



Universität St.Gallen

The Macroeconomic Effects of Foreign Aid: A Survey

Philipp Harms and Matthias Lutz

September 2004 Discussion Paper no. 2004-11

Editor: Prof. Jörg Baumberger
University of St. Gallen
Department of Economics
Bodanstr. 1
CH-9000 St. Gallen
Phone +41 71 224 22 41
Fax +41 71 224 28 85
Email joerg.baumberger@unisg.ch

Publisher: Forschungsgemeinschaft für Nationalökonomie
an der Universität St. Gallen
Dufourstrasse 48
CH-9000 St. Gallen
Phone +41 71 224 23 00
Fax +41 71 224 26 46

Electronic Publication: www.fgn.unisg.ch/public/public.htm

The Macroeconomic Effects of Foreign Aid: A Survey*

Philipp Harms

Matthias Lutz

Authors' addresses:

Philipp Harms
Study Center Gerzensee
P.O. Box 21
3115 Gerzensee
Switzerland
Tel.: +41 31 780 31 08
Fax: +41 31 780 31 00
Email: philipp.harms@szgerzensee.ch

Matthias Lutz
Institute of Economics
Bodanstrasse 1
9000 St. Gallen
Switzerland
Tel.: +41 71 224 2303
Fax: +41 71 224 2874
Email: matthias.lutz@unisg.ch

Abstract

Research on the macroeconomic effects of aid has expanded rapidly in recent years. In this paper, we provide a survey of this literature. We start by reviewing some theoretical models that suggest a positive impact of aid on investment and growth. We then discuss the empirical evidence, giving particular attention to the role of institutions and policies in determining aid effectiveness. As a general conclusion, we suggest adopting a more disaggregate perspective with respect both to different types of aid and to various aspects of governance.

Keywords

foreign aid, economic growth, institutions, governance

JEL Classifications

F35, F43, O16, O19

1. Introduction

Foreign aid flows from DAC countries to the developing world stagnated during the 1990s, reaching a low point in 1997 at \$48.5bn (World Bank 2004).¹ As these figures are in nominal terms, the trend in real terms has been even worse, whether adjusted for inflation or calculated relative to recipient countries' populations. Particularly striking is the drop in aid flows relative to donor countries' GDP. On this measure, rich countries reduced their aid contributions from around 0.34% to 0.23% of their output between 1990 and 2002 (World Bank 2004).

The 'aid-fatigue' reflected in these figures can be traced back to a number of economic and political changes (Hopkins 2000, Robinson and Tarp 2000): changes in industrialised countries' foreign policy priorities after the end of the cold war, a further weakening of old colonial ties, lower pay-offs for special interest groups due to the changing regional focus towards the commercially less interesting African countries, tighter budgets in donor countries, and a growing distrust of governments and international organisations in industrialised economies.

In addition to these forces, a key reason for the drying up of aid flows has certainly been the perception – even among groups traditionally supportive of foreign aid – that aid has failed, at least partly. There have been reports of corruption and poor administration, with aid management tying up valuable resources in recipient countries (Kanbur 2000) and questionable aid allocation decisions among donors. Although many aid projects were deemed to be successful considered on their own (or better, with respect to their pre-defined objectives), there is the perception that the overall impact has been less than the sum of its parts, something that Mosley (1987) referred to as the 'micro-macro paradox'.

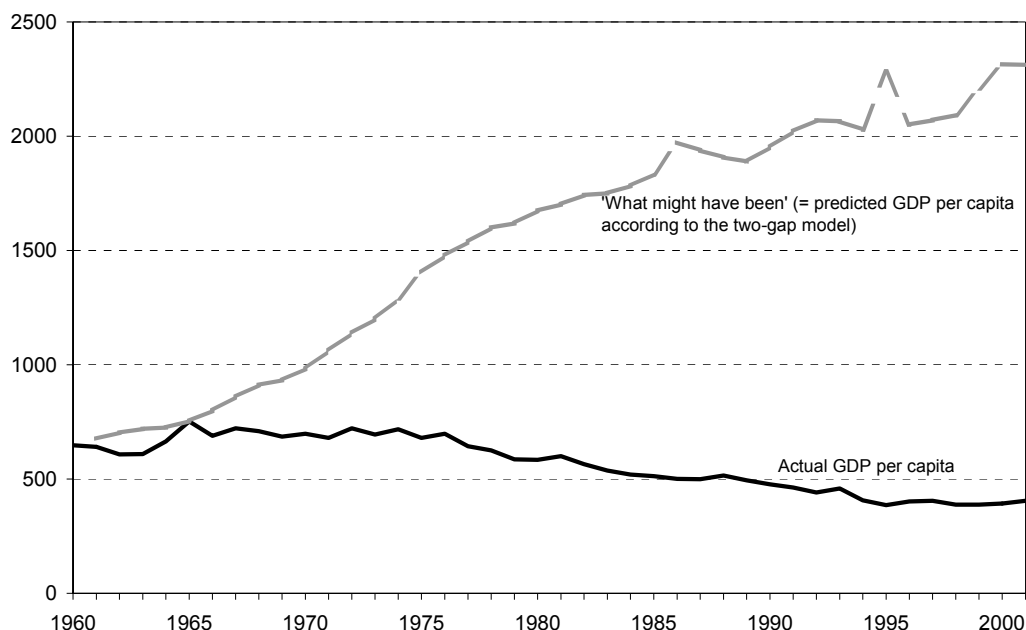
A very illustrative example of the observations that have fuelled aid scepticism is given by Easterly (1999). Predicting the impact that aid should have had on output on the basis of the still widely-used two-gap model he compared this with the actual performance of a large set of countries. In his paper and subsequent book (Easterly 2001) he presents the corresponding figure for Zambia, a country where the prediction diverges to a particularly striking extent from actual performance. While we have not found it possible to completely replicate his figure with newer data, the visualisation of the gap between the supposed aid effect and reality is still striking (see Figure 1). By 2001 Zambian GDP per capita was only about a fifth of what would have been predicted had all aid gone into investment and all investment into growth.²

Such a blatant discrepancy is no surprise to those economists who have always been sceptical about the ability of aid to lift developing countries out of poverty. Thus, the late Peter Bauer kept emphasising the corrupting and counterproductive effects of aid: "Because aid accrues to the government it increases its resources, patronage, and power in relation to the rest of society. The resulting politicisation of life enhances the hold of governments over their subjects and increases the stakes in the struggle for power. This result in turn encourages or even forces people to divert attention, energy, and resources from productive economic activities to concern with the outcome of political and administrative processes and decisions" (Bauer 1991, p. 45).

So does recent aid experience prove Bauer right? To answer this question, one needs to assess whether the Zambian example can be generalised. Is the apparent failure of aid in this case an exception or does it apply to the average developing country? Is aid *per se* ineffective, or can we identify some fundamental forces that are responsible for the failure of aid in some countries and its success in others? These are the questions that we want to address in this survey.

¹ Due to a rise in 2002, they have just caught up with the levels seen in the early 1990s (at around \$58bn).

² The 'what might have been' series was calculated by taking actual GDP per capita (in constant US\$) in 1960 and projecting future values using a hypothetical growth rate equal to the sum of actual investment and aid inflow (as a share of GDP) divided by a presumed capital-output ratio of 3.5 minus the population growth rate.



**Figure 1: Zambia, GDP per capita (PPP-adjusted):
What might have been and what actually happened**

The *raison d'être* of our paper is that it summarises the state of knowledge at a crucial moment of the aid effectiveness debate: while the optimistic assessment of foreign aid among economists gave way to frustration as Zambia-style failures became increasingly visible during the 1990s, a new consensus seemed to emerge towards the end of the past millennium, which identified ‘good policies’ as a prerequisite for successful aid. This view, which was brought forward in a paper by Burnside and Dollar (2000) swiftly dominated conventional wisdom and became extremely influential in shaping policymakers’ views and decisions. However, the consensus that “money matters – in a good policy environment” (World Bank 1998, p. 28) has started to unravel as more and more studies question the validity of the Burnside-Dollar paper. This makes it important to identify those insights that do not break down upon closer scrutiny and to identify the potential consequences.³

The rest of this paper is structured as follows: the next two sections summarise the main theoretical arguments that have been brought forward to justify the positive growth effects of aid. Section 2 contains a simplified version of the basic two-gap model which still forms the main motivation for aid employed by the multilateral institutions. Section 3 shows that aid may also be beneficial in helping a country emerge from a poverty trap. Section 4 looks at the evidence on the growth effects of aid leading up to Burnside and Dollar (2000). In section 5 we survey the current research debate in the wake of the Burnside and Dollar paper, which focuses on the role of policies and institutions in recipient countries. Section 6 concludes this paper.

³ Other recent contributions that have addressed these questions are Hansen and Tarp (2000, 2001), Easterly (2003), Roodman (2003) and Langhammer (2004).

2. Using aid to overcome ‘gaps’

2.1 Basic theory

The origins of the two-gap model are associated with McKinnon (1964) and Chenery and Strout (1966). Although no longer popular in the academic literature – Easterly (1999) calls it a ‘dead model’ – it is still widely used by policy-makers; in Easterly’s words, the ‘ghost of the financing gap’ is still well alive in policy circles. One example is its use as part of the *Revised Minimum Standard Model* (RMSM) of the World Bank. Another example are the projections, formulated for the World Bank in Devarajan et al. (2002), of the future aid requirements to reach the Millennium goals.⁴

The basic two-gap model has two components.⁵ The first concerns the link between investment and growth and determines the supply side.⁶ In the Harrod-Domar tradition, gap models assume a linear relationship between output (Y) and capital (K),

$$(1) \quad Y = \frac{K}{v},$$

where v denotes the capital-output ratio or ICOR (incremental capital-output ratio). This implies that output growth will be a function of the investment rate (I),

$$(2) \quad \frac{\dot{Y}}{Y} = \frac{\dot{K}}{vY} = \frac{I}{vY} - \delta,$$

where a dot over a variable denotes the change over time (e.g. $\dot{Y} = dY/dt$ is the change in output between now and the next period) and δ the depreciation rate. Note that current output is predetermined by past investments. As a planning framework, (2) allows policy makers to determine the minimum level of investment (I^*) required to achieve the desired rate of output growth (g^*):

$$(3) \quad \frac{I^*}{Y} = v(g^* + \delta),$$

⁴ In their paper, Devarajan et al. (2002) acknowledge the criticisms the two-gap model has received, but nevertheless base their projections on it, arguing that it “... is a transparent and flexible framework for examining, for a large number of countries, the aid requirements of achieving the poverty goal” (p. 17, footnote 9).

⁵ This subsection presents what amounts to the simplified textbook version rather than the more sophisticated versions in the original and subsequent two-gap papers. See, for instance, Tarp (1993, Ch. 4), Gillis et al. (1996, Ch. 6), Basu (1997, Ch. 5), Nafziger (1997, Ch. 16) and Agenor and Montiel (1999, Ch. 13). A further extension, the so-called ‘three-gap model’ which also includes a public investment constraint, was developed by Bacha (1990). The key results remain unchanged, however, and it is the simplified version presented here that has been used for policy purposes.

⁶ The view that investment is the key to growth is characteristic to thinking about development during the post-WWII period. It is epitomised by the following well-known dictum of W.A. Lewis (1954, p. 155): “... the central problem in the theory of economic development is to understand the process by which a community which has previously been saving and investing 4 or 5 per cent of its national income or less converts itself to an economy where voluntary savings are much higher” (cited in Tarp 1993, p. 82).

The second component of the two-gap model deals with the determination of investment. From basic national income accounting we know that

$$(4) \quad S_p - I = (G - T) + (X - M),$$

with S_p = private savings, G = government (current and capital) expenditure, T = taxes, X = exports and M = imports. This can be rewritten as

$$(5) \quad I = \underbrace{S_p + (T - G)}_{\text{domestic savings}} + \underbrace{(M - X)}_{\text{foreign savings}} = S + F.$$

In equation (5), private savings and the budget surplus have been aggregated into ‘domestic savings’ (S). The last term is referred to as ‘foreign savings’ (F), since the trade deficit (on goods and services) has to equal the sum of net current transfers (including foreign aid), net capital inflows (capital account plus financial account) and net factor payments. For the remainder of this paper, it is best to think of F as foreign aid, as we will abstract from private capital flows.

In the two-gap literature it is assumed that all the terms on the right-hand side of (5) are determined exogenously. The feasible levels of investment are thus given by

$$(6) \quad I^{SG} \leq S + F.$$

If the resulting investment level happens to be below the desired level I^* , the economy would be facing a *savings gap*.

To derive the *foreign-exchange gap*, assume further that imports consist of capital imports (M_K) and other imports (M_O):

$$(7) \quad M = M_O + M_K.$$

A fixed share m of all capital goods needs to be imported from abroad,

$$(8) \quad I = \frac{1}{m} M_K = \frac{1}{m} (M - M_O).$$

Substituting $M = X + F$ into this equation gives

$$(9) \quad I = \frac{1}{m} [(X - M_O) + F].$$

Again, the two-gap model assumes that the variables on the right-hand side are either exogenous or predetermined. The investment constraint due to this foreign-exchange restriction is given by

$$(10) \quad I^{FG} \leq \frac{1}{m}[(X - M_o) + F].$$

There is a ‘foreign exchange gap’ (or ‘trade gap’), if this investment level is below I^* , i.e. below the level required to achieve the desired level of output growth g^* .

Depending on the various exogenous and predetermined variables, either the savings constraint (6) or the foreign-exchange constraint (10) can be binding for a country. Note that neither implies that the economy is in a disequilibrium. Rather, there is a difference between the *ex-ante desired* and the *ex-post actual* investment rate.

The two constraints on investment are plotted as a function of foreign aid F in Figure 2. The savings constraint (6) is represented by the SG-curve, the foreign-exchange constraint by the FG-curve.⁷ Investment I is bounded by either of the two curves. The feasible regions are depicted by the bold shading. To the left of F' investment is limited by the foreign exchange constraint FG, to the right of F' it is limited by the domestic savings constraint SG. From (2), it follows that these limits on investment translate directly to the feasible growth rates that can be obtained in an economy characterised by these features.

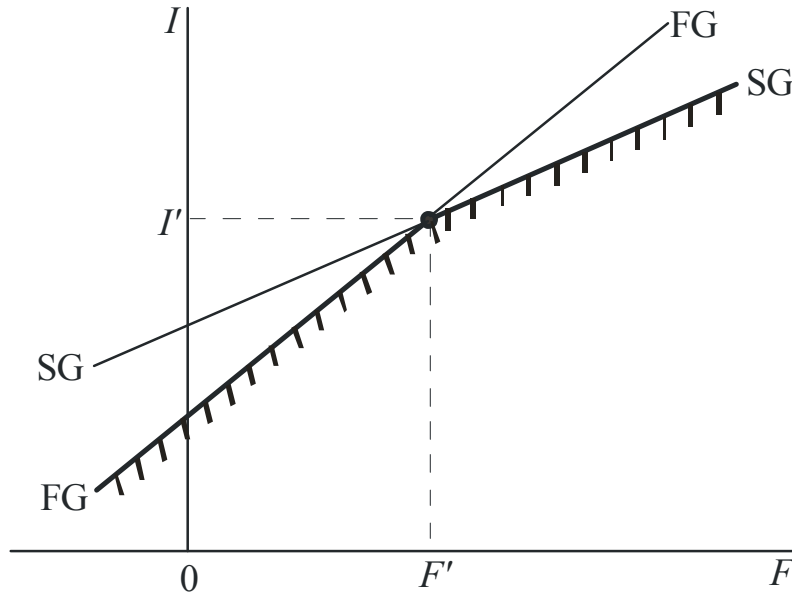


Figure 2: The savings and foreign-exchange gaps

An increase in foreign aid moves the economy to the right. This raises the feasible level of investment. Thus, independent of which of the two gaps applies, more aid increases the feasible growth rate of the economy. By how much it can rise, however, depends on which of the two constraints is binding. The effect will be smaller when the economy faces a savings gap.

2.2 Assessment

Gap models can be criticised on various grounds. First, and foremost, the two-gap approach is unsatisfactory methodologically, with prices fixed, no role for expectations and static behaviour

⁷ FG is steeper than SG since $1/m > 1$. The vertical positions of the two curves depend on $(X - M_o)/m$ and S . For both constraints to be relevant for positive values of F and I , the two curves have to intersect in the right quadrant, as in Figure 2. This requires $(X - M_o) < mS$.

of agents and governments. Another major criticism relates to the link between investment and growth, specifically the assumption of a constant capital-output ratio. The Harrod-Domar model no longer features as a serious contender in growth theory, having been superseded not only by the neo-classical growth model but also by endogenous growth theory.⁸ In these more recent frameworks, the role of physical capital investment is rather modest, as the focus shifts towards education and research & development as the ultimate determinants of growth.

The second major criticism addresses the relationship between foreign aid and investment. In a model with optimising agents, it is not obvious that all of aid should go into investment. From the point of view of private and public agents in the recipient country, an inflow of aid constitutes additional income. If agents behave rationally and prefer a smooth consumption flow, part of any additional income will be consumed and only part of it invested. The share to be saved depends on how transitory the additional income is. The longer the aid inflow is expected to last, the more of it will be allocated to current consumption.

Typically it is the government or part of the public sector that is the domestic recipient of aid. In this case it is possible that it alters its general expenditure pattern as a result of the aid inflow. For instance, resources previously earmarked for investment may get re-allocated to current expenditure. In any case, whether it is the private or the public sector that responds by raising current consumption/expenditure, the *fungibility* of aid makes it unlikely that all aid resources are devoted to investment. Empirically, it implies that as aid inflows rise, there will be a reduction in domestic financing of private and/or public investment. The negative correlation between aid and the aggregate savings rate implied by this does not mean that aid has a negative effect – just that there is unlikely to be a one-for-one rise in investment.

Finally, the two-gap approach appears rather naive in ignoring the incentive effects of aid. For instance, countries that perceive donors to disburse aid according to financing needs have an incentive to artificially raise this need, e.g. by lowering their domestic investment efforts. In addition, there are a number of reasons why part of the aid disbursed by donors may ‘be lost’ in the aid delivery process. Most obviously there are the standard transaction costs. The resource costs of aid negotiations, delivery and administration may be high. Accordingly, Kanbur (2000, p. 419) argues: “In my view, the real cost to Africa of the current aid system is thus the fact that it wastes much national energy and political capital in interacting with donor agencies.” In addition resources may get wasted directly by corrupt government officials and indirectly via rent-seeking activities.⁹

⁸ While it is possible to derive a similar aggregate relationship between capital and output in some endogenous growth models, the latter either require very specific assumptions on the production function, such as in the Jones-Manuelli (1990) model, or they rely on a broader definition of capital including human capital (Lucas 1988).

⁹ If aid inflows are large, they may also generate Dutch disease type effects which will adversely affect the foreign-exchange constraint through a real appreciation.

3. Using aid to overcome ‘poverty traps’

3.1 Theory

The ‘gap models’ described in the previous section identified foreign aid as a way to raise investment and to move developing countries’ growth rates closer to a desired level. An important implication of this framework is that investment and growth return to their initial levels if the inflow of aid dries up. In other words: the long-run growth effects of aid are only realised if the volume of aid disbursements is raised *persistently*. Proposing aid as a means to achieve higher growth in developing countries therefore requires quite heroic assumptions about donor countries’ generosity.

This changes once we move to a theoretical framework in which growth is hampered by the presence of *poverty traps*. A poverty trap may have different sources, which can be traced back to population dynamics, agents’ savings behaviour, the existence of complementarities, or properties of the production function. Regardless of the exact causes, the consequence is the existence of multiple steady states and the possibility that countries which start out with a low per-capita income find themselves in a vicious circle with poverty and low-growth reinforcing each other. Conversely, a temporary injection of foreign capital could help the economy to take off and to permanently reach a higher level of per-capita income.

The mechanics involved in such a setup can be illustrated with a simple example: suppose that all the assumptions of the Solow model are satisfied – that is, agents have access to a constant-returns to scale technology $F(K, L)$ with physical capital K and labour L as inputs, and there are no private international capital flows, such that domestic investment I has to be financed out of domestic savings S :

$$(11) \quad Y = F(K, L),$$

$$(12) \quad \dot{K} = I - \delta K,$$

$$(13) \quad I = S,$$

where δ denotes the exogenous rate of depreciation. For simplicity, we assume that there is no exogenous technological progress.

We depart from the Solow model by assuming that there are basic (‘subsistence’) consumption needs that agents have to satisfy, and that savings are zero as long as the per-capita income does not exceed this level of subsistence consumption. Hence, the savings function is described by

$$(14) \quad S = \begin{cases} s[Y - \tilde{C}L] & \text{if } Y > \tilde{C}L \\ 0 & \text{if } Y \leq \tilde{C}L \end{cases},$$

with $0 < s < 1$ and \tilde{C} representing (per-capita) subsistence consumption needs.

Combining equations (11) – (14) yields a modified ‘Solow equation’:

$$(15) \quad \dot{k} = s[f(k) - \tilde{C}] - (\delta + n)k,$$

where k is the capital stock in per-capita terms and n is the exogenous population growth rate.

In Figure 3, the evolution of the capital stock (in per capita terms) \dot{k} is depicted as the distance between the bold line and the dashed line. Apparently, the system has two steady states: one stable, Solow-type steady state k^{**} , to which the per-capita capital stock converges from below and above. And a second, unstable steady state k^* that determines the boundary of the poverty trap: if a country's initial capital stock (per capita) is lower than k^* , the dynamic forces of the model will drive it to an ever lower level.

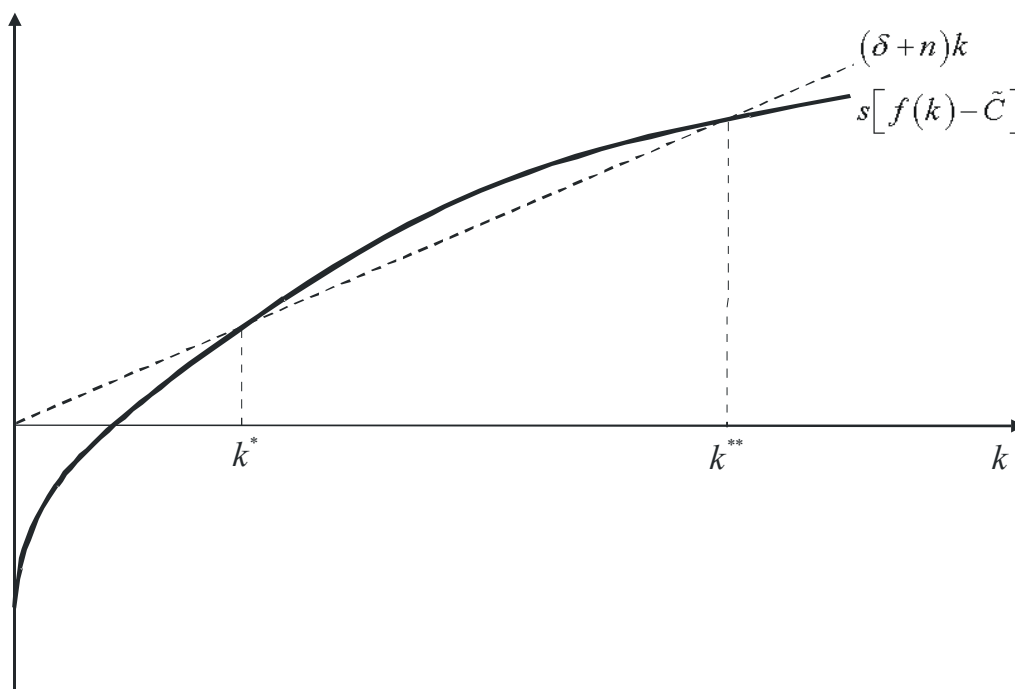


Figure 3: Poverty traps in a Solow-model with subsistence consumption

The intuition behind this result is straightforward: if agents have a very low income, subsistence consumption needs prevent them from investing in the maintenance (let alone the expansion) of the capital stock. As a consequence, depreciation reduces the capital stock even further, reinforcing the process of poverty and decay in future periods. While our model focused on a particular source of the poverty trap – the presence of subsistence consumption needs which reduce agents' savings behaviour at low levels of income – alternative models that concentrate on non-convexities in production yield quite similar results.¹⁰

Against this background there is an obvious role for aid: since a one-time increase of the capital stock can propel a country out of the poverty trap, one does not need permanent inflows of aid in order to lift developing countries to higher levels of income and growth. Instead, a one-time injection could do the trick. In fact, this is precisely one of the remedies that Nelson (1956) proposed in his early contribution on growth in the presence of poverty traps: “Increases in income and capital achieved through funds obtained from abroad [...] can help to free an economy from the low-level equilibrium trap.” (p. 904).

¹⁰ In Murphy, Shleifer and Vishny (1989) and Acemoglu and Zilibotti (1997), the adoption of a more productive technology is prevented if current income is too low. In Azariadis and Drazen (1990) as well as Galor and Zeira (1993), fixed costs combined with financial market imperfections hamper human-capital investment at low income levels. Surveys of this literature are provided by Benhabib and Gali (1995), Azariadis (1996), Galor (1996), Basu (1997) and Ray (1998).

3.2 Assessment

The idea to use aid as an instrument to initiate the ‘big push’ seems so compelling and attractive that we rush to highlight the numerous caveats that need to be taken into account: first, and most importantly, the model above suggests that poverty is due to unfavourable initial conditions. While this may be part of the truth, over-selling the argument risks downplaying the role of current institutions and policies. In fact, the exaggerated reliance of developing country policymakers on the big-push idea and their neglect of the current policy environment may be one reason for the failure of this idea in many cases.

Second, while aid seemed to be the only way to alleviate a shortage of capital in the 1960s, this notion seems somewhat dated in times of massive private foreign investment in developing countries. There may still be a case for seeing aid as a substitute or catalyst for private capital flows – especially since many of the poorest developing countries are apparently shunned by foreign investors. However, unless one comes up with a compelling argument why private capital markets do not provide these countries with the volume of foreign investment that they ‘deserve’, aid is likely to provide a brief cure of symptoms rather than a contribution to sustained development.

4. Evidence on aid, investment and growth

4.1. Hypotheses

The positive view on the role of aid based on the models presented above rests on two testable relationships – that between aid and investment and that between investment and growth. In what follows we assume for expositional simplicity that these two relationships take a linear form and that the variables in question only vary along the time dimension. The two key relationships thus take the form of the following two simple regression equations:

$$(16) \quad \frac{I_t}{Y_t} = \alpha_0 + \alpha_1 \frac{F_t}{Y_t} + u_t,$$

$$(17) \quad \frac{\dot{Y}_t}{Y_t} = \beta_0 + \beta_1 \frac{I_t}{Y_t} + e_t.$$

The last term in each regression, u_t and e_t , may either be thought of as the stochastic error terms in a simple bivariate regression, or as a composite measure of any other variables that may influence the left-hand side variables *plus* stochastic error.

If aid works as presumed in the two-gap framework, the null hypotheses of i) no effect of aid on investment (i.e. $\alpha_1 = 0$) and ii) no effect of investment on growth (i.e. $\beta_1 = 0$) should be rejected in favour of the alternative that $\alpha_1 > 0$ and $\beta_1 > 0$.

Instead of proceeding in two steps, the two predictions may also be tested jointly in form of:

$$(18) \quad \frac{\dot{Y}_t}{Y_t} = \gamma_0 + \gamma_1 \frac{F_t}{Y_t} + v_t,$$

where $\gamma_0 = \beta_0 + \beta_1 \alpha_0$, $\gamma_1 = \beta_1 \alpha_1$ and $v_t = e_t + \beta_1 u_t$ is now a composite error term (or measure of all other influences). A rejection of $H_0: \gamma_1 = 0$ against $H_1: \gamma_1 > 0$ implies that aid (via its effect on investment) has a statistically significant, positive effect on growth. While this provides a direct test of the effect of aid on growth, it has the disadvantage over the two-step approach that, in case there is no significant aid effect, we do not know which (or both) of the two relationships in (16) and (17) is not supported by the data.

The remainder of this section is largely based on three previous studies:

- **Hansen and Tarp (2000)** summarise the results of 29 papers, published between 1968 and 1998, that estimate at least one of the above relationships. Their meta-analysis thus provides a summary statement of earlier research findings on the aggregate impact of foreign aid.
- **Boone (1996)** examines the effect of aid on a variety of macroeconomic variables and several development indicators. His study has been widely cited as final proof that there is no significant, positive influence of aid inflows on investment and growth in recipient countries.

- **Easterly (1999)** takes issue with the still widespread use of the ‘gap model’ in international policy circles and re-examines the evidence on the basic two-gap relationships for a large sample of developing countries.

4.2 The effect of aid on investment

Table 1 summarises the effects of aid on investment identified by the three studies listed above and some own estimates. The studies surveyed by Hansen and Tarp provide overwhelming support for the hypothesis that aid raises the level of investment in recipient countries, with 15 out of 16 regressions providing a positive and significant estimate. However, due to the limitations of the period in which they were undertaken, not all of them feature particularly large data sets or the more sophisticated econometric methods available today. The newer estimates in Boone (1996) and Easterly (1999) paint a much bleaker picture. The majority of the individual country estimates in Easterly are either insignificant or significantly negative. Boone (1996) only finds a positive and significant effect in one specification¹¹.

	<i>Number of estimates</i>			
	<i>Total</i>	<i>Negative, significant</i>	<i>Not significant</i>	<i>Positive, significant</i>
Hansen & Tarp (2000)	<i>(taken from 7 studies published between 1972 and 1998)</i>			
	16	0	1	15
Boone (1996)	<i>(panel data, 10-year averages, 96 countries, 1971-90)</i>			
	8	0	7	1
Easterly (1999)	<i>(by country, 88 countries, annual data, 1965-95)</i>			
	88	36	35	17
Own estimates	<i>(94 countries, annual data, 1960-2001, aid lagged by one period)</i>			
<i>By country</i>	94	22	41	31
		<i>Coefficient</i>	<i>t-ratio</i>	
<i>Panel (FE, n = 3321)</i>		0.25	10.48	

Table 1: The effect of aid on investment (both relative to GDP)

Notes: The results are taken from: Hansen and Tarp (2000), Table 1; Easterly (1999), Table 1; Boone (1996), Table 4.

Our own estimates feature a re-estimation of the country regressions in Easterly (1999) based on the simple bivariate relationship posited in (16). The data are taken from the World Bank’s *World Development Indicators 2003* on CD-Rom.¹² There are two differences to Easterly’s work. First, we base our estimates on longer time-series (1960-2001) and include a slightly larger set of developing countries. For a country to be included, there had to be at least twenty years

¹¹ Based on ten-year averages of the data and estimation with instrumental variables.

¹² The series used are ‘Gross capital formation (% of GDP)’, ‘GDP (current US\$)’ and ‘Official development assistance and official aid (current US\$)’.

of consecutive observations available. Second, we use aid lagged by one period rather than the contemporaneous value as explanatory variable in an attempt to deal at least with some of the potential endogeneity of aid. Nevertheless, these estimates are purely meant as a crude summary of the basic correlation between foreign aid and investment.

The bottom row of Table 1 summarises the results from running individual country regressions and from using all observations in a fixed-effects panel regression. The individual country results are more favourable of the gap approach than Easterly's, but the positive and significant estimates are still in a minority. However, the panel estimate – included as a summary of the basic relationship across all countries – is positive and highly significant. The estimated coefficient is 0.25, suggesting that, on average, a quarter of aid inflows translate into investment. This is not a large effect, and significantly below one (as suggested for the savings gap constraint by the very simple version of the two-gap model presented in section 2). However, at least in terms of this simple bivariate regression, there is support for the assertion that there is a positive relationship between aid and investment at the aggregate level.

The summary evidence in Table 1, though providing a benchmark, is not satisfactory in all respects. Many of the papers surveyed in Hansen and Tarp (2000) are outdated, and the simple regressions in Easterly (1999) as well as our own can at best inform on the basic correlation between aid and investment. Two papers that have recently looked at the effect of aid on investment using newer data, and more sophisticated econometric models and methods, are Feyzioglu et al. (1998) and Hansen and Tarp (2001).

Feyzioglu et al. (1998) estimated the effect of aid on both public and total investment in fixed effects regressions with annual data for up to 38 countries during 1971-90. Hansen and Tarp (2001) base their estimates on a sample of 56 countries, using 4-year averages during 1974-93. Although the two studies differ with respect to the additional explanatory variables included, both Feyzioglu et al. (1998) and Hansen and Tarp (2001) reach the same conclusion: aid has a significant positive effect on investment.

4.3. The effect of aid on savings

In the simple two-gap model of section 2 the level of savings is determined exogenously. However, the fungibility argument suggests that aid may lead to a reduction in domestic savings, at least in relation to income. The focus of the early literature was partly on this issue, by estimating relationships like

$$(19) \quad \frac{S_t}{Y_t} = \delta_0 + \delta_1 \frac{F_t}{Y_t} + z_t,$$

with z_t as the stochastic error term (or as a composite measure of all other influences, including a purely stochastic term). Early sceptics of the two-gap approach appeared to view a rejection of $H_0: \delta_1 = 0$ against $H_1: \delta_1 < 0$ in (19) as evidence against its validity. However, as explained in the previous section, while it is to be expected that an increase in aid would at least partly be consumed, aid would be ineffective only in the extreme case where all extra income is used for consumption. As long as $\delta_1 > -1$, not all of aid is being consumed. In this sense, the estimate of δ_1 in (19) provides some indication of the use of aid. As Hansen and Tarp (2000) point out, the claim that aid has a negative overall effect requires the estimate of δ_1 to be significantly smaller than -1 .

The results from Hansen and Tarp (2000) and Boone (1996), as well as summary indicators of our own results, are collected in Table 2.¹³ The three columns on the right report the results for the standard test that $\delta_1 = 0$. The majority of the earlier papers surveyed in Hansen and Tarp (2000) reject this hypothesis in favour of a negative effect of aid on savings. The same is true for Boone's (1996) results. Moreover, in both these studies in the majority of cases the hypothesis that $\delta_1 = -1$ cannot be rejected. There is a difference, though: in Hansen and Tarp (2000) there is a substantial number of estimates for which neither $\delta_1 = -1$ nor $\delta_1 = 0$ can be rejected due to the broad confidence intervals involved. The results in Boone (1996) are clearer and suggest very strongly that aid inflows are largely compensated by an equivalent reduction in domestic savings. This explains why he finds no effect of aid on investment, as seen in Table 1.

		<i>Number of estimates</i>					
	<i>Total</i>	<i>Signif. < -1</i>	<i>Cannot reject = -1</i>	<i>Signif. > -1</i>	<i>Negat., signif.</i>	<i>Not signif.</i>	<i>Posit., signif.</i>
Hansen & Tarp (2000)	<i>(taken from 6 studies published between 1973 and 1992)</i>						
	24	1	13	8	14	10	0
Boone (1996)	<i>(panel data estimates, 96 countries, 5 year averages, 1971-90)</i>						
	8	0	7	1	8	0	0
Own estimates	<i>(94 countries, annual data, 1960-2001, aid lagged by one period)</i>						
<i>By country</i>	94	11	38	45	41	40	13
		<u><i>Coefficient</i></u>	<u><i>t-ratio</i></u>				
<i>Panel (FE, n = 3321)</i>		-0.28	-7.07				

Table 2: The effect of aid on savings (both relative to GDP)

Notes: The results in Hansen and Tarp (2000) are taken from Table 1. Those in Boone (1999) are taken from Table 4, based on his results for total domestic consumption.

Our own exploratory analysis of the data is somewhat less supportive of such a strong response of domestic savings.¹⁴ The majority of simple country-by-country estimates are either insignificant or positive and significant. Similarly, the hypothesis that $\delta_1 = -1$ is rejected in nearly half the cases in favour of the alternative hypothesis that $\delta_1 > -1$. Lastly, our fixed effects panel regression suggests an overall estimate of δ_1 equal to -0.28 . This is significantly different from zero, but also significantly above -1 . Thus, both the earlier studies and our own results indicate that it would be wrong to presume that savings are not affected by aid inflows. However, there are differences in the extent to which these studies point to a serious problem because of this. Most negative on the potential beneficial impact of foreign aid are the results in Boone.

¹³ Easterly (1999) does not contain estimates of the aid-savings relationship.

¹⁴ The savings data, 'Gross domestic savings (% of GDP)', are again taken from the *World Development Indicators 2003*.

4.4. The effect of investment on growth

Easterly (1999) estimates the simple bivariate relationship between growth and investment on an annual basis. Looking at each of the 138 countries in his sample separately, he only obtains a significantly positive relationship in 11 cases. Most estimates (117) are insignificant and 11 are significant and negative. Moreover, only four fall into the range Easterly (1999) considers to be realistic values for the ICOR. Together with his results on the link between aid and investment, he concludes that there is practically no support of the simple two-gap approach.

However, Easterly's (1999) result on the relationship between investment and growth is a clear outlier, when the general empirical growth literature is considered. Practically all studies assessing the empirical relevance of potential growth determinants have found the investment rate to be one key influence. Moreover, in their seminal analysis of the robustness of the various potential explanatory variables, Levine and Renelt (1992) found the investment rate to be one of only a handful of variables to be robust to the inclusion or exclusion of other variables. A similar result was obtained in the less stringent robustness test of Sala-i-Martin (1997) for both equipment investment and non-equipment investment.

4.5. The effect of aid on growth

Regression specification (18) constitutes a joint test of the two key relationships of the two-gap model. It also forms the basis of much of the empirical literature on the aggregate effect of aid, in particular the new wave of research discussed in more detail in the next section. As with the earlier relationships, Hansen and Tarp (2000) perform a meta-analysis of the earlier literature on this link. They list 14 studies published between 1970 and 1998, containing a total of 64 estimates of the impact of aid on growth. 38 of these estimates are positive and significant and only one negative and significant. The remaining 25 do not show a statistically significant correlation between aid and growth.

4.6. The effect of aid on other aggregate variables

It is probably a fair assessment that Boone's (1996) study constituted a watershed in the empirical analysis of the effectiveness of aid. One reason is that he was the first to examine the role of political and institutional variables in determining the effectiveness of aid, a topic we will return to in the next section. The second reason is that he provided a very careful empirical analysis of the aggregate impact of foreign aid with extremely dispiriting results for aid protagonists. His results have been so influential that Burnside and Dollar's (2000) motivation of their own research, that "... foreign capital has not raised growth rates in the typical poor country" (p. 847), refers alone to Peter Boone's 1996 article and its 1995 working paper version, but not to any other studies.

Interestingly, Boone (1996) does *not* contain any estimates of the impact of aid on growth, but only on other macroeconomic and development indicators. Among these are consumption and investment, as reported above. In addition, he considers the effect of aid on private and government consumption individually, three measures of government-induced distortions (the black market premium, indirect taxes and the inflation tax) and on changes in three development indicators (infant mortality, life expectancy, and primary schooling). The sample comprises 96 countries and spans the 1971-90 period. The data are either averaged over five- or ten-year periods. Each regression is estimated using both OLS and IV estimators controlling for the possibility that aid may be endogenous. The additional control variables are per-capita GNP, its square and its growth rate, the rate of population growth, the terms of trade, and dummy variables for countries undergoing debt rescheduling, in Sub-Saharan Africa and in Asia.

The results in Boone (1996) – referred to in much of the debate on the effectiveness of aid that followed – is that aid does not matter for any of the indicators that are frequently used to justify aid programs: it neither increases public investment nor reduces distortionary taxation in developing countries, it neither lowers child mortality nor raises life expectancy or the level of education. The only statistically significant consequence of aid is an increase in total consumption which, when split between private and public consumption, appears to be largely driven by the latter. This appears to be the case across different political regimes, with democratically legitimated governments being no less prone than autocratic regimes to squander resources. The disillusioning conclusion Boone (1996, p. 322) draws himself is that “... aid does not promote economic development for two reasons: poverty is not caused by capital shortage, and it is not optimal for politicians to adjust distortionary policies when they receive aid flows.”

4.7. Summary

It is interesting that Boone’s (1996) study, where aid fared particularly badly, has attracted such an extraordinary amount of attention in both the subsequent literature and the public debate. Similarly, it is somewhat surprising that Easterly (2003) in his recent survey refers to the death of the two-gap model on the basis of his 1999 results, even though these were obtained from a particularly simplified estimation procedure. As our own exploratory results on the link between aid and investment presented in this section show, there is little evidence that Easterly’s results are robust. This is even more true when one considers other recent studies on the impact of aid on investment. And, as Hansen and Tarp (2000) show, it would be wrong to refer to the ineffectiveness of aid at the aggregate level as a stylised fact of the literature that preceded Burnside and Dollar (2000). The majority of studies they survey report a positive effect of aid on investment and growth.

5. Politics, policies, and institutions

5.1. Burnside and Dollar (2000)

Boone's (1996) approach to interact aid with a proxy for the political system in recipient countries was motivated by a political-economic model that suggested that different forms of government should differ in their use of aid. This explicit theoretical foundation distinguishes his work from the contribution of Burnside and Dollar (2000, henceforth BD), who also applied the empirical strategy of making the effect of aid dependent on some proxy for the 'political-economic environment', but who used a summary measure reflecting the quality of policies instead of Boone's index of political participation and civil liberties. In their view, a 'good policy environment' is characterised by low inflation, low budget deficits, and the absence of protection, as measured by the Sachs Warner index of trade openness. To arrive at a composite policy variable, the authors first regress growth over 4-year periods between 1970 and 1993 on these three criteria (and a set of controls), and then use the resulting coefficients as weights. In a second step, BD use aid (as a share of GNP) as well as aid interacted with their policy variable in a standard growth regression. The estimated coefficients are presented in column 1 of Table 3: the coefficient of aid by itself is not significantly different from zero, but the interactive term has a significantly positive effect, implying that "...the impact of aid is greater in a good policy environment than in a poor policy environment" (BD 2000, p. 859).

This main result of BD's contribution, which started to be circulated as a working paper in 1996 and was eventually published in the AER in 2000, turned out to be extremely influential, and decisively shaped the World Bank's assessment of aid in the late nineties. The Bank's credo that "money matters – in a good policy environment" (World Bank 1998, p. 28) subsequently dominated both the debate on aid effectiveness and the allocation of aid.¹⁵ The appeal of the BD message is easy to explain: first, their result seems to reconcile Boone's (1996) rather frustrating finding with claims of donor institutions that individual aid projects successfully alleviate poverty. By digging somewhat deeper and by taking into account the policy environment, BD seemed to have found the missing link between the micro-success and the macro-failure of aid. Moreover, their paper offered a policy conclusion that is easy to grasp and that makes intuitive sense: it suggested that "...making aid more systematically conditional on the quality of policies would likely increase its impact on developing country growth"¹⁶ (Burnside and Dollar 2000, p. 864). It is therefore not surprising that their prescription soon became the officially proclaimed guideline for the World Bank's and individual donor countries' allocation of aid.

5.2. Related studies

While the paper by BD was the most influential study that used an interactive term to highlight the dependence of aid effectiveness on some proxy for the 'policy environment', it was not the only one. In fact, the late nineties abounded with 'interaction results'. Thus, Dollar and Easterly (1999) demonstrate that "foreign aid leads to higher private investment in an environment of good policies, but not in an environment of poor policies" (p. 572) and argue that "...foreign aid to a *reforming government* [our italics] may improve the environment for private investment – both by creating confidence in the reform program and by helping ease infrastructure bottlenecks" (p. 573).¹⁷ Collier and Dollar (2002) adopt a broader notion of 'good policies' using the

¹⁵ Easterly (2003) provides an impressive collection of quotations from press and politics echoing this view.

¹⁶ In the final section of their paper, BD demonstrate that past practice of aid allocation has largely ignored this healthy advice.

¹⁷ In addition to the BD policy variables, Dollar and Easterly (1999) use Knack and Keefer's (1995) measure of institutional quality to capture the policy environment.

World Bank's *Country Policy and Institutional Assessment* (CPIA). Their main finding, reproduced in column 2 of Table 3, reinforces the results of BD. Finally, Svensson (1999) comes back to Boone's (1996) initial question whether the impact of aid on growth depends on political regimes in recipient countries. Surprisingly, he finds empirical support for the hypothesis that the effect of aid is not only greater in more democratic countries, but also positive and significant (see column 3 of Table 3).¹⁸

Source	Burnside-Dollar (2000)	Collier-Dollar (2002)	Svensson (1999)	Hansen-Tarp (2001)	Easterly et al. (2003)
aid/GDP	-0.02 (0.13)	-0.54 (1.40)	0.20 (0.26)	0.26 (2.56)	0.20 (0.75)
aid/GDP squared		-0.02 (1.60)		-0.57 (2.02)	
aid/GDP * policy	0.19 (2.61)	0.31 (2.94)	0.29 (3.32)	0.05 (1.26)	-0.15 (1.09)
Table	Table 4 Column 5	Table 1 Column 1	Table 3 Column 3b	Table1 Colum 4	Table1 Colum 2
Policy measure	Weighted average of inflation, budget deficit and trade openness	Country Policy and Institutional Assessment (World Bank)	Democracy	same as Burnside-Dollar (2000)	same as Burnside-Dollar (2000)
Estimation method	OLS	OLS	2SLS	2SLS	OLS
Period	1970-93	1974-97	1970-89	1970-93	1970-97
Frequency	4-year averages	4-year averages	10-year averages	4-year averages	4-year averages
n	270	349	112	270	345
R-sq	0.39	0.37	--	--	0.33

Table 3: Recent estimates of the effect of aid on growth

5.3. Critique

While policy makers were busy digesting the BD message, a number of researchers started to subject their analysis to closer scrutiny and to question the consensus that had just started to emerge. Their critique addresses different aspects of the BD study – econometric specification, data selection, and the policy variable – but they share a general result: the BD finding is much too shaky to serve as a basis for policy prescriptions. In what follows, we will sketch the empirical strategies and results that support this conclusion.

Specification

Hansen and Tarp (2001, henceforth HT) mounted an early attack on BD by arguing that their result merely captured diminishing returns to aid. Referring to the Solow model as well as Dutch disease phenomena as possible reasons for a concave aid-growth relationship, they showed that the policy-interaction term is no longer significant once additional polynomials of aid – in par-

¹⁸ Svensson (1999, p. 276-77) argues that this deviation may be due to his consideration of economic growth (instead of investment) as a dependent variable, to the use of an alternative aid variable, a larger data set, and an econometric approach that allows the level of democracy to be endogenous.

ticular, aid squared – are used as regressors (see column 4 of Table 3).¹⁹ There are two conclusions to be drawn from HT: first, there is an optimal level of aid, beyond which additional aid flows are counterproductive – i.e. an abundance of aid may be too much of a good thing. Second, while this optimum may depend on country-specific characteristics, it does not depend on economic policies as captured by the BD index.

BD claim to capture cross-country differences by using a set of control variables as well as regional dummies. As Jensen and Paldam (2003) argue, this makes their results extremely vulnerable to omitted-variable bias. Jensen and Paldam therefore verify the robustness of the ‘good policy model’ (BD) and the ‘medicine model’ (HT) by using country-specific fixed effects instead of regional dummies (and other time-invariant control variables). Showing that the BD result breaks down while the coefficient on the quadratic aid term is still significantly negative if this alternative specification is used, they conclude that “...the medicine model is far superior to the good policy model when it comes to robustness in the within sample replications” (p. 12).

Finally, there is no clear reason for using four-year averages in a growth regression.²⁰ So an obvious robustness check is to test whether the BD result holds at lower frequencies. This is done by Easterly (2003) who reports that “... the coefficient on the interaction term between aid and policy no longer enters significantly for periods of 12 years and for the pure cross-section of 24 years” (p. 30).

Sample size

Our belief in the validity of econometric results is based on the notion that they reflect a structural relationship which does not depend on the inclusion or omission of a few data points. However, exactly this presumption turned out to be wrong in the BD case: thus, Roodman (2003), Easterly et al. (2003), Easterly (2003), as well as Jensen and Paldam (2003) show that the policy interaction term is no longer significant if an additional four-year period (1994-97) is added to the original BD data set, and if some ‘newly found’ observations enter the sample (see column 5 of Table 3). Moreover, the BD result breaks down if official development assistance (ODA) instead of ‘effective development assistance’ (EDA) is used as a regressor.²¹ Finally, as Jensen and Paldam emphasise, the result heavily relies on the inclusion of a large number of control variables and the sample reduction that results from limited data availability.²² In fact, neither the ‘good policy model’ nor the ‘medicine model’ nor any other non-linear model with aid as a determinant of growth gets empirical support if one makes use of the maximum number of data points.

¹⁹ This is surprising, given the BD finding that aid squared is no longer significant (while the policy-interaction term is) once five influential observations are removed from the sample. The explanation may be that – in contrast to BD – HT use both aid squared and policy squared as regressors. The HT model gets powerful support from Roodman (2003) who subjects it to a battery of robustness tests and states that “...the most robust and far-reaching conclusion to emerge from the testing is that of Hansen and Tarp, the sole proponents in the work examined here of the straightforward view that aid works on average, albeit with diminishing returns” (p. 35).

²⁰ The standard explanation for not using annual data is that averaging helps to “eliminate business cycle factors and measurement error” (Boone 1996, p. 304).

²¹ “Effective development assistance” (EDA) as defined by Chang et al. (1998) is computed by isolating the grant component of concessional loans and adding it to the volume of outright grants. While EDA may give a more accurate impression of the sacrifices made by donor countries, the original ODA series covers a larger number of countries and time periods.

²² A carefully assembled table in the appendix of Jensen and Paldam (2003) singles out the countries that did not make it into the BD sample because either EDA data or some control variable were not available. It is quite disheartening that, to a large extent, these are countries with very low incomes to which the BD message was supposed to apply in the first place.

The policy variable

A third line of critique focuses on the policy variable used by BD. An obvious objection is that this proxy is extremely ad-hoc: why should good policies be reflected by a combination of low inflation, a low budget deficit, and trade openness and not, say, a low black market premium? Why is the Sachs-Warner index used instead of some alternative measure of trade openness like the sum of imports and exports over GDP? These points are raised by Easterly (2003) who reports that interacting aid with alternative policy variables, such as the black-market premium, does not yield a significant coefficient.

A related argument is brought forward by Brumm (2003) who emphasises that the BD policy variables are, at most, proxies for the quality of a country's economic policy, and that one needs to account for measurement error when using such proxies. Adopting an econometric approach that is more robust to measurement error and that treats economic policy as a latent variable, he comes up with the surprising finding that the coefficient of the interactive term is significantly *negative* – which suggests that aid is more effective in countries where it meets a bad policy environment.²³

Quite related are the results of Guillaumont and Chauvet (2001) who find that the BD interactive term is insignificant in a regression focusing on twelve-year intervals, but that aid is more effective in countries which are characterized by an unstable economic environment.²⁴ Finally, Harms and Lutz (2003) test whether aid has an effect on the volume of private foreign investment, i.e. the sum of foreign direct investment and portfolio equity investment. Instead of the BD policy index, they use a set of *governance indicators* developed by Kaufmann et al. (1999). The first advantage of these data is that they carefully isolate different aspects of the 'political and institutional environment', distinguishing variables that refer to the political system ('voice' and 'political stability') from measures that reflect the quality of official government activity ('government effectiveness', 'regulatory burden') and from indicators that reflect the population's respect for laws and institutions ('graft', 'rule of law'). The second advantage is that the Kaufmann et al. (1998) data are based on a systematic aggregation of measures from different sources and thus represent a consensus view on countries' institutional and political situation. Regressing private foreign investment (in per capita terms) on aid per capita and an interactive term, Harms and Lutz (2003) find that, for countries with an 'average' institutional environment, aid has no impact. However, it becomes significantly positive in countries where investors meet a heavy regulatory burden. The explanation they offer for this puzzling finding is that the impact of (aid-financed) public infrastructure services on the marginal productivity of capital may be larger in countries where an oppressive regulatory environment prevents the private sector from providing these services.

5.4. Endogenous institutions and conditionality

A further reason for criticising the BD policy variable is that it represents a set of policy *outcomes* which are very likely to be a function of both aid and growth. Of course, BD are aware of this problem, and they discuss it explicitly in their paper. However, despite their reassurances, the reader is left with the nagging feeling that the BD result reflects a combination of various causal effects. If one wants to isolate the direct effects of aid on growth, one is left with the question whether there are any 'deeper' structural variables that capture the policy environment and that are less likely to be a function of other endogenous variables. Dalgaard et al. (2004) offer the fraction of land in tropical areas as a candidate, arguing that climatic differences are correlated

²³ Brumm's (2003) analysis differs from BD both by using an alternative econometric method and by considering a pure cross section of 24-year averages.

²⁴ Guillaumont and Chauvet (2001) use the stability of agricultural added value, the stability of the real value of exports, the trend of the terms of trade and the log of initial population as proxies for economic vulnerability.

with slow-moving variables that affect the business environment.²⁵ They show that an interactive term of aid with this ‘institutional variable’ has a significantly positive effect on growth, suggesting that “over the last thirty years, aid seems to have been far less effective in tropical areas” (p. 36).

Apart from forcing researchers to interpret their empirical results with caution, the discussion of the potential endogeneity of policy variables highlights another channel through which aid may affect investment and growth in developing countries: if massive aid inflows raise the extent of rent-seeking and corruption in recipient countries, the detrimental consequences on factor allocation and productivity may dominate the beneficial effects of a better infrastructure and rising education. This is exactly the point emphasised by Bauer (1991) in his fierce critique of the standard practice of aid allocation.

Again, it is an empirical question whether the perverse consequences of aid observed in some countries are systematic or exceptional. And, not surprisingly, the literature offers a wide range of – sometimes contradictory – results on this question: Svensson (2000) considers the *International Country Risk Guide*’s index of corruption and finds that aid raises graft in ethnically fractionalized countries. He interprets this as empirical support for a model in which windfall gains exacerbate the distributional struggle between competing interest groups. Knack (2001) uses the *change* of a composite measure of governance – comprising the ICRG’s indicators of corruption, bureaucratic quality and rule of law. As in Svensson (2000), Knack’s results suggest that aid dependency worsens governance. However the effect of ethnic diversity is dampening rather than exacerbating.

While the results of Svensson (2000) and Knack (2001) indicate that any beneficial economic effects of aid may be superseded by its negative impact on governance, Tavares (2003) defends the opposite point of view: his empirical findings suggest that aid *reduces* corruption. How can we explain these differences? And who is right? Closer scrutiny of the contributions by Svensson and Tavares reveals that they are strikingly similar with respect to their samples and empirical approaches. However, they differ in their choice of instrumental variables: while Svensson uses income, the terms of trade and population size as instruments for aid, Tavares focuses on variables that capture geographic and cultural proximity. Confronted with a choice between the two approaches, we believe that Tavares’ set of instruments is better suited to address the endogeneity problem.

The possibility that aid affects the quality of governance and policies finally leads to the question why donor countries do not target these variables by making aid *conditional* on recipients’ efforts in reform and their policy performance. Unfortunately, as Dollar and Svensson (1998) document, this approach seems to have failed in many cases: apparently, the threat to withhold future resources in case of poor reform performance has rarely been credible – either because of overruling strategic and economic interests (see Alesina and Dollar 2000 and Alesina and Weder 2001) or because of the mechanics of aid allocation within donor agencies (Svensson 2003).

²⁵ This line of argument goes back to Hall and Jones (1999) as well as Acemoglu et al. (2001).

6. Conclusions

Almost ten years after Boone (1996) first investigated the hypothesis that the effectiveness of aid depends on the policy environment in recipient countries, we seem to have gone full circle: for some time, Boone's result that aid is ineffective – even if one controls for the political system – seemed to be replaced by a new consensus that (aid) money matters in a good policy environment (Burnside and Dollar 2000). However, this consensus has started to unravel in recent years: some authors (Hansen and Tarp 2001, Roodman 2003, Dalgaard et al. 2004) argue that aid has a significantly positive and non-linear effect on growth, but that the non-linear relationship rather reflects diminishing returns or deep structural differences than the importance of “good policies” as defined by Burnside and Dollar (2000). Others (Brumm 2003; Harms and Lutz 2003) find that policy and institutions matter, but in a way that turn Burnside and Dollar (2000) on its head. A third set of papers (Easterly et al. 2003; Jensen and Paldam 2003) claims that one cannot find a robust effect of aid on growth unless one uses an artificially restricted sample.

Does this mean that we are back to square one, and that the past ten years leave us with nothing but a stack of empirical investigations that differ in their choice of data, specifications, and results without delivering any reliable policy recommendation? We believe that such a frustrating conclusion would ignore the important insights that can be gained from a more nuanced look at the recent research output.

In particular, it is surprising how little care and time has been devoted to a discussion of the question which component of a country's political, institutional and economic fabric one actually wants to capture by controlling for the policy environment. Is it the government's ability to control the budget deficit and the central bank's willingness to fight inflation? Is it the extent of red tape and corruption that hampers business activity? Or is it political stability, the transparency of the political process and the reliability of the legal framework? While these aspects of the ‘political and institutional environment’ are likely to be correlated – with a politically unstable country possibly favouring corrupt administrations who use seignorage for lack of a sound tax base – they are not the same. For some reason, these differences have been lost amidst the recent critique of Burnside and Dollar (2000), and we argue that it would be wrong to conclude from the findings of, e.g., Easterly et al. (2003) that, in general, we can neglect the political, institutional, and economic framework in recipient countries when assessing the effectiveness of aid. In fact, the BD policy variable may just fail to capture the aspects that matter most. Or the functional relationship between aid, macroeconomic variables, and policies may be more complex than suggested so far – involving, e.g., threshold effects or other forms of nonlinearities.

Moreover, we think that it is misleading to explore the effects of aid without accounting for the supply side of aid, i.e. without considering the criteria that are used to allocate aid or the composition of aid flows. It is hardly surprising that huge sums of mainly military support that were unleashed for strategic rather than humanitarian purposes during the cold war did not have much of a growth effect.²⁶ It is also not surprising that a variable as aggregate as official development assistance does not have a robust effect on growth. In fact, given that ODA comprises such diverse components as emergency food aid, the building of village wells, the construction of airports and the salaries of teachers, it is surprising that some researchers obtained any results at all.

Hence, we believe that the unravelling of the Burnside and Dollar (2000) consensus is a starting point rather than an end of the aid-growth debate, and we emphasise the desirability of taking a more disaggregate view – both with respect to the various aspects of policies/institutions and with respect to the different components of aid. We are sure that, once these subtle but important differences are accounted for, future research will come up with important and robust results on the macroeconomic effects of aid.

²⁶ See Burnside and Dollar (2000), Alesina and Dollar (2000) as well as Alesina and Weder (2003) for an empirical exploration of the determinants of donor countries' aid allocation.

References

- Acemoglu, D. and F. Zilibotti (1997). Was Prometheus unbound by chance? Risk, diversification and growth. *Journal of Political Economy* 105, 709-751.
- Acemoglu, D., S. Johnson and J. Robinson (2001). The colonial origins of comparative development: an empirical investigation. *American Economic Review* 91, 1369-1401.
- Agenor, P. and P. Montiel (1999). *Development Macroeconomics*. 2nd Edition. Princeton University Press, Princeton.
- Alesina, A. and B. Weder (2002). Do corrupt governments receive less foreign aid? *American Economic Review* 92, 1126-1137.
- Alesina, A. and D. Dollar (2000). Who gives foreign aid to whom and why? *Journal of Economic Growth* 5, 33-63.
- Azariadis, C. (1996). The economics of poverty traps. Part one: complete markets. *Journal of Economic Growth* 1, 449-486.
- Azariadis, C. and A. Drazen (1990). Threshold externalities in economic development. *Quarterly Journal of Economics* 105, 501-526.
- Bacha, E. (1990). A three-gap model of foreign transfers and the GDP growth rate in developing countries. *Journal of Development Economics* 32, 279-296.
- Bauer, P. (1991). *The Development Frontier – Essays in Applied Economics*, London (Harvester Wheatsheaf).
- Basu, K. (1997). *Analytical Development Economics*. The MIT Press, Cambridge, MA.
- Benhabib, J. and J. Gali (1995). On growth and indeterminacy: some theory and evidence. *Carnegie-Rochester Conference Series on Public Policy* 43, 163-211.
- Boone, P. (1995). Politics and the effectiveness of foreign aid. *Working Paper No. 272*. Centre for Economic Performance, London School of Economics.
- Boone, P. (1996). Politics and the effectiveness of foreign aid. *European Economic Review* 40, 289-329.
- Brumm, H. (2003). Aid, policies and growth: Bauer was right. *Cato Journal* 23, 167-174.
- Burnside, C. and D. Dollar (2000). Aid, policies, and growth. *American Economic Review* 90, 847-868.
- Chang, C., E. Fernandez-Arias, and L. Servén (1998). Measuring aid flows: a new approach. *Mimeo*, The World Bank, Washington D.C.
- Chenery, H. and A. Strout (1966). Foreign assistance and economic development. *American Economic Review* 56, 679-733.
- Collier, P. and D. Dollar (2002). Aid allocation and poverty reduction. *European Economic Review* 45, 1470-1500.
- Dalgaard, C., H. Hansen and F. Tarp (2004). On the empirics of foreign aid and growth. *The Economic Journal* 114, F191-F216.
- Devarajan, S., M. Miller and E. Swanson (2002). Goals for development: history, prospects and costs. *Working Paper 2819*, The World Bank, Washington D.C.
- Dollar, D. and W. Easterly (1999). The search for the key: aid, investment, and policies in Africa. *Journal of African Economies* 8, 546-577.
- Dollar, D. and J. Svensson (1998). What explains the success or failure of structural adjustment programs. *The Economic Journal* 110, 894-917.
- Easterly, W. (1999). The ghost of financing gap: testing the growth model used in the international financial institutions. *Journal of Development Economics* 60, 423-438.

- Easterly, W. (2001). *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*. MIT Press, Cambridge MA.
- Easterly, W. (2003). Can foreign aid buy growth? *Journal of Economic Perspectives* 17, 23-48.
- Easterly, W., R. Levine and D. Roodman (2003). New data, new doubts: a comment on Burnside and Dollar's "Aid, policies and growth" (2000). *NBER Working Paper No. 9846*, Cambridge, MA.
- Feyzioglu, T., V. Swaroop and M. Zhu (1998). A panel data analysis of the fungibility of foreign aid. *World Bank Economic Review* 12, 29-58.
- Galor, O. (1996). Convergence? Inference from theoretical models. *The Economic Journal* 106, 1056-1069
- Galor, O. and J. Zeira (1993). Income distribution and macroeconomics. *Review of Economic Studies* 60, 35-52.
- Gillis, M., D. Perkins, M. Roemer and D. Snodgrass (1996). *Economics of Development*. 4th Edition. W.W. Norton, New York.
- Guillaumont, P. and L. Chauvet (2001). Aid and Performance: A Reassessment. *Journal of Development Studies* 37, 66-92.
- Hall, R. and C. Jones (1999). Why do some countries produce so much more output per worker than others? *Quarterly Journal of Economics* 114, 83-116.
- Hansen, H. and F. Tarp (2000). Aid effectiveness disputed. *Journal of International Development* 12, 375-398.
- Hansen, H. and F. Tarp (2001). Aid and growth regressions. *Journal of Development Economics* 64, 547-570.
- Harms, P. and M. Lutz (2003). Aid, governance, and private foreign investment: some puzzling findings and a possible explanation. *Study Center Gerzensee Working Paper 03.04*.
- Hopkins, R. (2000). Political economy of foreign aid. In F. Tarp (ed.), 423-49.
- Jensen, P. and M. Paldam (2003). Can the new aid-growth models be replicated? *Working Paper No. 2003-17*, Department of Economics, University of Aarhus.
- Jones, L. and E. Manuelli (1990). A convex model of equilibrium growth: theory and policy implications. *Journal of Political Economy* 98, 1008-1038.
- Kanbur, R. (2000). Aid, conditionality and debt in Africa. In F. Tarp (ed.), 409-22.
- Kaufmann, D., A. Kraay and P. Zoido-Lobaton (1999). Governance matters. *Policy Research Working Paper 2196*, The World Bank, Washington D.C.
- Knack, S. (2001). Aid dependence and the quality of governance: cross-country empirical tests. *Southern Economic Journal* 68, 310-329.
- Knack, S. and P. Keefer (1995). Institutions and Economic Performance: Cross-country tests using alternative institutional measures. *Economics and Politics* 7, 207-227.
- Langhammer, R. (2004). Halving poverty by doubling aid: is there reason for optimism? *World Economy* 27, 81-98.
- Levine, R. and D. Renelt (1992). A Sensitivity Analysis of Cross-Country Growth Regressions. *American Economic Review* 82, 942-963.
- Lewis, W. (1954). Economic development with unlimited supplies of labour. *The Manchester School* 22, 139-191
- Lucas, R. (1988). On the mechanics of economic development. *Journal of Monetary Economics* 22, 3-42.
- McKinnon, R. (1964). Foreign-exchange constraints in economic development and efficient aid allocation. *The Economic Journal* 74, 388-409.
- Mosley, P. (1987). *Overseas Aid: Its Defence and Reform*. Wheatsheaf Books, Brighton

- Murphy, K., A. Shleifer and R. Vishny (1989). Industrialization and the big push. *Journal of Political Economy* 97, 1003-10026
- Nafziger, W. (1997). *The Economics of Developing Countries*. 3rd Edition. Prentice-Hall, New Jersey.
- Nelson, R. (1956). A theory of the low-level equilibrium trap in underdeveloped economies. *American Economic Review* 46, 894-908.
- Ray, D. (1998). *Development Economics*. Princeton University Press.
- Robinson, S. and F. Tarp (2000). Foreign aid and development: summary and synthesis. In F. Tarp (ed.), 1-14.
- Roodman, D. (2003). The Anarchy of Numbers: Aid, Development, and Cross-Country Empirics. *Working Paper No. 32*, Center for Global Development, University of Harvard.
- Sala-i-Martin, X. (1997). I just ran two million regressions. *American Economic Review* 87, 178-183.
- Svensson, J. (1999). Aid, growth, and democracy. *Economics and Politics* 11, 275-297.
- Svensson, J. (2000). Foreign aid and rent-seeking. *Journal of International Economics* 51, 437-461.
- Svensson, J. (2003). Why conditional aid does not work and what can be done about it? *Journal of Development Economics* 70, 381-402.
- Tarp, F. (1993). *Stabilization and Structural Adjustment*. Routledge, London.
- Tarp, F. (2000) (ed.). *Foreign Aid and Development – Lessons Learnt and Directions for the Future*. Routledge, London.
- Tavares, J. (2003). Does foreign aid corrupt? *Economics Letters* 79, 99-106.
- World Bank, The (1998). *Assessing Aid: What Works, What Doesn't and Why*. The World Bank, Washington D.C.
- World Bank, The (2003). *World Development Indicators 2003*. The World Bank, Washington D.C.
- World Bank, The (2004). *Global Development Finance 2004*. The World Bank, Washington D.C.