Aid and the Soft Budget Constraint*

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Abstract

This paper applies the theory of the soft budget constraint to explain some stylized facts regarding the outcomes and practice of international aid, including ineffectiveness, white elephants, and volatility. The soft budget constraint can also make aid counterproductive. Nonetheless, actual aid institutions may be constrained optimal responses to soft budgets and commonly suggested reforms such as improved donor coordination, focus on fewer countries and projects, and less volatility may lower the effectiveness of aid. The soft budget is also consistent with conservative project selection and the recent focus on “ownership”.
1. Introduction

Most people believe that foreign aid does not work as well as it could, many believe that it does not work at all, and some believe that aid is counter-productive. The causes may include geography, aid tying, donor bureaucratic inefficiency, absorption incapacity, and donor non-development objectives, such as during the cold war. However, the most commonly identified suspect is the poor incentives of those in the developing world who receive and control foreign aid (Rajan and Subramanian, 2007; Brautigam and Knack, 2004). Reflecting this view, a literature growing from the 1980s has considered how to discipline recipients through incentive schemes. A problem in practice, however, has been the non-credibility of threats to reduce aid when recipients violate the implicit contract (Collier, 1997; Easterly, 2002a).

Surprisingly, solutions to the credibility problem are fairly unexplored. Among a handful of papers, Svensson (2000a) suggests delegating aid to a less poverty-averse agency or using tied aid. This commits the donor not to help the poor in low performance countries ex-post if the country’s government does not help them. Similarly, in Torsvik (2005) donors may be better off if they cannot coordinate on non-contractible aid. This is because donors view aid as a public good and the rise in aid due to coordination would crowd out the government’s incentive to spend on the poor. Kletzer (2005) shows that repeated interaction can partly compensate for donor time-inconsistency, while Azam and Laffont (2003) derive optimal aid contracts with moral hazard and adverse selection due to private information on the part of the government.

Recipients do seem to be constrained by donors in practice. For example, even self-interested governments fund health clinics, infrastructure, and schools for beneficiaries who lack independent political or economic clout. In this paper, I use a partial control assumption to develop new explanations for several stylized facts relating to the outcomes and practice of international aid. While other explanations have been offered for each of the stylized facts, my framework explains them from a single perspective. An important suggestion from the analysis is that aid institutions, rather than being part of the problem of aid inefficiency (Easterly, 2002a; OECD, 2003), may be part of the solution.

I approach the partial donor control problem as follows. First, I assume that donors can choose the general class of projects their funds are used for. However, within the project class, there is adverse selection or moral hazard (Kilby, 2001; OECD, 2003). For example, donors
may have no problem ensuring that a school, health clinic, electricity plant, or road is built, but ensuring quality and work effort in the long run may be a problem. This view is consistent with the appearance of “white elephants”, understood as incomplete or poorly maintained development projects. Second, as in Dewatripont and Maskin (1995) I assume that projects involve significant sunk costs. This would be true for the examples above even with counterfactually well-functioning secondary asset markets in developing countries. The sunk cost creates a wedge between the ex-ante and ex-post financing decision which, by leading to a soft budget problem, can promote adverse selection and moral hazard ex-ante. The focus of the paper is on the implications and institutional responses of principals to the problem of the soft aid budget.¹

The paper makes two contributions. First, it shows how the theory of the soft budget, developed by the economic planning and transition literatures, offers a unified explanation for a range of stylized facts regarding aid. In the aid literature itself, a different model is generally used to explain a different stylized fact. Second, in subsections 3.6-3.9 I extend the soft budget constraint model of Dewatripont and Maskin (1995) to explain some special aid topics, including white elephants, the volatility of aid, and why aid can fail to raise or even lower the national income of the recipient. Until subsection 3.9, however, I abstract from the macroeconomics of aid, such as real exchange rate, structural change and political economy issues, and trade and transfer effects (Rajan and Subramanian, 2005; Svensson, 2000b; Lahiri et al., 2002; Abe and Takarada, 2005; Aiyar, Berg and Hussain, 2005).

2. The Soft Budget Constraint

The soft budget constraint refers to the expectation of a bailout by an entity – e.g. a firm, project manager, or subnational government - in case of financial distress. To explain the soft budget, Kornai (1980) cites government paternalism and high social and political costs of worker layoffs, Shleifer and Vishny (1994) point to politicians subsidizing firms to sustain inefficiently high employment levels², and Segal (1998) argues that soft budgets are due to government social surplus maximization when firms are imperfectly competitive. In Segal’s model, the inability of the government to commit to the amount of the subsidy implies that firms underinvest, not only relative to the efficient (competitive) outcome, but also to the outcome without subsidies.
Wildasin (1997) shows a result analogous to that of Segal in a setting where local public goods provide external economies. In Wildasin’s model, again due to the inability of the central government to commit to the amount of the subsidy, regional governments provide even less of the public good than in the no subsidy case. In Perotti (1993), also, external economies divorce social and private incentives, causing a soft budget. In that paper, enterprise arrears imply that one bankruptcy would lead to another. In Dewatripont and Maskin (1995) a sunk initial financing cost implies that the cost of completion at the interim stage of a project is less than the cost \textit{ex-ante}. Inefficient projects may be funded because the principal only learns the project quality at the interim stage. This explanation of the soft budget constraint has been very influential and inspired much subsequent work.

2.1. \textit{Soft Budgets and Aid}

Soft budgets appear to be common in developing countries (Skoog, 2000; Raiser, 1997), probably because governments tend to be heavily involved in the finance and regulation of economic activity; use public investment to pursue political economy objectives (Bates, 1981); are poorly able to resist rent-seeking pressure; and lack control and information in regard to lower-level governments despite supplying them with funds. Evidence also suggests that budgets are soft in donor-recipient relations: developed countries maximize poverty alleviation or strategic objectives and generally not the same objectives as receiving governments; policies that appear detrimental to development are not penalized by aid cutoffs (Easterly, 2002a; Collier, 1997); and agency problems are commonly cited by aid practitioners. In 1999, 17 countries in Africa received overseas development assistance worth at least half their government expenditures and 27 countries received at least a quarter’s worth, after correcting for principal repayments (Brautigam and Knack, 2004).

2.2. \textit{Solutions}

The inefficiencies due to the soft budget arise because the principal cannot commit to a hard budget. However, commitment generally requires institutional change (Roland, 2000). Among the proposed solutions, several involve decentralization. First, \textit{fiscal decentralization} may be effective when local governments compete for private investment by providing public goods (Qian and Roland, 1998) or generate external economies (Wildasin, 1997). Second, \textit{financial
Decentralization can be effective when the decentralized principals are small enough to lack liquidity ex-post and external sources of finance are less able to monitor the project (Dewatripont and Maskin, 1995), or when the external sources engage in a war of attrition due to private information about their project continuation values (Povel, 1995). Lastly, production decentralization is shown effective in Segal (1998). The idea here is that with a socially excessive number of projects, even a welfare maximizing government without commitment bails out with probability less than one ex-post, which can deter opportunism ex-ante. Related, deregulation and privatization can raise the cost of interference by a government principal (Shleifer and Vishny, 1994). However, with less oversight also moral hazard and adverse selection may increase, raising the likelihood of need for bailouts (Qian, 1994; Roland, 2000, p. 221). Other possibilities include government transparency, central bank independence, fiscal reforms, monetary centralization, and capital market liberalization (Qian and Roland, 1998).

3. Models of the Soft Budget

This section presents the soft budget constraint model of Dewatripont and Maskin (1995) and several variations. Where the relation to aid may not be obvious, I describe one or more applications. The presentation relies on the framework used in Roland (2000).


In the Dewatripont and Maskin (1995) model (figure 1 below), a principal can invest one unit in an agent’s project in period 0. This is a sunk cost. Good and bad projects come in proportions $\alpha$ and $1 - \alpha$, but while the agent always knows the quality of his project the principal only learns it in period 1. At this time good projects pay a gross return $R_g$ to the principal and a private benefit to the agent, $B_g$, which the principal cannot appropriate. Bad projects, on the other hand, yield nothing at the end of period 1. A bad project may be either liquidated, giving $R_l$ to the principal and $B_l < 0$ to the agent, or refinanced at a unit cost. If refinanced, the bad project yields gross monetary return $R_p$ and private return $B_p > 0$. The agent has zero wealth and reservation utility, both parties are risk neutral, and for simplicity there is no discounting. The principal maximizes the gross return plus the private benefit minus the financing cost.
Since $B_i < 0 < B_p$, an agent with a bad project will submit it if and only if she expects to be refinanced. Such bailouts are inefficient from the *ex-ante* perspective if $R_p + B_p < 2$. However, *ex-post*, due to the sunk cost, bailouts occur when $R_p + B_p - 1 \geq R_i + B_i$. Then project finance requires

$$\alpha(R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2) \geq 0 \quad \text{or} \quad \alpha \geq \frac{2 - R_p - B_p}{R_g + B_g - R_p - B_p + 1} \equiv \alpha^s,$$

where $\alpha^s$ is the “softness threshold”. If the principal could commit not to refinance bad projects there would be no soft bad submissions and bailouts, and the outcome would be efficient. The soft budget constraint problem thus lies in the combination of asymmetric information, sunk cost, and lack of credible commitment.

Total surplus maximization can be replaced with profit maximization and yet fail to harden the budget constraint (set $B_p = B_i = B_g = 0$). Thus, a benevolent principal is neither necessary nor sufficient for a soft budget (Dewatripont and Maskin, 1995; Roland, 2000). In the aid context, suppose that $R$ is poverty alleviation and $B$ is the private gain to the project manager in the recipient country. Then, since $B_p > B_i$, delegating poverty relief to an agency whose payoff only depends on $R$ can harden the budget, by (1), and make finance feasible by (2). However, the budget can also remain soft. Of course, if the refinancing decision is with a principal that does not care for either poverty or the private benefits, while the original principal does, a hard budget is always achievable. Several solutions to the soft budget constraint involve institutional designs or policies which lower the benefit of bailouts (subsection 3.4.).

\[
\begin{array}{c}
\alpha \\
R_g, B_g \\
-1 \\
1-\alpha \\
\text{Liquidation} \\
R_l, B_l \\
-1 \\
\text{Refinancing} \\
R_p, B_p \\
\end{array}
\]

*Figure 1: The Soft Budget Constraint*
3.2. Effects on Innovation

Due to the soft budget, bad projects are bailed out *ex-post*. However, suppose that at cost $\sigma$ the principal can screen projects *ex-ante* (Roland, 2000). Screening yields a good project signal $\theta_g$ or bad project signal $\theta_b$. The signal is correct with probability $\gamma \in (\gamma_1, 1]$ and incorrect with probability $1 - \gamma$. $\gamma_1 > 0.5$ is such that $\gamma \in (\gamma_1, 1]$ ensures that a project yielding a good signal will be financed but a project with a bad signal will not. The principal’s return under screening is $\alpha \gamma (R_g + B_g - 1) + (1 - \alpha)(1 - \gamma)(R_p + B_p - 2) - \sigma$, where the first term reflects type 2 error (share $(1 - \gamma)$ of the good projects inefficiently fail to obtain finance) and the second term type 1 error (share $(1 - \gamma)$ of the bad projects inefficiently obtain finance). $\gamma \rightarrow 1$ minimizes both errors, restoring efficiency. However, if $\gamma$ is high for new project types there will be a status-quo bias in project selection when the budget constraint if soft: a higher $\gamma$ makes for a more favorable pool of projects, even when good and bad projects individually are no better or worse than before. Therefore, the principal will favor projects she is familiar with. The principal is willing to pay for the screening option as long as $\alpha \gamma (R_g + B_g - 1) + (1 - \alpha)(1 - \gamma)(R_p + B_p - 2) - \sigma > \alpha (R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2)$ or $-(1 - \alpha) \gamma (R_p + B_p - 2) > \gamma + \alpha (1 - \gamma)(R_g + B_g - 1)$, which says that the value of type 1 error reduction exceeds the direct cost of screening plus the value of type 2 error increase compared to the pooling option.

A wide variety of projects are typically submitted to aid institutions, especially after growing disillusionment with developing country governments and increasing confidence in local participation and non-governmental organizations from the early 1980s. Though in itself a bottom-up approach may lead to new and creative projects, the argument above shows that the soft budget problem combined with more imperfect screening for new relative to conventional projects could prevent the realization of the new projects potential. For example, though donors favor microfinance today, Grameen Bank’s pioneering effort was self-financed.

Finally, notice that screening is not a perfect substitute for a hard budget: even for $\gamma = 1$ the principal gets return $\alpha (R_g + B_g - 1) - \sigma$ with screening, while she would get $R_g + B_g - 1$ with a hard budget. This is because, with a hard budget, bad projects are not submitted in the first place.
3.3. Project Autonomy

Project autonomy can potentially be used to harden the budget. To capture the role of autonomy, suppose that a bad project can be rescued to yield the same return as a good project if the project manager provides effort. Due to moral hazard and the soft budget, effort is only exerted if the principal monitors the manager. Figure 2 below depicts the new game. The probability of monitoring is \( p > 0 \). Now, proportion \((1 - p)(1 - \alpha)\) are bailed out and projects are financed initially provided that \((\alpha + p(1 - \alpha))(R_g + B_g - 1) + (1 - p)(1 - \alpha)(R_p + B_p - 2) \geq 0\) or

\[
\alpha \geq \frac{(1 - p)(2 - R_p - B_p) - p(R_g + B_g - 1)}{(1 - p)(R_g + B_g - R_p - B_p + 1)} \equiv \alpha^M, \text{ where } \alpha^M < \alpha^S.
\]

If a rise in project autonomy lowers \( p \), the moral hazard problem worsens and efficiency declines. When the required proportion of good projects \( \alpha^M \) rises beyond the actual proportion \( \alpha \), no projects are financed.

There are also some arguments favoring autonomy, however. For example suppose that autonomy allows the manager to appropriate \( \pi \) from the principal’s return. Then she provides effort, even unmonitored, if \( \pi \geq B_p - B_g \) (Roland, 2000). Alternatively, assuming credibility of the principal she could offer a bonus of \( B_p - B_g - \pi \) for a good outcome. However, notice that in both cases autonomy raises the payoff of the agent at the expense of that of the principal and the principal is only indifferent because she is benevolent with no greater weight on R than B. In the aid context, if R is poverty relief, this is not realistic. A better case for autonomy may be offered by Debande and Friebel (1997): suppose that the gross return \( R_p \) is stochastic and autonomy makes it unobservable to the principal, who only knows the distribution. Then if \( \bar{R}_p + B_p - 1 < R_i + B_i \), where \( \bar{R}_p \) is the expected return, the budget hardens. Without autonomy, by contrast, the principal would still inefficiently bail out some projects above the mean for \( p < 1 \).
Project autonomy can raise efficiency when the principal pursues non-efficiency goals (Shleifer and Vishny, 1994) and we have just shown that less control by a benevolent principal can lead to soft budgets and promote agent opportunism. Those findings jointly suggest the perhaps intuitive view that, loosely speaking, principals should be in control if and only if they are more benevolent than agents. In relation to aid, if central governments tend to care less for local development than do local governments and communities, local control should be preferable. This is consistent with the contemporary push by donors for deregulation and economic decentralization in receiving economies. However, “giving the control rights to the most benevolent party” is hardly consistent with donors themselves surrendering control, as implied by the notion of “ownership” currently promoted by the World Bank. An explanation of the push for “ownership” is, however, provided by the Debande and Friebel (1997) mechanism: ownership may allow donors to harden budgets because it implies less information.

3.4. Decreasing the Benefit of Bailouts

Following Segal (1998), suppose that the return to refinancing declines in the number of completed projects: $R_p = R_p(n), R_p' < 0, R_p(l) > 1$. In this case the last bailout occurs when the number of projects is $n^S$, where $(R_p(n^S) + B_p) - (R_l + B_l) - 1 = 0$. Suppose that the principal finances $N$ projects. The bailout probability for a bad project in a pooling equilibrium then equals $n^S(1 - \alpha)/[N^*] = n^S/N$. Therefore, provided that $N > N^*$, where $N^*$ is defined by
\[
\frac{n^S}{N^S} B_p + \left[1 - \frac{n^S}{N^S}\right] B_g = 0, \text{ bad projects will not be submitted. } N \text{ is socially excessive since } N > n^S. \text{ If } R_p(n) \text{ declines very slowly with } n, \text{ then the principal may prefer a pooling equilibrium with bailouts of some bad projects. Applied to the aid context, this can explain why donors seem to undertake inefficiently many projects: a focus on fewer projects, including the socially efficient number, would soften the budget and decrease donors’ net benefit.}
\]

3.5. Raising the Cost of Bailouts

Commitment can also be achieved by a higher marginal cost of funds. For example, the principal can be on a fixed budget (Qian, 1994), as is true for many aid agencies. On a fixed budget \( F \), the principal can start enough projects that she cannot possibly bail out a share \((1 - \alpha)\). In fact, under certainty apart from the agents’ private information on project type, the principal should spend the whole budget on new projects as long as \( R_g + B_g - 1 > R_p + B_p - 2 \), which is true by definition of good and bad projects. Even with diminishing returns, as long as \( R_g(N) + B_g - 1 > R_p + B_p - 2 \) for \( N = F \), no bailouts occur. The optimal and efficient budget is \( F = N^E \) with \( R_g(N^E) + B_g = 1 \). Alternatively, if the supply of projects is elastic, never refinancing and only receiving and financing good submitted projects is an equilibrium for \( R_g + B_g > (R_p + B_p) - (R_t + B_t) \), that is, the net return to good projects exceeds the refinancing return (Berglöf and Roland, 1997). However, if this condition does not hold bad projects crowd out good projects and the usual soft budget return, \( \alpha(R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2) < R_g + B_g - 1 \), obtains.

Donors are often criticized for aid tying and for absorbing the scarce administrative and skilled labor resources of developing countries (Easterly, 2002a; OECD, 2003; Svensson, 2000a). However, rather than the conventional political economy interpretation (tying benefits the donor economy), aid tying may lower the private benefit of bailouts, \( B_p \). This would tend to deter bad submissions and harden budgets. Similarly, pressure on the administrative capacity and skilled labour of developing countries will raise the opportunity cost of bailouts.

As discussed informally in section 2.2., several solutions are based on decentralization. For example, following Dewatripont and Maskin (1995), suppose that the principal is a small
unit that does not have sufficient liquidity to refinance the project. A new financier could step in. However, suppose that the return to a refinanced project depends on monitoring and the first principal has a comparative advantage in monitoring the project. When hired by the second principal, the first principal is subject to moral hazard because effort is not observable. Formally, let the refinancing lead to success with probability $e$, where $e$ is monitoring effort. Set $\bar{R} = R_p + B_p - R_i - B_i$. With a single, liquid principal the benefit of monitoring is internalized: $\max_e \{e\bar{R} - \psi(e) - 1\}$ where $\psi(e)$ is the increasing, convex effort cost function, implies $\bar{R} = \psi'(e)$. However, under decentralization and illiquidity of the first principal she solves $\max_e \{e[\bar{R} - 1/e] - \psi(e)\}$ where $1/e$ is the cost of funds from a competitive second principal expecting the first principal to supply effort (repayment probability) $\hat{e}$. The first order condition is now $\bar{R} - 1/e = \psi(e) = \psi(\hat{e})$, where $\hat{e} = e$ in rational expectations equilibrium. Though the second principal is competitive, the moral hazard problem lowers the first principal’s refinancing return to $\hat{e}[\bar{R} - 1/e] - \psi(\hat{e}) < e\bar{R} - \psi(e) - 1$, and if $e[\bar{R} - 1/e] - \psi(\hat{e}) < R_i + B_i < e\bar{R} - \psi(e) - 1$ then decentralization hardens the budget constraint.

Donors are also criticized for failing to coordinate aid (OECD, 2003; Mascarenhas and Sandler, 2006), for their conflicting objectives, and for sponsoring too many new projects instead of maintaining existing ones (Easterly, 2002b; Brautigam and Knack, 2004; Knack and Rahman, 2007). However, coordination failure, conflicting objectives, and excessively many projects can be no-bailout commitment devices in the soft budget models of, respectively, Dewatripont and Maskin (1995), Povel (1995), and Segal (1998). Thus, while Easterly (2002b) argues that public choice reasons and lack of accountability in donor agencies lead to excessive numbers of projects, the competing view presented here suggests that aid institutions may be less far from constrained efficient.

3.6. Budget Volatility

Suppose that the principal has a pre-determined budget sequence. In particular, suppose that the budget alternates between $2F$ and $0$. Now, since bad projects need funds two periods in a row to be completed, they will not be submitted after all. Consequently, only good projects are financed in high budget years and no projects are financed in low budget years. $F$ can then be set to equal
the desired average number of projects. Alternatively, suppose that the budget varies stochastically, perhaps due to domestic politics in the donor country, and equals zero with probability \(1 - \lambda\) where \(\lambda B_p + (1 - \lambda)B_i = 0\). A high aid year budget of \(F = F'/\lambda\) achieves any desired average \(F'\) but without softness. Since volatile aid is now associated with a rise in growth, empirical assessments of the aid volatility-growth relationship (Bulir and Hamann, 2006; Pallage and Robe, 2001) should distinguish between countries with and without soft budgets. For example, one could interact aid volatility with a soft budget measure. Roland (2000, chapter 12) reviews some empirical aspects of the soft budget constraint.

3.7 Equilibrium Bailouts and White Elephants

In the models discussed so far, if the budget constraint is soft bad projects are submitted, get funds unless they fail to pass a screening test, and are subsequently bailed out. If the budget constraint is hardened, no bad projects are submitted, so there are no bailouts. However, equilibrium bailouts with a fully or partially hard budget are possible under slightly different assumptions. For example, assume instead of a constant private value \(B_i < 0\) a distribution of unobservable private values where \(B_i > 0\) for some agents. Then, since the reservation utility of agents is zero, even bad projects not expecting or receiving a bailout will be submitted. In this case, not even fully hard budgets deter bad projects. Liquidated projects, being projects never completed, are roughly consistent with the common notion of “white elephants” in development planning. White elephants include many of the discontinued or poorly maintained, health, education, power and transportation projects begun in developing countries since the 1950s.

\(B_i < 0\) can also lead to equilibrium bailouts. First, in sections 3.2 and 3.3., bad projects that pass the screening test or are not monitored will be bailed out, unless the Debande and Friebel (1997) mechanism applies. Second, we can suppose that in section 3.5 we have \(B_i^{L} << 0\) for a fraction \(\mu\) of agents and \(B_i^{L} < B_i^{H} < 0\) for a fraction \(1 - \mu\). \(B\) is observed by the principal before the bailout decision. From section 3.4., a rise in \(B\) implies \(dn^* = dB_i^{L}/R_p(n^*) < 0\): fewer projects are implemented ex-post when the agent does not suffer from liquidation, since then the benevolent principal is less afraid of liquidating. While the rise in \(B_i\) encourages submission given the bailout probability, the effect on the necessary bailout probability is second order.
marginal so a stronger liquidation incentive dominates. Formally, total differentiating the condition defining $N^*$ and substituting $dn^* = dB_i / R_p(n^*) < 0$ gives

$$dN^* = \frac{1}{n^s} dB_i \left[ \frac{1}{R_p(n^*)} - \frac{N^* - n^s}{B_p - B_i} \right] < 0.$$ 

If deterring submission by $B^L_i$ types requires a large inefficient number of projects $N^*$ and $\mu$ is sufficiently small, the principal may prefer to let the $B^L_i$ types pool with the good types and only deter $B^H_i$. Then some bailouts happen, but there are also some white elephants.

### 3.8. Bailouts and White Elephants under Uncertainty

Suppose that, in addition to asymmetric information, there is uncertainty: agents only know their project imperfectly and what seems to them like good projects may turn out, after submission and initial finance, to be bad projects. Bad projects wrongly appear to be good to the agent with probability $p$ and for simplicity bad projects always look bad. In this case, principals enforcing a hard budget constraint will finance projects if $(1 - p) (R_g + B_g - 1) + p(R_i + B_i - 1) \geq 0$ and agents with good signals submit projects if $(1 - p) B_g + pB_i \geq 0$, so that a share of submissions $p$ become white elephants.

Perhaps surprisingly, white elephants may not be more likely in a soft budget equilibrium: while more bad projects may be submitted, the soft budget also implies that they are bailed out, in which case they do not become white elephants. Under the completely soft budget in section 3.1., for example, many bad projects are submitted, but all are bailed out. However, suppose again that with probability $p$ an apparently good project turns out to need a bailout and again use the model in section 3.4. For simplicity, set $R_p(n) = R_g(n) - \lambda$, $\lambda > B_p - B_g - 1$, so that the marginal effect of raising the number of completed projects affects the gross return the same way whether or not projects are bailed out. The bailout probability for a bad project in a pooling equilibrium is still $n^s (1 - \alpha + \lambda p) / [(1 - \alpha + \lambda p)N] = n^s / N$, so that $N^*$ still deters bad project submission. If $(1 - p) B_g + p \frac{n^s}{N^*} B_p + p[1 - \frac{n^s}{N^*}] B_i \geq 0$, then projects with good signals are still submitted. Overall now only apparently good projects are submitted, of these
submissions some turn out to be bad, and of the bad ones some are bailed out and others are not. Particularly, a fraction \( p \left[ 1 - \frac{n_s^*}{N^*} \right] \) of the \( N^* \) submissions become white elephants.

If there is also aggregate uncertainty, the number of white elephants may vary across contexts. For example, suppose that the share of bad projects with good signals is a stochastic \( \bar{p} \in \{0, p\} \). Then white elephants only appear when \( p \) is realized. Aggregate uncertainty can also be a distinct source of white elephants when the principal is on a budget, as uncertainty can make the principal keep a buffer stock of liquidity to refinance submissions that appeared good to agents. Then again some bailouts and/or white elephants can appear (appendix available on request). More generally, with both uncertainty and asymmetric information, a trade-off may exist between efficiency \textit{ex-ante} and \textit{ex-post} (Dooley and Verma, 2003).

3.9. Returns to Aid with Endogenous Institutions

Suppose that the principal is an aid donor. The return is lower with a soft budget since \( \alpha(R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2) < (R_g + B_g - 1) \). Nonetheless, since with a negative return presumably the principal would not pay for projects at all, aid should not actually make the recipient worse off. On the other hand, however, there is a common argument, backed by recent empirical literature (Brautigam and Knack, 2004; Azam, Devarajan, and O’Connell, 1999; Adam and O’Connell, 1999), that aid can lower welfare by damaging the quality of institutions in the recipient. I now consider this issue.

The means of budget hardening discussed above may be interpreted not only as fortuitous exogenous circumstances, but also as endogenous institutional responses to the soft budget problem. However, in that case institutions respond favourably to aid, not adversely. Yet, suppose now that initially the budget for a development project is hard. The return due to the project is therefore \( R_g + B_g - 1 > 0 \). If now an aid agency appears on the scene, and this agency cannot commit not to bail out either the project or the government, then the average return falls to \( \alpha(R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2) < R_g + B_g - 1 \). Aid also allows more projects to be financed, however, so a large amount of aid could still raise the recipient’s welfare. Thus, suppose first that the aid is a loan. Then, as long as the number of aid funded projects relative to
the number of domestically funded projects, \( a \), satisfies
\[
(a + 1)[\alpha(R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2)] < R_g + B_g - 1, \text{ or } a < (1 - \alpha) \frac{(R_g + B_g - 1) - (R_p + B_p - 2)}{[\alpha(R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2)]} \equiv a_{\text{min}}^g,
\]
then the aid will lower the income of the recipient. The problem is that the larger number of projects made possible by aid does not compensate for the lower average return due to aid. If for example good projects yield net return 0.10, bad projects -.05, and \( \alpha = 0.5 \) then \( a_{\text{min}} = 3 \) and aid must at least quadruple total investment to raise the income of the recipient. While benevolent donors should internalize this erosion of institutions they cause (Azam, Devarajan, and O’Connell, 1999), and want to either increase aid or harden their aid budgets, the commitment problem remains.³ Notice also that if again we interpret \( R \) as poverty relief and \( R_g > R_p \), then foreign aid lowers the quality of poverty relief, and if \( a < a_{\text{min}}^g \) holds then aid raises total poverty. Alternatively, if in the example bad projects yield -0.10 or less, then no amount of aid will help and, worse, the government too no longer gains from project finance. Even aid that never arrives makes the country worse off.

Second, if the funds do not have to be repaid the result is less drastic. Now, national income only declines with aid if
\[
(a + 1)[\alpha(R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2)] + \alpha a + (1 - \alpha)2a < R_g + B_g - 1 \text{ or } a < (1 - \alpha) \frac{(R_g + B_g - 1) - (R_p + B_p - 2)}{[\alpha(R_g + B_g - 1) + (1 - \alpha)(R_p + B_p - 2)] + 2 - \alpha} \equiv a_{\text{min}}^l. \text{ With the same parameters as before, } a_{\text{min}}^l \approx 0.0492, \text{ so even a total investment increase of 5% due to aid raises the income of the recipient. However, this more positive result reflects that the donor’s opportunity cost of funds is not internalized and this cost may be the gain to poverty alleviation elsewhere.}

4. Conclusion

Motivated by the similarity between development aid and planning systems (Easterly, 2006), this paper has applied lessons from one aspect of the planned system, the soft budget constraint, to the aid system. I have argued that soft budgets and responses to soft budgets are consistent with a variety of aid outcomes and practices. While most of the facts are also consistent with other explanations, a force of the soft budget approach is to provide a unified explanation. From a
broader perspective, I believe that the literatures on planned and transition economies (Ericson, 1991; Kornai, 1980) may hold other ideas and lessons for development planning. For example, the ratchet effect problem, where a manager underperforms since revealing high ability will cause him to face higher demands in future years, is well known in planned economies. An aid system parallel may be if a country revealing high growth potential receives less aid in future years (Easterly, 2002a). In terms of resolution, Olsen and Torsvik (1993) show for the planning case that privatization can cause a common agency problem which dulls the static incentives of the firm, but improves the dynamic incentives by making the commitment not to ratchet demands more credible. A similar solution may apply in the case of aid. As another example, Hausman, Rodrik, and Velasco (2005) have recently suggested that the key to growth is to identify the binding constraints on the economy at any point in time. This problem must also be known in planning.
References


Notes


2 Subsides are consistent with soft budgets, though neither implies the other (Roland, 2000 p. 213 ff.).

3 A rise in aid can also lead to macroeconomic problems (real appreciation, rent seeking).

Appendix: White elephants under aggregate uncertainty when the principal in on a budget

Assume in section 3.8. a fixed budget $F$ and a stochastic $\bar{p} \in \{0, p\}$ with probabilities $q$ and $1-q$. Then in an equilibrium with only good projects submitted the principal chooses the number of projects $N$ to

$$\max_N q(R_g + B_g - 1)N + (1-q)(1-p)(R_g + B_g - 1)N$$

$$+ (1-q) \min\{(F - N), pN\}(R_p + B_p - 2)$$

$$+ (1-q)(pN - \min\{(F - N), pN\}) (R_r + B_r - 1)$$

s.t. $0 \leq N \leq F$. \hspace*{1cm} (A1)

which implies

$$N = \frac{F}{1+p}$$ \hspace*{1cm} (A3)

with $pN = pF/1+p$ in reserves

when
\[ [q + (1 - q)(1 - p)](R_g + B_g - 1) \leq (1 - q)[(R_p + B_p - 2) - (1 + p)(R_i + B_i - 1)] \]  
(A4)

and

\[ N = F \]  
(A5)

otherwise. Intuitively, on the margin a unit of funds used for a project yields a good return \((R_g + B_g - 1)\) with probability \([q + (1 - q)(1 - p)]\), while the opportunity cost is a rise in the gap between required bailout funds and actual funds. This funds gap increase is worth \((R_p + B_p - 2) - (1 + p)(R_i + B_i - 1)\) and happens with probability \(1 - q\). If the opportunity cost is higher, full self-insurance is optimal, \(F - N = pN\) or \(N = F / 1 + p\). If not, all funds are spent up front, \(N = F\), and projects that turn out bad are not bailed out, becoming white elephants. With other distributions for \(\bar{p}\) partial self-insurance obtains, causing both bailouts and white elephants. For example, suppose that \(\bar{p} \in \{0, p, 1\}\) with probabilities \(q - \varepsilon\), \(1 - q\) and \(\varepsilon\) with \(\varepsilon\) small but positive. Then the corresponding version of (A4) can still hold, but if

\[ [1 - \varepsilon](R_g + B_g - 1) > \varepsilon[(R_p + B_p - 2) - (1 + \varepsilon)(R_i + B_i - 1)] \]  
(A6)

then it does not pay to self-insure beyond the intermediate risk level \(p\). Then white elephants could also appear:

with probability \(\varepsilon\) there are no good projects, \(pN = pF / 1 + p\) bad but bailed-out projects, and

\((1 - p)N = (1 - p)F / 1 + p\) white elephants in equilibrium. (The budget adds up because the bailouts cost 2 units each, so the total cost is \(2pF / 1 + p + (1 - p)F / 1 + p = F\).