Department of the Bank) in a sample of adjustment loans made by the World Bank, while there is no connection between the latter and outcomes.

[25] In a panel of recipient countries, Hagen and Hatlebakk (2003) do find that some donors seem to have influenced levels of social spending. Devarajan, Dollar, Holmgren (2001b) also claim that in some circumstances aid affects policies.

recipients must be receiving more assistance. The current emphasis on reaching the Millenium Development Goals may also lead to higher total levels of aid.[26] According to my model, it is then more likely that we will see donor influence over outcomes and thus to lower probabilities of winning elections for governments with the intention of pursuing policies more to the donors' liking than their political opponents.

Of course, it is difficult to predict whether this will happen as it requires intimate knowledge of the political economy of each recipient country. But this is in any case inherent to the pursuit of a strategy of aid selectivity. Governments change, particularly in low-income countries, which are more unstable politically than high-income countries. Sometimes, and more regularly in recent years, this is by democratic means. It is therefore not only the intentions of the current government that must be probed, the path of likely governments must be forecasted. This requires a greater understanding of the political economy of recipient countries - e.g. how interests are organised, the ideology of the main parties, and the electoral system - in order to be able to predict the impact of aid on the distribution of income among politically influential groups, the support of political parties, and, ultimately, what policies will be adopted, implemented, and sustained in the domestic political equilibrium.[27] This paper constitutes but a small part of such a research project, to which I hope to contribute in the future.

# 7 Appendix: Political Equilibrium with Aid

*Proof of Lemma 1*

Let $\Delta V^i = U^i\left(\mathbf{G}^N(R)\right) - U^i\left(\mathbf{G}^N(S)\right)$ be voter $i$'s utility differential from having $R$ in power instead of $S$. The indifferent voter is defined by $\Delta V^i \equiv 0 \Leftrightarrow \nu_0^I \ln g_1^{R*} + \left(1-\nu_0^I\right) \ln g_2^{R*} = \nu_0^I \ln g_1^{S*} + \left(1-\nu_0^I\right) \ln g_2^{S*}$. Using $(3b)$ in the main text to replace $g_k^{j*}$ and rearranging yields the

[26] Devarajan, Miller, and Swanson (2002) estimate that compared to 2000 official aid needs to be roughly doubled if the goals are to be met by the target date of 2015.

[27] It should be noted that policy choice is a function not only of political preferences, but of beliefs about the links between policies and outcomes. Beliefs might change even when ideologies do not, whether on the basis of accumulated experience or through persuasion. So even when buying influence is too costly, careful analysis of where to put one's bets in combination with a policy dialogue based on long-standing relationships might enable donors to make a difference.

expression for $\nu_0^I$ stated in the lemma. To see that $\nu_0^I \in \left(\beta^S, \beta^R\right)$, first note that for $\nu^i = \beta^R$, we must have $\Delta V^i > 0$ while for $\nu^i = \beta^S$ it must be the case that $\Delta V^i < 0$. Moreover,

$$(A1a)\frac{\partial \Delta V^i}{\partial \nu^i} = \left[\ln \beta^R - \ln \beta^S\right] + \left[\ln\left(1-\beta^S\right) - \ln\left(1-\beta^R\right)\right] > 0; \tag{A1a}$$

$$(A1b)\frac{\partial^2 \Delta V^i}{\partial \left(\nu^i\right)^2} = 0. \tag{A1b}$$

Hence, the value of $\nu^i$ such that $\Delta V^I = 0$, which I denote by $\nu_0^I$, lies between $\beta^S$ and $\beta^R$. Assuming $\left[\beta^S, \beta^R\right] \subseteq [\underline{\nu}, \overline{\nu}]$ is sufficient to ensure $\nu_0^I \in (\underline{\nu}, \overline{\nu})$. For future reference, note that straightforward calculations show that $\nu_0^I \gtreqless \frac{1}{2} \Leftrightarrow \beta^S \gtreqless 1 - \beta^R$. QED.

*Proof of Lemma 2*

The "virtual" representative of $S$ in operation for $A \in \left[\overline{A}^S, \overline{A}^R\right]$ is denoted by $\sigma$ and defined to be the kind of government that would have optimally chosen the Nash-equilibrium outcome generated under an $S$-government if it could determine the allocation of $C$ on its own. Since $g_1^N(S) = A$ for such values of $A$, the preferences of $\sigma$ can be derived from $\beta^\sigma C = A \Leftrightarrow \beta^\sigma(A) = \frac{A}{C}$. We thus have $\frac{\partial \beta^\sigma(A)}{\partial A} = \frac{B}{C^2} > 0$. It is easily checked that $\beta^\sigma\left(\overline{A}^S\right) = \beta^S$ and $\beta^\sigma\left(\overline{A}^R\right) = \beta^R$. By assumption $\beta^R > \beta^S$. It follows that $\beta^\sigma(A) \in \left[\beta^S, \beta^R\right]$. QED.

*Proof of Lemma 3*

For $A \in \left[\overline{A}^S, \overline{A}^R\right)$, $\nu^I(A)$ is defined by $U^I\left(\mathbf{G}^N(R)\right) = U^I\left(\mathbf{G}^{R*}\right) \equiv U^I\left(\mathbf{G}^{\sigma*}\right)$, i.e., it is the weight placed on the utility of private consumption by the voter who is indifferent between electing $R$ (which will see its optimal allocation of $C$ realised if it comes to power) and $S$ (represented by $\sigma$). Using the procedure applied in the proof of Lemma 1 one can verify that $\nu^I(A)$ is given by the expression in Lemma 3 and that $\nu^I(A) \in \left(\beta^\sigma(A), \beta^R\right)$, $\forall A \in \left[\overline{A}^S, \overline{A}^R\right)$. The derivative of $\nu^I(A)$ with respect to $A$ is

$$\frac{\partial \nu^I(A)}{\partial A} = \left[\frac{1}{\ln\frac{\beta^R}{\beta^\sigma} + \ln\frac{(1-\beta^\sigma)}{\left(1-\beta^R\right)}}\right] \frac{\partial \beta^\sigma}{\partial A}\left[\frac{\nu^I}{\beta^\sigma} - \frac{1-\nu^I}{1-\beta^\sigma}\right], \tag{A2}$$

which is positive $\forall A \in \left[\overline{A}^S, \overline{A}^R\right)$ since $\nu^I(A) \in \left(\beta^\sigma(A), \beta^R\right)$ and $\frac{\partial \beta^\sigma(A)}{\partial A} > 0$. We have

$$\lim_{A \to \overline{A}^R} \nu^I(A) = \lim_{A \to \overline{A}^R} \frac{\frac{1}{1-\beta^\sigma}}{\frac{1}{\beta^\sigma} + \frac{1}{1-\beta^\sigma}} = \beta^R. \tag{A3}$$

QED.

*Proof of Proposition 2*

$p(A)$ is obviously constant when $\nu^I(A)$ is. For $A < \overline{A}^S$, $p(A) = p\left(\nu_0^I\right) \equiv p_0$. For $A \geq \overline{\overline{A}}$, all voters are indifferent. They are then assumed to flip fair coins to decide which alternative to vote for, resulting in $p(A) = 0.5$. For $A \in \left[\overline{A}^S, \overline{A}^R\right)$, $\frac{\partial \nu^I(A)}{\partial A} > 0$ and $\nu^I(A) \in \left(\left(\beta^\sigma(A), \beta^R\right)\right) \subset [\underline{\nu}, \overline{\nu}]$ (c.f. proof of Lemma 3). By assumption $m(z) > 0$ $\forall z \in [\underline{\nu}, \overline{\nu}]$. Hence, $\frac{\partial p(A)}{\partial A} = -m\left(\nu^I(A)\right)\frac{\partial \nu^I(A)}{\partial A} < 0$. QED.

*Proof of Corollary 1*

It is immediate from Proposition 2 that in this case $p(A) = p_0 > 0.5$ when $A < \overline{A}^S$, declines towards 0.5 on $\left[\overline{A}^S, \overline{A}^R\right)$, and equals 0.5 for $A \geq \overline{\overline{A}}$. QED.

*Proof of Lemma 4*

A $\rho$-government is defined by $\mathbf{G}^{\rho*} = \{B, A\}$, the Nash-equilibrium outcome for $j = R$ when $D$ has partial influence over outcomes. Thus $\beta^\rho C = B \Leftrightarrow \beta^\rho(A) = \frac{B}{C}$ and $\frac{\partial \beta^\rho(A)}{\partial A} = -\frac{B}{C^2} < 0$. Note that $\beta^\rho(A) = 1 - \beta^\sigma(A)$ and $\frac{\partial \beta^\rho(A)}{\partial A} = -\frac{\partial \beta^\sigma(A)}{\partial A}$. QED.

*Proof of Proposition 3*

From the proof of Proposition 2, we know that $sign\ \frac{\partial p(A)}{\partial A} = -sign\ \frac{\partial \nu^I(A)}{\partial A}$. As the probability that $S$ wins is $1 - p(A)$, $sign\ \frac{\partial[1-p(A)]}{\partial A} = sign\ \frac{\partial \nu^I(A)}{\partial A}$. For $A \leq Min\left\{\overline{A}^j, \overline{A}^{-j}\right\}$ $\nu^I(A) = \nu_0^I$. $\nu^I(A)$ is also constant for $A \in \left[Max\left\{\overline{A}^j, \overline{A}^{-j}\right\}, Min\left\{\overline{\overline{A}}^j, \overline{\overline{A}}^{-j}\right\}\right]$; specifically, the true political alternatives are then $\rho$ and $\sigma$ (see Table 2) and so $\nu^I(A) = \frac{1}{2}$ (since $\beta^\rho(A) = 1 - \beta^\sigma(A)$, c.f. Proof of Lemma 4). In both of these cases, $\frac{\partial\left|\nu^I(A) - \beta^j\right|}{\partial A} = 0$. This completes the proof when $\overline{A}^j = \overline{A}^{-j}$ and $\overline{\overline{A}}^j = \overline{\overline{A}}^{-j}$. If $j = S$ and $\overline{A}^S < \overline{A}^R$, then $\frac{\partial\left|\nu^I(A) - \beta^j\right|}{\partial A} = \frac{\partial \nu^I(A)}{\partial A} > 0$ for $A \in \left[\overline{A}^S, \overline{A}^R\right)$. Similarly, If $j = S$ and $\overline{\overline{A}}^R < \overline{\overline{A}}^S$, then $\frac{\partial\left|\nu^I(A) - \beta^j\right|}{\partial A} = \frac{\partial \nu^I(A)}{\partial A} > 0$ for $A \in \left[\overline{\overline{A}}^R, \overline{\overline{A}}^S\right)$. In both situations $S$ is represented by $\sigma$ and $\beta^\sigma(A)$ moves towards the fixed position of $R$ ($\beta^R$ in the first case, $\alpha$ in the second) as $A$, and hence $1 - p(A)$, goes up. A corresponding analysis for $j = R$ establishes that $p(A)$ is increasing on $\left[\overline{A}^R, \overline{A}^S\right)$ and $\left[\overline{\overline{A}}^S, \overline{\overline{A}}^R\right)$ because for such parameter values $\nu^I(A)$ is decreasing over these intervals. QED.

*Proof of Corollary 2*

Follows directly from the proof of Proposition 3, with $\widetilde{A} = \overline{A}^{-j}$ if $\overline{A}^j < \overline{A}^{-j}$ and $\overline{\overline{A}}^j \leq \overline{\overline{A}}^{-j}$ and $\widetilde{A} = \overline{\overline{A}}^{-j}$ if $\overline{A}^j = \overline{A}^{-j}$ and $\overline{\overline{A}}^{-j} < \overline{\overline{A}}^j$. QED.

*Proof of Proposition 4*

In the proof of Lemma 2 it was established that $\nu_0^I \gtreqless \frac{1}{2} \Leftrightarrow \beta^S \gtreqless 1-\beta^R$. So $\beta^S = 1-\beta^R$ is equivalent to both $\overline{A}^S = \overline{A}^R$ and $\nu_0^I = \frac{1}{2}$. Hence assuming $\alpha > \nu_0^I$ in this case implies $\alpha > \frac{1}{2}$ and we have $\overline{\overline{A}}^S > \overline{\overline{A}}^R$. It follows that $p(A) = p_0$ for $A < \overline{\overline{A}}^R$ and then declines over $\left[\overline{\overline{A}}^R, \overline{\overline{A}}^S\right)$ as $\nu^I(A)$ rises (c.f. the proofs of propositions 2 and 3). Finally, by assumption $p_0 \geq 0.5 = p(A)$ $\forall A \geq \overline{\overline{A}}^S$. QED.

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Figure 1: Regional averages of democracy

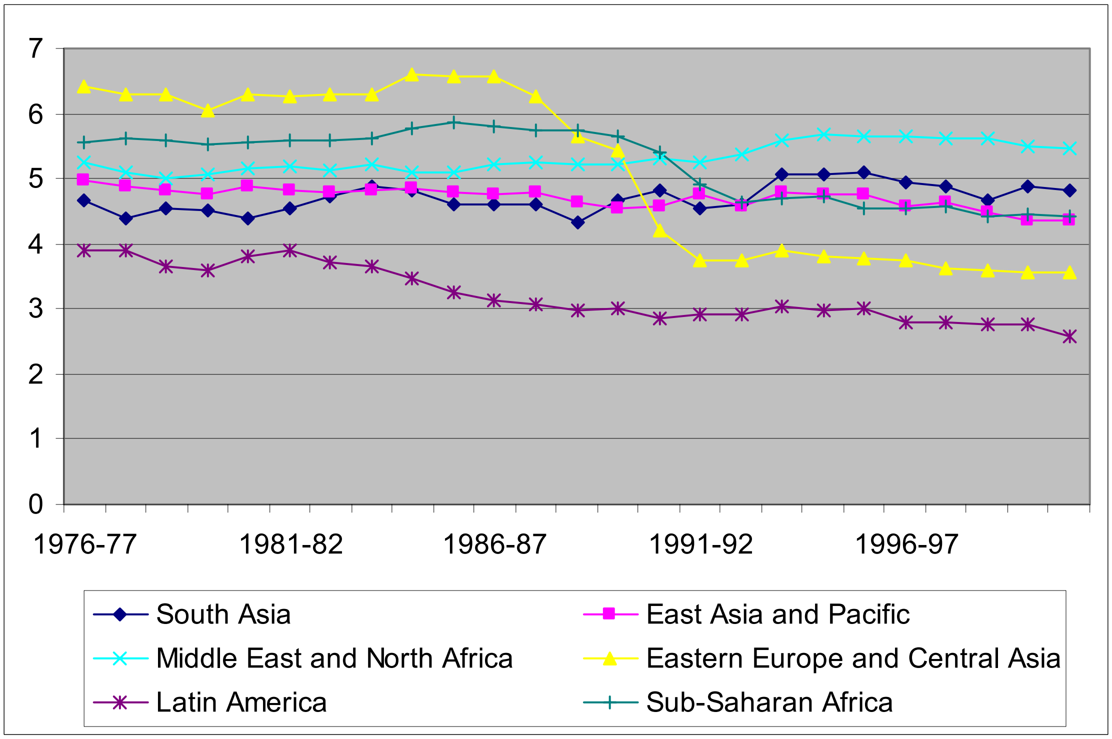


Figure 2: Nash-equilibrium outcomes as functions of the aid budget

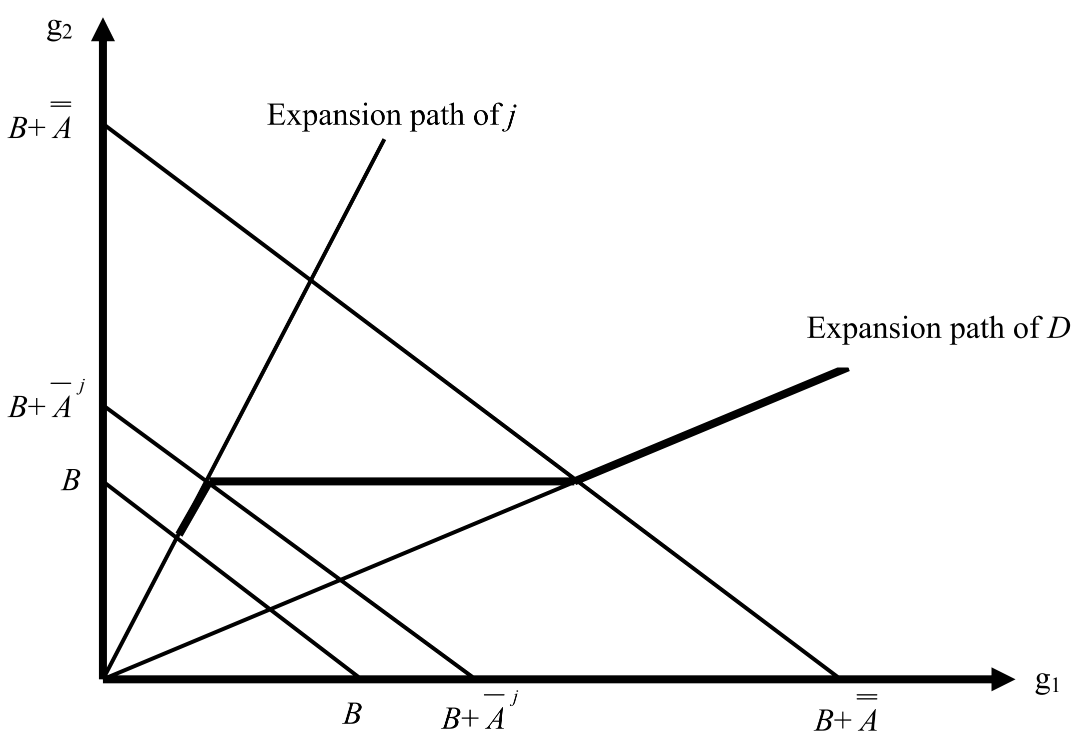

Figure 3: Convergence of outcomes under *R*- and *S*-governments, $\alpha > \beta^R > \beta^S$

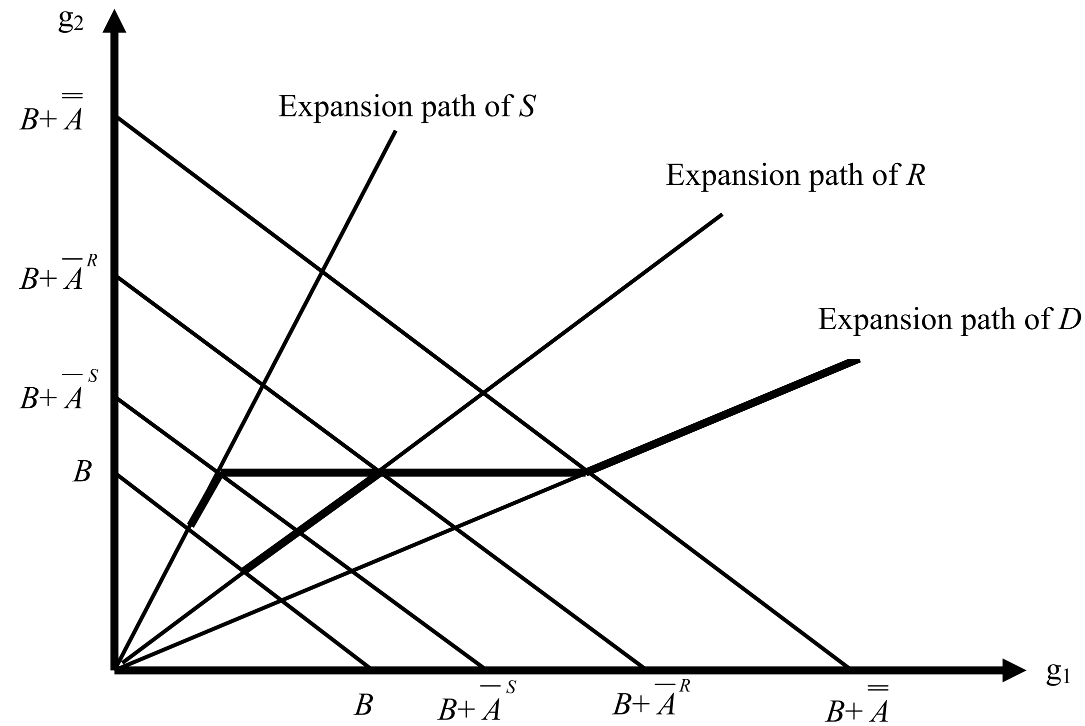


Figure 4: Aid and Elections

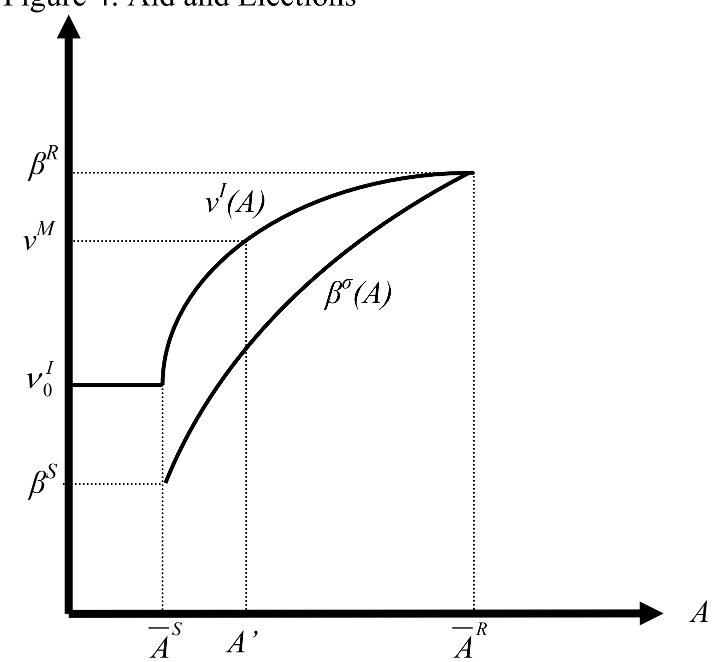

Table 1: Nash-equilibrium outcomes under different types of governments, $\alpha > \beta^R > \beta^S$

| *A/j* | *R* | *S* |
|---|---|---|
| $\left[0, \overline{A}^S\right]$ | $\left\{g_1^{R*}, g_2^{R*}\right\}$ | $\left\{g_1^{S*}, g_2^{S*}\right\}$ |
| $\left(\overline{A}^S, \overline{A}^R\right]$ | $\left\{g_1^{R*}, g_2^{R*}\right\}$ | $\left\{A, B\right\}$ |
| $\left(\overline{A}^R, \overline{\overline{A}}\right]$ | $\left\{A, B\right\}$ | $\left\{A, B\right\}$ |
| $> \overline{\overline{A}}$ | $\left\{g_1^{D*}, g_2^{D*}\right\}$ | $\left\{g_1^{D*}, g_2^{D*}\right\}$ |

Table 2: Properties of $v^I(A)$ for possible electoral alternatives, $\beta^R > \alpha > \beta^S$

| Real electoral alternatives | *A* | $v^I(A)$ | $\partial v^I / \partial A$ |
|---|---|---|---|
| *R vs. S* | $< Min\left\{\overline{A}^R, \overline{A}^S\right\}$ | $v_0^I$ | 0 |
| *R vs. σ* | $\left[\overline{A}^S, \overline{A}^R\right)$ | $\left(\beta^\sigma(A), \beta^R\right)$ | + |
| *R vs. D* | $\left[\overline{\overline{A}}^S, \overline{A}^R\right)$ | $\left(\alpha, \beta^R\right)$ | 0 |
| *ρ vs. S* | $\left[\overline{A}^R, \overline{A}^S\right)$ | $\left(\beta^S, \beta^\rho(A)\right)$ | - |
| *ρ vs. σ* | $\left[Max\left\{\overline{A}^R, \overline{A}^S\right\}, Min\left\{\overline{\overline{A}}^R, \overline{\overline{A}}^S\right\}\right)$ | *1/2* | 0 |
| *ρ vs. D* | $\left[\overline{\overline{A}}^S, \overline{\overline{A}}^R\right)$ | $\left(\alpha, \beta^\rho(A)\right)$ | - |
| *D vs. S* | $\left[\overline{\overline{A}}^R, \overline{A}^S\right)$ | $\left(\beta^S, \alpha\right)$ | 0 |
| *D vs. σ* | $\left[\overline{\overline{A}}^R, \overline{\overline{A}}^S\right)$ | $\left(\beta^\sigma(A), \alpha\right)$ | + |