14/6-2005

Conditional aid effectiveness

A meta study

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Abstract:

The AEL (aid effectiveness literature) studies the effect of development aid using econometrics on macro data. It contains about 100 papers of which a third analyzes conditional models where aid effectiveness depends upon z, so that aid only works for a certain range of the variable. The key term in this family of AEL models is thus an interaction term of z times aid. The leading candidates for z are a good policy index and aid itself. In this paper, meta-analysis techniques are used (i) to determine whether the AEL has established the said interaction terms, and (ii) to identify some of the determinants of the differences in results between studies. Taking all available studies in consideration, we find no support for conditionality with respect to policy, while conditionality regarding aid itself is dubious. However, the results differ depending on the authors' institutional affiliation.

JEL.: B2, F35, O35

Keywords: Aid effectiveness, meta study, economic growth, policy conditionality

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Acknowledgements: Our cooperation was supported by the Aarhus University Research Foundation. Pia Wichmann Christensen has been a very competent research assistant. This paper benefited from ideas and comments from Peter Sandholt Jensen and Mehmet Ulubasoglu.

1. Introduction: An important puzzle

Development aid is meant to contribute to the economic development of the recipient country. However, raw macro data show no relation between the share of development aid and economic growth in the recipient country.[1] This is even more puzzling as the amount, magnitudes and variability of the data should make them ideal for this kind of research. Research is often driven by puzzles, and it has certainly generated a large AEL, **A**id **E**ffectiveness **L**iterature. Figure 1 overleaf divides the AEL into three families of studies. We analyze each family in a seperate paper, of which this is one.

Many researchers claim that the impact of aid is unconditionally good for growth, bad for growth, or has no clear effect. The research considered here argues that the effect of aid is conditional. One group argues that aid is effective conditional on good policy; another that aid is effective conditional on the level of aid. Still others argue that institutional conditions determine aid effectiveness. All these conflicting positions have empirical support, so it is difficult to identify the true aid-growth association. In addition to the puzzle, the AEL is also driven by the great importance of the underlying policy issue. Mass poverty in the LDC world is surely a huge problem. Many in the West are concerned about effective development strategies, and in particular about what they can do to assist development.

Existing reviews of the AEL are all partial. They are not quantitative, but largely subjective qualitative reviews, and as such are vulnerable to "causal methodological speculation" (Stanley 2001). Accordingly, the aim of this paper is to review *all* available evidence drawn from the published and unpublished conditionality studies. We use meta-analysis on these studies to conduct a quantitative review. Specifically, we ask whether the available evidence supports the notion of conditionality with respect to policy. We also ask whether the conflicting results are due to the way studies are conducted, and whether the results are dependent on the interests of those who conduct them.

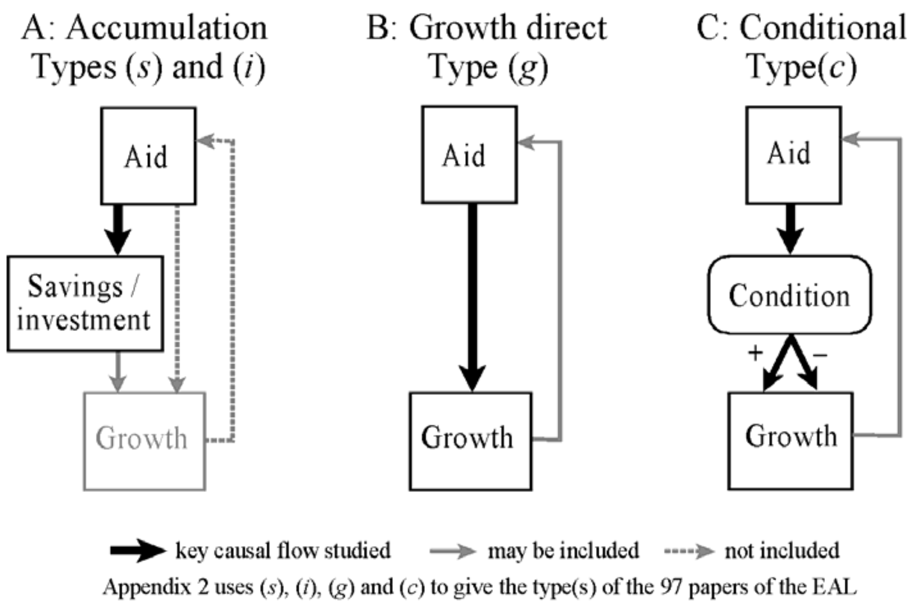
Section 2 classifies the AEL and discusses the theory of the conditionality family of models. Meta-analysis is used in section 3 to determine if the key effects of the two main conditionality models have been established, and in section 4 to explain the differences in reported results. Section 5 summarizes the sad findings of the paper. Appendix 1 is an introduction to meta techniques, especially to the tests used. Appendix 2 lists the AEL.

1. See estimates in Herbertsson and Paldam (2005) and Doucouliagos and Paldam (2005c).

2. From aid effectiveness to conditional aid effectiveness

A thorough search produced the 97 AEL papers listed in Appendix 2.[2] We have divided the models of the papers into 3 families, depending on the causal structure analyzed, as given in figure 1. Half the papers bring models from more than one family.

Figure 1. The causal structure in the three families of AEL models



A: 43 papers contain *accumulation estimates* of the impact of aid on either savings or investment. They are marked as type (*s*) and (*i*) in Appendix 2. These models are covered in Doucouliagos and Paldam (2005a) that shows that aid has an unclear effect on accumulation.

B: 68 papers contain a total of 543 *direct estimates*, using reduced form models of the effect of aid on growth. They are marked as type (*g*) in Appendix 2. They are covered in Doucouliagos and Paldam (2005b), which shows that the 543 estimates of the direct effect of aid on growth reported scatter considerably, and add up to a small positive, but not statistically significant effect on growth.

C: 31 papers contain *conditional estimates*, where the effect of aid on growth depends upon a third factor *z*, so that if *z* is favorable, the result is growth, and vice versa if *z* is

2. Extensive searches of Econlit, Proquest, Web of Science and Google were undertaken, from which we could track citations backward. Papers available only after 1st of January 2005 are not included.

unfavorable. These studies are marked as type (*c*) in Appendix 2. This is the family analyzed in this paper.

Historically, the AEL was started in the early 1970s by papers in the A-group. The early studies found no effect of aid on accumulation, and the AEL then moved on to the B-group papers, where most of the research in the 1980s and 1990s was done.

The AEL has published 1025 regressions. To reach these regressions many more have been made. The number of regressions on which the AEL is based is surely much larger than the amount of data for aid and growth available. We have concentrated the discussion of the resulting *data mining* in Doucouliagos and Paldam (2005c), see however Appendix 1 on the statistics used.

2.1 Conditional aid effectiveness

In the late 1990s two new developments came about. One was the appearance of a new EDA data set for aid (Chang, Fernandez-Arias and Serven 1998), which reduced the standard ODA data to the gift equivalent.[3] This was a promising new development, but we find that it does not affect the results of the studies as the two data sets are highly correlated.

The other development was that the C-family of models appeared, using the new data. The C-group of studies is the newest family, as nearly all 31 papers were written within the last 10 years. The list is still growing, and there are more publications in the field in 2004 than any other year.[4] Thus, our study is a snapshot of a wave that is still rolling.

The C-family of studies is based on the idea that aid ineffectiveness may be due to aid having a positive effect on growth in some countries and a negative effect in others, so that aid is conditionally effective. Till now, three conditions have been proposed, leading to three models, of which two have an *institutional home*.[5]

(x1) *Good Policy Model*: Aid works if the recipient country pursues good polices, and is harmful in countries pursuing bad policies. The Good Policy Model was proposed initially by Burnside and Dollar (2000) from the World Bank. The working paper

3. The EDA data cover fewer years and countries than the ODA set, and therefore the competition between the new models came to take place on about 1/3 of the available data. However, very little changes if the ODA data for the same years and countries are used.
4. The first paper in the AEL is from 1968, and since then there has been a significant upward trend. The conditional family started in 1995, and has dominated the AEL since 1999.
5. The term *institutional home* is used in the sense that the models are proposed by research financed by a specific institution, which contributes to making the model known. Also, in both cases the model is broadly consistent with the thinking and policies of the institution.

version appeared in 1995, and it was popularized in World Bank (1998). The institutional home of the model is thus the World Bank.

The model has been analyzed in 22 more papers: Svensson (1999); Hansen and Tarp (2000; 2001); Collier and Dehn (2001); Dalgaard and Hansen (2001); Guillaumont and Chauvet (2001); Hudson and Mosley (2001); Lensink and White (2001); Lu and Ram (2001); Collier and Dollar (2002); Brumm (2003); Dayton-Johnson and Hoddinott (2003); Burnside and Dollar (2004); Chauvet and Guillaumont (2004); Collier and Hoeffler (2004); Dalgaard, Hansen and Tarp (2004); Denkabe (2004); Easterly, Levine and Roodman (2004); Jensen and Paldam (2004); Ram (2004); Roodman (2004); and Shukralla (2004).

(x2) *Medicine model*: Aid works if given in moderation, and harms if taken in excess, just like most medicine. This model was first proposed by Hadjimichael, Ghura, Mühleisen, Nord and Ucer (1995), but it has mainly been developed and publicized by the DERG (Development Economics Research Group) at Copenhagen University. The group, which includes Tarp, Dalgaard and Hansen (see below), is financed by *Danida* (Danish Development Aid Agency). The model was popularized by a special grant to Tarp and Hjertholm (2000), and its institutional home is thus Danida.

This model has been further analyzed in 14 papers: Durbarry, Gemmell and Greenaway (1998); Hansen and Tarp (2000; 2001); Dalgaard and Hansen (2001); Hudson and Mosley (2001); Lensink and White (2001); Collier and Dollar (2002); Gomanee, Girma and Morrisey (2002); Denkabe (2003); Moreira (2003); Ovaska (2003); Collier and Hoeffler (2004); Dalgaard, Hansen and Tarp (2004); Jensen and Paldam (2004).

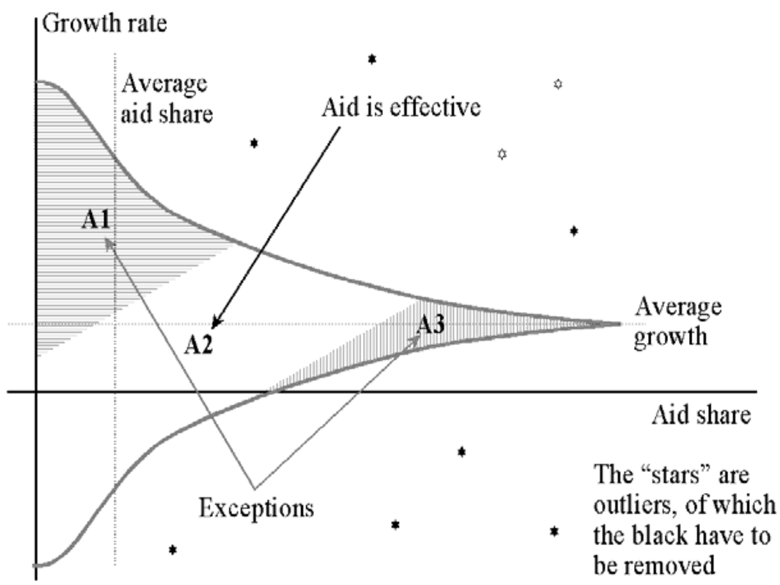
(x3) *Institutions models*: A residual of 10 papers contains models that condition for various institutions: Two studies link aid with *GDP* (Bowen 1995; Svensson 1999); two papers condition for *democracy* (Svensson 1999; Kosack 2002); one for *external vulnerability* (Guillaumont and Chauvet 2001); two for *quality of institutions* (Collier and Dehn 2001; Collier and Dollar 2002); one for *trade openness* (Teboul and Moustier 2001); and one for *economic freedom* (Brumm 2003). Finally one condition for *political instability* (Chauvet and Guillaumont 2004).

Note that several of the papers listed appear in two groups. While future development may be within the institutional models, it is certainly the two first models that have led to a stream of papers, in particular the Good Policy Model, which has dominated the macroeconomic aid discussion since 1995.

2.2 The two main models

Figure 2 shows the funnel-like distribution of the raw aid growth data for 156 LDCs (based on Paldam 2004). The two gray curves give the outer bounds for 95% of the observations. There are some wild outliers, such as the "stars" far outside the bounds.

Figure 2. Interpreting the data to get positive aid effectiveness



To find positive aid effectiveness, the conditional studies thus have to give the A1 and A3 areas a separate explanation, and disregard some of the outliers (the black stars).

Both the Good Policy Model and the Medicine Model may be seen as attempts to single out parts of the two areas A1 and A3. Good Policy generates growth, so the Good Policy Model explains A1 by a separate term, while aid squared explains A3 by a separate term. Thus in both cases one may get a nice coefficient to aid.

In both models g_{it} is the real growth rate, and h_{it} is the aid share. The *j* controls, $\boldsymbol{x}_{jit}$, are the "nuisance" part of the model, and u_{it} are the residuals. Greek letters are the coefficients estimated. The two indices are *i* for countries and *t* for time.

The Good Policy Model (from Burnside and Dollar 2000) has 2 equations. The Good Policy Index, z_{it} is a weighted sum of, e.g., the budget balance, B_{it}, the inflation rate, p_{it}, and trade openness, T_{it}, while (2) is the aid effectiveness relation.

(1) $z_{it} = \lambda_0 + \lambda_1 B_{it} + \lambda_2 p_{it} + \lambda_3 T_{it}$ Good Policy Index[6]

(2) $g_{it} = \alpha + \mu h_{it} + \delta z_{it} + \omega z_{it} h_{it} + \gamma_{jit} \boldsymbol{x}_{jit} + u_{it}$ Aid Effectiveness Relation

In the original findings μ is insignificant, while both δ and ω are positive and significant.[7]

The coefficients for the Good Policy Index, z, is scaled (estimated), so it is fairly symmetrical around zero for the countries considered, and z is outcome oriented, so it is not surprising that δ becomes significant and positive. What is non-trivial is that the interacted variable $z_{it}h_{it}$ produces a significantly positive coefficient, ω. It means that aid to a country that pursues good policies increases growth, which is already high due to the good policies. Aid to a country with bad policies decreases growth, which is already low due to the bad policies. Obviously, the policy implications are that aid should be given to countries pursuing good policies only. It is cruel to give aid to countries pursuing bad policies.

Thus, in the Good Policy Model, the crucial coefficient is ω to the interactive term. However, also the coefficient to aid, μ, matters, as it shifts the relation up or down: If μ is large and positive, aid may be preferable to no aid, even in countries with bad policies, and reversely, if μ is negative, no aid may be preferable even in countries with good policies. Aid effectiveness thus depends upon both coefficients μ and ω.

The Medicine Model (3) uses aid itself as the condition:

(3) $g_{it} = \alpha + \mu h_{it} + \omega h_{it}^2 + \gamma_{jit} \boldsymbol{x}_{jit} + u_{it} = \alpha + \phi(h_{it}) + \gamma_{jit} \boldsymbol{x}_{jit} + u_{it}$

The proponents of the model find that $\mu > 0$ and $\omega < 0$. The size and robustness of both μ and ω, are important for this model. The function, $\phi(h_{it})$, shows the excess growth due to aid. It looks like drawn on figure 3, with a symmetrical positive section between zero and 2Ω.

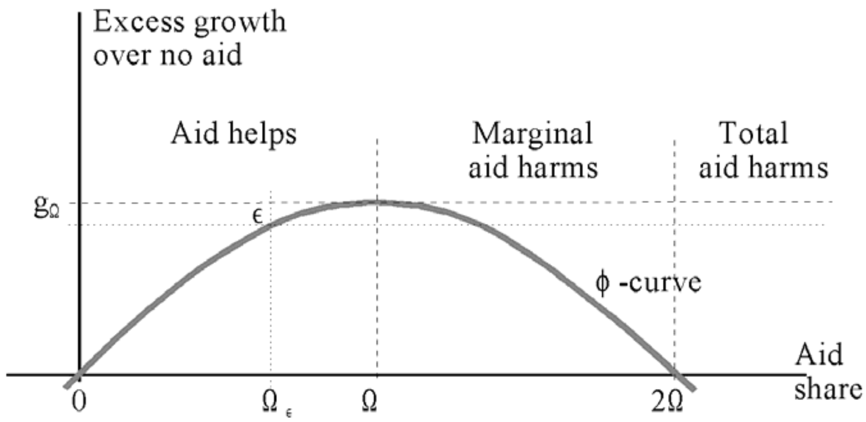
Two policy conclusions from the model are that aid is optimal at $h = \Omega$, where excess growth is g_Ω. (1) Aid should not exceed Ω. In fact, aid should not exceed Ω_ε, where ε is a measure of marginal costs to the donor. The model also says that marginal aid effectiveness,

6. In Burnside and Dollar (2000): $\lambda_0 = 1.28, \lambda_1 = 6.85, \lambda_2 = -1.20$ and $\lambda_3 = 2.16$.

7. Some studies estimate more general specifications that include squared aid, and aid policy and squared aid policy interactions, but the essence of the model is captured in equation 2.

$\partial g / \partial h = \mu + 2\omega h$, is highest at zero and falls to zero in *Ω*. (2) Consequently aid shares should be as equal as possible for all recipients. This is against the policy of poverty orientation of many donors, which demands that aid should be disproportionaly given to the poor.

Figure 3. The form of the quadratic aid effectiveness function



Both models thus have two *substantial* coefficients: μ to aid and ω to the interacted term. Proponents of the Good Policy Model claim that $\mu \approx 0$ and $\omega > 0$. Proponents of the Medicine Model claim the $\mu > 0$ and $\omega < 0$.

3. Are the substantial terms of the models established?

In order to make sense of the many conflicting results of the AEL, we use the tools of the rapidly emerging field of meta-analysis, see Appendix 1. The method is developed for two purposes: (P1) To determine if an empirical literature has established certain facts. In the case of the present study we want to know what the AEL says about the size of the two key coefficients, μ and ω, of the two main models. (P2) To study if the variation in the estimates can be explained by methodological differences of the studies, or – at a different level – by priors of the authors, that is prior expectations about the underlying population parameters. The present section considers (P1), while section 4 turns to (P2).

By methodological differences we mean: (a) differences in *models*, notably in control variables included; (b) differences in the *data samples* on which models are estimated;[8] and (c) differences in regression *technique*s used for the estimation.

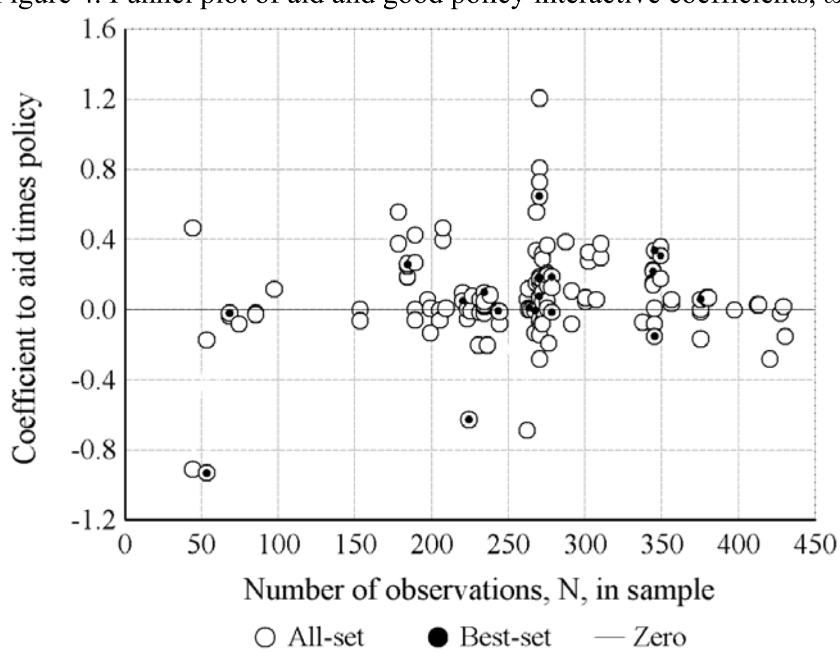
8. Aid started in the early 1960s. It has accumulated with 100-150 observations since the mid 1970.

The many methodological possibilities offer the researcher a large number of choices. It is possible that all these choices are made *only* to seek the truth, but few researchers are likely to be so pure. Researchers are commonly guided by prior beliefs,[9] expectations or interests. Some researchers may even systematically seek a confirmation of a prior. In addition to interests, priors may be due to history or institutional nearness – once an author or his group has presented a certain result, a prior has been generated. Studies may thus have biases due to priors (see Doucouliagos and Laroche 2003). Meta-analysis allows us to explore whether differences between studies are biases.[10]

3.1 Data and methods of analysis

The 31 studies listed above are the raw data of the meta-analysis. From these data we derive two data sets: The ***best-set*** of the 31 regressions presented by the author(s) of the 31 papers as its best regression. It is not always clear what is the authors' preferred estimate, so we have sometimes had to assess. The second set is the ***all-set*** of all 162 regressions reported for the Good Policy Model and 85 for the Medicine Model. This increases the data available for tests, but it gives some interdependence between data points.

Figure 4. Funnel plot of aid and good policy interactive coefficients, ω



Note: One extreme point at (98, -3.68) from Svensson (1999) is outside frame of the figure.

9. Doucouliagos and Paldam (2005a and b) demonstrate that both *left-wingers* and *libertarian* researchers tend to report that foreign aid has a negative impact on savings and economic growth.
10. The parallel argument in historical research is termed *source critique*.

It is important to note that we do not study a sample of the available studies, but the *population* of available studies.[11] Of the 31 conditionality studies, 23 studies report estimates of the aid policy interaction. Another 15 studies report estimates of the aid squared term – this is barely enough for a meta study, but we will try. Finally, 10 studies bring models conditioned on various institutions. They can only be surveyed by qualitative assessments.

To get a 'feel' for the data, consider figure 4, which is a funnel plot of the 162 estimates. All 23 studies have economic growth (as a percentage) as the dependent variable, and likewise all use a similar measure of aid (as a percent of GDP). Hence, the estimates are elasticities and are directly comparable across studies.[12]

The funnel plot shows the association, if any, between the estimates of ω and sample size. The elasticity should converge toward the true result as N increases, with smaller studies showing greater variation, so the point scatter should look funnel-like, but it does not.[13] There is a clear cluster of coefficients around the zero mark – especially for high Ns – suggesting that the aid policy variable has a coefficient close to zero, as is shown in tables 1 and 2. There are, however, many positive as well as some negative coefficients. To see if a policy effectiveness result has been established, we need to address two problems.

First, should all or only some estimates be included? We explore the all-set (which includes results relating to robustness checks) as well as the best-set. Second, should all studies be treated equally? In the present section we use the sample size to assign weights to studies.[14] As this literature is relatively young, many of the papers are still working papers. We control for publication status of papers in section 4.

3.2 Have the coefficients μ and ω of the Good Policy Model been established?

The Good Policy studies have a best-set of 23 observations, and the all-set has 162 observations.[15] Basic counts and tests are given in table 1. Appendix 1 explains these tests. The key coefficient in the Good Policy model is ω on the aid-policy term and μ on aid. Table 1 reports

11. This literature is developing very rapidly, but we do not include studies available only after 1/1-2005.
12. EDA and ODA data are roughly proportional, and thus should give the same elasticities. In the larger data set focusing on the aid-growth association (abstracting from conditionality) of Doucouliagos and Paldam (2005b) we test if it makes any difference to use EDA or ODA data. It does not.
13. Using only the 23 best-set observations also does not produce a funnel shaped plot. See Doucouliagos and Paldam (2005b) for better examples of funnel shaped distributions.
14. A larger sample should on average give more accurate estimates and should, hence, be assigned a larger weight (see Hunter and Schmidt 2004).
15. Some studies report only a single estimate, e.g. Lensink and White (2001) and Dalgaard, Hansen and Tarp (2004), but the average study reports 7 regressions. We have refrained from including a few estimates explicitly rejected by the authors. Including these does not, however, change the conclusions significantly.

the distribution of the Good Policy Model results for both coefficients. Of the 23 studies only (10/23 =) 43% found a positive and statistically significant aid policy interaction.

Table 1 reports the Meta-Significance Test (MST), which is a test for the existence of a genuine effect between two variables, using all the available empirical evidence. A genuine effect will reveal itself through a positive and statistically significant association between degrees of freedom, *df*, and t-statistics. The MST results for both Good Policy model data sets show that the coefficient on lndf_i is not statistically significant, indicating that the aid-policy interaction effect is not meta-significant (all p-values > 0.10). That is, taking all the available information there is no evidence of a genuine effect between aid-policy interactions and economic growth. The Funnel Asymmetry Test (FAT) is a test for publication bias in a given literature. For both data sets, there is clear evidence of publication bias (all p-values < 0.10).

Table 1. Effects of aid, μ, and aid times policy, ω, in the Good Policy Model

	All-set, N = 162				Best-set, N = 23			
Sign counts	Positive		Negative		Positive		negative	
	Signif.	Not	Not	Signif.	Signif.	Not	Not	Signif.
Aid, μ	24	47	51	7	4	3	7	0
Aid · policy, ω	52	59	45	6	10	7	5	1
Test results	MST-test		FAT-test		MST-test		FAT-test	
	(3A)	p-value	(5A)	p-value	(3A)	p-value	(5A)	p-value
Aid, μ	-0.08	-0.46	0.50	0.00	na		na	
Aid · policy, ω	0.22	0.30	0.90	0.00	0.36	0.48	0.71	0.05
	Credibility Intervals							
Aid · policy, ω	-0.10 to +0.19				-0.04 to +0.20			

Note: *Signif.* is significant at the 10% level, while *Not* is insignificant. (3A) and (5A) refer to formulas in Appendix 1. Cells based on few observations have gray shading, na = too few observations. Credibility intervals trace the distribution of partial correlations associated with ωs.

Table 1 reports also credibility intervals, which trace the distribution of parameter values (i.e. between aid policy interaction and economic growth), rather than a single value. Since the distribution of the parameter values includes zero, we cannot reject the hypothesis that aid policy interaction has a zero or even a negative association with economic growth.

Of particular interest to us is whether there is any detectable difference between the results reported by researchers affiliated with the aid industry and those employed by universities. While it may be controversial, we expect *a priori* that the former group is more likely to either (a) find that foreign aid has a positive effect on economic growth, or (b) find that the impact of foreign aid on economic growth is dependent on policy. We have no prior expectations with respect to the direction of findings by researchers from universities.

Table 2. Meta-analysis of the estimates of the Good Policy Model

(1) Group	(2) No.[a)]	(3) Coeff.	(4) Simple average	(5) Median	(6) Weighted aver.[b)]	(7) 95% interval [c)] Lower	Upper
All-set of 162 regressions							
All Studies	162	μ	-0.01	+0.01	-0.01	*-0.19*	*+0.16*
		ω	+0.05	+0.05	+0.04	*-0.16*	*+0.09*
Non-Aid Business	81	μ	-0.06	+0.01	-0.06	*-0.18*	*+0.13*
		ω	+0.03	+0.01	+0.04	*-0.04*	*+0.09*
Aid Business	81	μ	+0.04	+0.01	+0.03	*-0.04*	*+0.16*
		ω	**+0.13**	**+0.08**	**+0.08**	*+0.07*	*+0.17*
Danida Group	19	μ	**+0.28**	**+0.14**	**+0.28**	*+0.10*	*+0.52*
		ω	+0.04	+0.01	+0.04	*0.00*	*+0.08*
World Bank Group	27	μ	-0.11	-0.10	-0.12	*-0.18*	*+0.03*
		ω	**+0.17**	**+0.18**	**+0.17**	*+0.09*	*+0.21*
Best-set of one regression per paper							
All Studies	23	μ	-0.02	-0.02	-0.04	*-0.33*	*+0.35*
		ω	+0.04	+0.06	+0.08	*-0.39*	*+0.13*
Non-Aid Business	11	μ	-0.11	+0.17	-0.03	*-0.97*	*+0.30*
		ω	-0.11	0.00	-0.04	*-0.62*	*+0.05*
Aid Business	12	μ	+0.06	-0.11	-0.04	*-0.24*	*+0.65*
		ω	**+0.19**	**+0.19**	**+0.21**	*+0.08*	*+0.29*
Danida Group	4	μ	**+0.59**	**+0.26**	**+0.53**	*+0.17*	*+1.32*
		ω	**+0.03**	**+0.03**	**+0.03**	*+0.00*	*+0.05*
World Bank Group	6	μ	**-0.25**	**-0.25**	**-0.27**	*-0.40*	*-0.10*
		ω	**+0.23**	**+0.22**	**+0.23**	*+0.15*	*+0.30*

Notes: μ is the coefficient on aid, and ω is the coefficient on aid times policy. The bolded estimates are significant. a) Number of estimates. b) Weighted with number of observations for each estimate. c) Confidence intervals are bootstrapped, see Appendix 1.

Above we mentioned that the World Bank is the institutional home of the Good Policy Model,[16] while Danida is the institutional home of the Medicine Model. Accordingly, we consider two groups of aid business studies. The World Bank group papers are: Burnside and Dollar (2000; 2004); Collier and Dehn (2001); Collier and Dollar (2002); Collier and Hoeffler (2004); and Svensson (1999). The Danida group papers are: Dalgaard and Hansen (2001); Dalgaard, Hansen and Tarp (2004); and Hansen and Tarp (2000; 2001). We expect that the

16. The World Bank is a large organization, but the group was concentrated in the same department, with P. Collier (director) and D. Dollar (division head). They are also the two most prolific authors in the AEL.

World Bank group has a prior for a positive aid policy term, while the Danida group has a prior against the aid policy term, but for the aid squared term.[17]

Table 2 gives a basic meta-analysis of the two data sets for the two coefficients. The estimates have been grouped and a set of averages calculated, and the obvious differences tested for significance. Table 2 combines the results from different studies into an overall result, showing what the literature has established for the all-set and for the best-set. Results are given for the coefficient ω on the aid policy interaction term and μ on aid alone. Column 2 lists the number of estimates for each group. Column 4 reports the simple unweighted average of the estimates, and column 5 reports the median values. The sample size weighted averages are reported in column 6. Column 7 reports the 95% confidence intervals constructed around the weighted average partial correlations (see Appendix 1 for construction details).

The results for all studies reported in table 2 are that the elasticity of economic growth with respect to aid-policy conditionality, i.e. the weighted average value of the interaction effect, ω is +0.04 or less. This shows that the interactive term is of little *economic* significance; also, it is not statistically significant. Hence, we conclude that when all available studies are considered, there is no evidence of a positive aid policy interaction. The table also shows that the average coefficient μ on the aid variable in this family of the AEL is even closer to zero. Thus, this family of studies has found that aid has no impact on economic growth, much like in our studies of the other families of the AEL (see Doucouliagos and Paldam 2005b and 2005c).

Table 2 compares the results of the aid business studies to the non-aid business studies. They deviate systematically in the direction predicted, and the deviation is often significant – especially as regards ω. A comparison of the findings of the Danida and World Bank groups also confirms our expectations. The World Bank group reports a relatively large positive and statistically significant value for ω and a negative value for μ. In contrast, the Danida group studies find a near zero value for ω and a positive value for μ. Interestingly, the 95% confidence intervals do not overlap, indicating that the two groups of researchers produce quantitatively different results, with a more pronounced difference when the best-set data are used: Affiliation matters. This difference in results can be seen in Figure 5, which is a funnel plot comparing the Danida and World Bank group of studies.

17. Note that Svensson (1999), though he (at that time) belonged to the World Bank group, rejected the aid policy term, but we do code this as part of the World Bank group of studies.

Figure 5. Funnel plot of aid and good policy interactive coefficients, *ω*, Danida and World Bank studies only

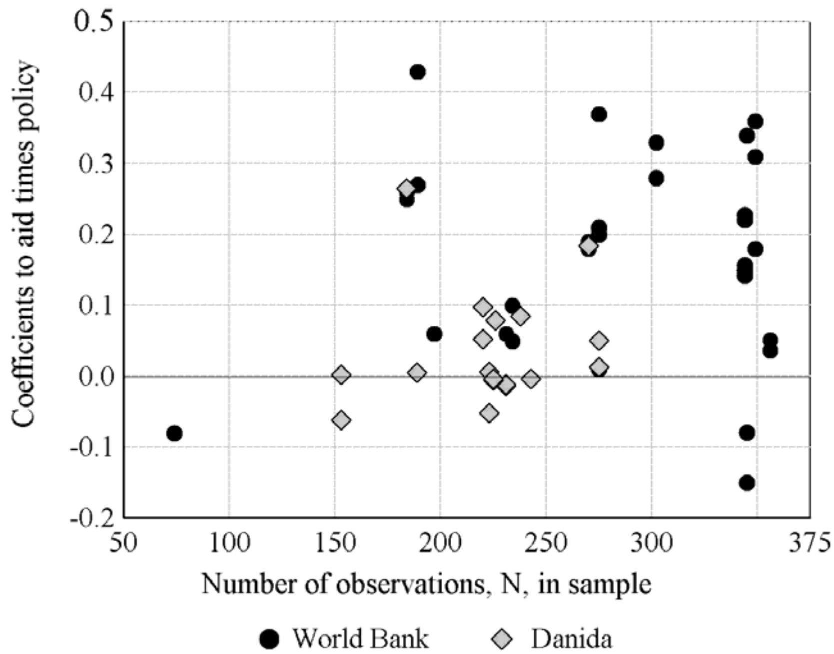
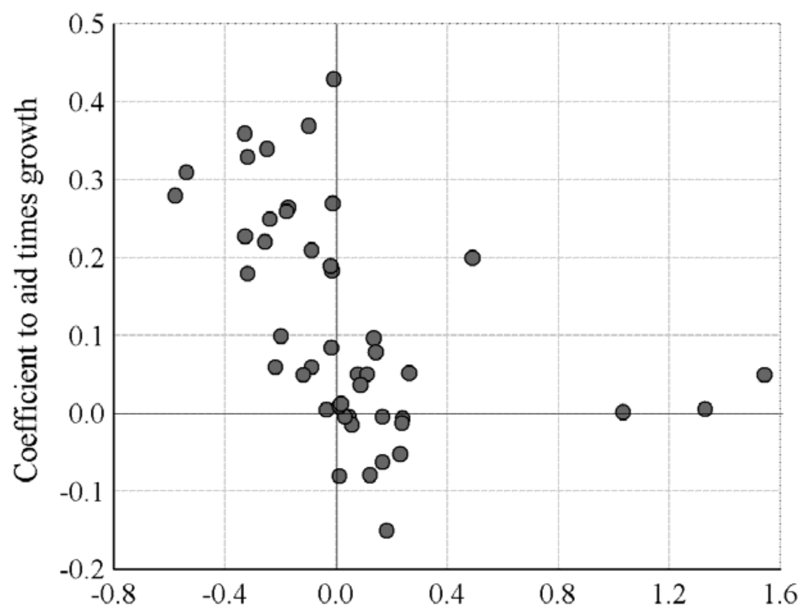


Figure 6. The relation between the coefficients to aid and aid times policy



Note: Two extreme points, (0.17, -0.93) and (0.19, -0.91), from Brumm (2003) are outside frame of figure.

One obvious feature of table 2 is the association between the magnitude of the coefficients μ and ω. Figure 6 is a simple scatter diagram of the coefficients on the aid variable and the coefficients on the aid policy interactive terms, for the Danida and World Bank group of studies. It shows a clear negative association. Studies that report higher coefficients on the aid policy interactive term tend to report lower coefficients on the aid term. As noted earlier, even if the aid policy interactive term is positive and statistically significant, it is still possible for aid to have a positive impact regardless of policy if the coefficient on aid is large enough.

3.3 Is there an aid squared effect?

The Medicine Model has been analyzed in 15 papers, and a total of 85 regressions have been presented with an aid squared term. A main problem for the analysis of this data is that a large fraction of the regressions are in papers proposing the model, Hadjimichael *et al.* (1995), Hansen and Tarp (2000; 2001), and Lensink and White (2001). There is thus little independent verification of the model.

Taking the best-set of results from all 15 studies, the weighted average aid squared coefficient, ω, is -0.08, and the associated partial correlation is -0.12.[18] Taking all 85 estimates from the 15 studies, the weighted average aid squared coefficient is -0.18, and the associated partial correlation is -0.13. Both credibility intervals include zero, so it is dubious if the term is significant (see Table 3). Hence, a firm conclusion on this aspect of conditionality cannot be made. Also, here we do get a significantly positive coefficient, μ, to aid. Further research is clearly needed.

Table 3. Effects of aid, μ, and aid squared, ω, in the Medicine Model

	All-set, N = 85				Best-set, N = 15			
Sign counts	Positive		Negative		Positive		Negative	
	Signif.	Not	Not	Signif.	Signif.	Not	Not	Signif.
Aid, μ	50	19	8	2	12	1	2	0
Aid squared, ω	0	4	18	63	0	0	3	12
Test results	MST-test		FAT-test		MST-test		FAT-test	
	(3A)	p-value	(5A)	p-value	(3A)	p-value	(5A)	p-value
Aid, μ	-0.03	0.87	1.53	0.00	na		na	
Aid squared, ω	0.11	0.68	-0.06	-0.20	-0.26	0.25	-0.06	0.95
	Credibility Intervals							
Aid squared, ω	-0.30 to +0.04				-0.33 to +0.08			

Note: See note to table 1. The 15 observations of the best-set are very few for the test, see also figure 6. Credibility intervals trace the distribution of partial correlations between aid and aid squared and economic growth.

18. There is a high degree of skewness in the reported coefficients from this part of the literature. For example, while the unweighted average aid squared coefficient is -0.10, the median is -0.01.

The MST results for the aid squared estimates had a coefficient on the natural logarithm of degrees of freedom of +0.11, and for the best-set it is -0.26, and neither is statistically significantly different from zero. Hence, there is no evidence of a genuine association between aid squared and economic growth.

Tables 1 and 3 also report the distribution of results and MST and FAT tests for the μ coefficients. None of the cases show evidence of a genuine effect between aid and economic growth. Note, however, that tables 1 and 3 relate to only a sub-sample of the available evidence on aid and economic growth, i.e. only to the conditionality literature. Doucouliagos and Paldam (2005b) have explored the entire body of evidence and come to the same conclusion.

3.4 Institutional conditions: The future?

The 10 papers in the residual group are all relatively new proposals. They have not been independently replicated, so they are promising, and because they are a small group they cannot be submitted to a formal meta-analysis.

Two papers condition for *democracy* (Svensson 1999 and Kosack 2002). Both suggest that aid works better in democracies, but are otherwise different, and the main thrust of Kosack's paper is to replace economic growth with growth of the human development index as the dependent variable, but he also reports results using growth, confirming that the two welfare measures are highly correlated.

Two studies by Chauvet and Guillaumont (2001; 2003) condition for various measures for *political instability* and *external vulnerability*, which attempt to catch institutional stability. This appears logical, as successful projects do need time for implementation, and hence some kind of institutional stability. Two related studies condition for *quality of institutions,* Collier and Dehn (2001) and Collier and Dollar (2002), but in different ways. Perhaps one may say that the quality and stability of institutions is the same factor for aid effectiveness. It is a main problem that we need simple and clear measures for this factor, but the proxies tried suggest that it is important for aid effectiveness.

One study conditions for *trade openness* (Teboul and Moustier 2001). The logic is here more indirect, and one gets the impression that trade openness is a proxy for a broader concept. The broadest such concept is perhaps *economic freedom* as is tried in Brumm (2003). Although it may not matter, it appears that the statistical methods used by Brumm are too far from the state of the art in the field.

Finally, two studies link aid with *GDP* (Bowen 1995 and Svensson 1999). They suggest that aid works better in more developed countries. The many studies that concentrate on a region or have regional dummies give evidence pointing in the same direction.

4. Accounting for differences in results for the two models

The previous analysis shows that priors influence results, but we also want to study the methodological differences producing the results. MRA (meta-regression analysis) can be used for that purpose (Stanley 2001). The dependent variable is a binary variable taking the value of 1 if the study reports a statistically significant positive coefficient and otherwise 0. When probit meta-regressions are used to explain this variable, it reveals if a certain other variable affects conditional aid effectiveness. The number of observations is limited, so we only use the most important explanatory variables,[19] which are defined in Table 4.

The aim of our MRA is to identify the characteristics of studies that influence the reported results. We are still interested in exploring whether an author's association with the aid business results in qualitatively different results on the aid policy variable. We include the *Danida* and *WorldBk* dummies in order to test the findings of table 2 within a multivariate context. We add a control variable for working papers since working papers have not yet passed the referee process and, hence, may have a lower quality (i.e. *WorPap* is our binary measure of research quality). We expect an association between the number of countries included in a study and the study results.[20] Similarly, we include the number of years of data from each study. We include the *DevJour* variable to see if there are differences in results across the types of journals.

4.1 Results for the Good Policy Model

The results reported in table 5, columns 1 and 2, use the all-set of 162 estimates. The *DevJour* and *AidBus* variables were not statistically significant. Consequently, they were eliminated and the model reestimated (column 2), so that the remaining variables have a t-statistic greater than 1. *NrCountries* is statistically significant: the more countries included in a study, the less

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19. We considered other aspects of studies, e.g. a dummy variable for the two papers published in the Cato journal, a dummy variable for estimation using OLS, as well as a dummy variable for the use of EDA versus ODA data. These variables were not statistically significant and can be ignored.

20. Several studies show that the choice of countries can influence study results. Burnside and Dollar (2000) shows that the exclusion of a handful of outliers changes the statistical significance of the results. Jensen and Paldam (2004) shows that the results are highly sensitive to the sample.

likely is a positive and statistically significant aid policy interaction. The *WorldBk* dummy variable is positive and statistically significant. Studies by authors associated with the World Bank are more likely to report positive aid policy effectiveness results. The *Danida* variable was only marginally statistically significant, although it did have the expected negative sign.

Table 4. Means and Standard Deviations of MRA variables. All-set.

Variable	BD means binary dummy. It is 1 if condition fulfilled, otherwise 0	GPM Mean	GPM St dev	MM Mean	MM St dev
Dependent	BD if study reports significantly positive coefficients (ω)	0.33	0.47	0.74	0.44
DevJour	BD if published in development journal	0.33	0.46	0.38	0.49
AidBus	BD if author(s) employed/affiliated with aid agency	0.48	0.50	0.47	0.52
WorldBk	BD if paper from World Bank group	0.19	0.39	0.14	0.35
Danida	BD if paper from Danida group	0.16	0.36	0.30	0.46
NrCountries	Number of countries included in the sample	62	20	61	23
WorPap	BD if the research has yet to be published in journal	0.41	0.49	0.38	0.49
NrYears	Number of years covered in the analysis	25	14	23	4

Note: *GPM* is the Good Policy Model and *MM* is the Medicine Model.

It needs to be noted that the MRA results reported in columns 1 and 2 are based on the full data set reported by researchers. The majority of these estimates are reported by authors to show the robustness of the results and to compare with the authors' preferred results. Hence, it is more meaningful to focus on those results that researchers propose as their best or preferred set of results. Accordingly, we report also the results from using only one estimate of the aid policy variable from each of the 23 studies. This, of course, reduces the number of available observations to 23. While this is the population, we still need to be cautious with the results, which are presented in columns 3 and 4. In order to preserve degrees of freedom, we remove *DevJour, AidBus* and *NrYears*, as these were not statistically significant when the all-set was used, and were not significant in preliminary analysis when the best-set was used.

It can be seen from column 3 that *Danida* has a negative and significant coefficient, *WorldBk* has a positive and significant coefficient, and the *NrCountries* has a negative and significant coefficient. All this confirms our expectations. In order to test the robustness of the results, we re-estimated the model replacing the *Danida* and *WorldBk* with *AidBus* (column 4), resulting in a large fall in the explanatory power of the model.

Table 5. Meta-regression analysis and meta-significance testing, Good Policy Model

Variable	(1) MRA: All-set	(2) MRA: All-set	(3) MRA: Best-set	(4) MRA: Best-set	(5) MSTMRA
Constant	1.77 (1.27)	1.91 (1.55)	**7.58** (2.38)	1.83 (1.18)	-0.53 (-0.51)
AidBus	0.15 (0.36)	-	-	1.04 (1.57)	-
NrCountries	**-0.02** (-2.05)	**-0.03** (-2.18)	**-0.15** (-2.92)	**-0.05** (-2.57)	**-0.02** (-2.77)
WorPap	**-0.54** (-1.72)	**-0.49** (-2.03)	1.59 (1.71)	1.57 (2.13)	-0.04 (-0.21)
Danida	-0.82 (-1.52)	-0.74 (-1.79)	**-7.46** (-10.97)	-	**-0.74** (-2.03)
WorldBk	0.46 (1.10)	**0.57** (2.11)	**4.12** (4.26)	-	**0.50** (2.48)
DevJour	-0.06 (-0.20)	-	-	-	-
NrYears	-0.03 (-0.78)	-0.03 (-1.01)	-	-	-
lndf	-	-	-	-	0.25 (1.17)
N	162	162	23	23	162
McFadden R^2	0.12	0.12	0.69	0.34	-
Adjusted R^2	-	-	-	-	0.09
Aid business ME	0.05	-	-	0.37	-
World Bank ME	0.17	0.21	0.94	-	-
Danida ME	-0.23	-0.21	-0.31	-	-

Notes: The dependent variable in columns 1 to 4 is a binary variable reflecting whether the aid policy interaction term of the study has a positive and statistically significant impact on economic growth. The dependent variable in column 5 is a natural logarithm of the absolute value of the t-statistic. Figures in brackets are z-statistics for columns 1 to 4 and t-statistics for column 5. *ME* is marginal effect. Bolded estimates are significant.

Table 6. Meta-regression analysis and meta-significance testing, Medicine Model

Variable	(1) MRA: All-set	(2) MRA: All-set	(3) MSTMRA	(4) MSTMRA
Constant	**3.55** (2.34)	**2.03** (3.58)	-0.84 (-0.98)	-0.24 (-0.28)
Proponent	-0.15 (-0.13)	-	0.65 (1.09)	-
NrCountries	**-0.02** (-2.34)	**-0.01** (-2.12)	0.00 (0.23)	-
WorPap	**-1.63** (-2.53)	**-0.97** (-2.62)	0.32 (0.98)	**0.43** (2.14)
Danida	-1.15 (-1.03)	-	-0.48 (-1.12)	-
WorldBk	**-1.38** (-2.01)	**-0.77** (-1.66)	-0.22 (-0.59)	-
DevJour	0.35 (0.64)	-	0.46 (1.04)	**0.57** (3.32)
NrYears	-0.02 (-0.33)	-	**0.04** (1.67)	-
lndf	-	-	-0.02 (-0.13)	0.06 (0.41)
N	85	85	85	85
McFadden R^2	0.13	0.10	-	
Adjusted R^2	-	-	0.02	0.05

Notes: The dependent variable in columns 1 and 4 is a binary variable reflecting whether a study's aid square term has a positive and statistically significant impact on economic growth. The dependent variable in columns 3 and 4 is a natural logarithm of the absolute value of the t-statistic. Figures in brackets are z-statistics for columns 1 and 2 and t-statistics for columns 3 and 4. Bolded estimates are significant.

The meta-regression model (column 3) on the best-set explains approximately 70% of the variation in aid policy results. In other words, most of the variation in reported aid policy coefficients can be explained by sample size and author affiliation. The marginal effects, reported in the last three rows, show the effect on the probability that a study reports a positive and statistically significant aid policy interaction. The probability that a positive and statistically significant effect is reported is close to 0.94 when the researcher is associated with the World Bank.

Doucouliagos (2005) and Stanley (2005) advocate combining MST and MRA to control for study characteristics. These MSTMRA results are presented in the last column of table 5. Once again, the coefficient on the $\ln df_i$ variable is not statistically significant, confirming the non-existence of aid and policy conditionality.[21]

4.3 Results for the Medicine Model

The meta-regression analysis was repeated for the data associated with the Medicine Model (see table 6). The one new explanatory variable is *Proponent*, which is a dummy variable with a value of 1 if the author is one of the proponents of the Medicine Model. Once again, the number of countries included in a growth regression is inversely related to the probability of finding a statistically significant conditionality result. While the *Proponent* variable is not a significant factor, the World Bank variable is: Studies conducted by authors affiliated with the World Bank are less likely to find support for the Medicine Model. Interestingly, working papers are less likely to support the Medicine Model. Working papers are mainly newer studies and hence independent verifications; however, since they are not yet published they maybe of lower quality. This result suggests that much more research into the Medicine Model is needed. Finally, the MSTMRA results presented in columns 3 and 4, confirm the results from table 3 that there is no evidence of a genuine aid square effect on economic growth (the $\ln df$ coefficients are not statistically significant).

5. Summary and conclusions

The aim of this paper was to explore one family of the AEL, aid effectiveness literature, by the tools of meta-analysis. We analyzed the conditional models, where aid is effective if one condition is right, and may be harmful if the condition is bad.

The most researched condition is “Good Policy” (defined above). The number of studies is already large enough to permit clear conclusions on the two questions asked:

(a) Is the impact of aid on growth moderated by policy? The aggregate coefficient to the interaction between foreign aid and policy proves to be very close to zero. Good policies help increase growth, but they do not influence the marginal effectiveness of aid. (b) Are the

21. Using the bootstrap to derive standard errors for the MST and MSTMRA models produces the same conclusion. The estimates for column 5, table 5, become: Coefficient on $\ln df$ = 0.24 and the t-statistic = 1.26.

reported estimates systematically influenced by study characteristics? We established that the author's institutional affiliation does influence reported results as does sample size.

The success of the Burnside and Dollar and World Bank reports was based on the evidence available at that time, but subsequent analysis has shown that their conclusions were premature. This proves Hunter and Schmidt's (2004, xxvii) statement that: "Scientists have known for centuries that a single study will not resolve a major issue. … Thus, the foundation of science is the cummulation of knowledge from the results of many studies".

The second most researched condition is aid itself, where aid works as medicine, which has an optimal dose. Here we asked the same questions. The number of independent studies is not large enough to reach a sharp conclusion, either way. It is a more robust connection, but till now it has proved too unstable for independent replication, so more research is needed.

Finally, the literature contains a whole set of new conditional variables that have been proposed and tested once or twice. These variables are potentially quite promising, and suggest that the field is open to future research.

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Appendix 1: An introduction to meta techniques, especially to the tests used

Meta-analysis uses both descriptive statistics and significance tests, which are developed for the purpose. Note especially that the significance tests have to take into account that all studies are based on a common pool of available macro data that has been thoroughly mined.

Descriptive statistics

A1. Average effects

The effect between two variables (holding other effects constant) established by a literature can be derived as a weighted average of the associated estimates:

(1A) $$\varepsilon = \sum [N_i \varepsilon_i] / \sum N_i$$

where ε is the *standardized* effect (elasticity or partial correlation) from the i^{th} study, and N is the sample size.

A2. Confidence intervals

Confidence intervals in meta-analysis can be calculated in several ways. Hunter and Schmidt (2004) derive the formula for the standard error in the mean correlation for a homogenous group of studies, as well as the standard error in the mean correlation for a heterogenous group of studies. Hedges and Olkin (1985) use a slightly different procedure. We prefer to follow Adams *et al.* (1997) and use resampling techniques to construct bootstrap confidence intervals. Bootstrap confidence intervals are more conservative. The 95% confidence intervals of elasticities were constructed using the bootstrap, of 1000 iterations (with replacement) to generate the distribution of aid and aid-growth interaction elasticities (see Efron and Tibshirani, 1993). The lower and upper 2.5% of the values of the generated distribution are used to construct the 95% confidence intervals.

A3. Credibility intervals

A credibility interval is the Bayesian equivalent of a confidence interval and is based on the idea that the underlying population correlations (in our case between aid policy interaction and economic growth) may vary across studies (see Hunter and Schmidt 2004). That is, there may be a distribution of parameter values, rather than a single value. Confidence intervals are constructed around a single population value, while credibility intervals highlight the *distribution* of population values. In this sense, credibility intervals are more important and informative than confidence intervals. In order to construct a credibility interval, it is necessary to compare the observed variance of the correlations to the variance expected from sampling error. Hunter and Schmidt (2004, p. 83) show that the observed variance across studies results from two sources: (a) variation in the population correlations and (b) variation in sample correlations produced by sampling error. That is:

(2A) $$\sigma_r^2 = \sigma_\rho^2 + \sigma_e^2$$

where σ denotes variance, and the subscripts r, ρ and e denote observed, population and sampling error, respect-tively. Thus the observed variance in correlations should be corrected for the impact of sampling error. Following the logic, we calculated partial correlations for each study (see Greene 2002 for formula). We then calculated the observed variance of partial correlations drawn from each study, with each partial correlation weighted by the associated sample size. See Hunter and Schmidt (2004) for the formula for the observed variance and the variance expected from sampling error.

Regression based tests

The data for the two following tests are a set of *n* estimates of the same effect, *ε*, with the associated tests statistics (t_i, s_i, d_i), where t_i is the t-statistics; s_i, is the standard error; d_i is the degrees of freedom of the estimate. All *n* estimates use variants of the same estimation equation and sub-samples of the same data. Both tests use the population of observations and are robust to data mining.

A4. Meta-Significance Testing: The MST test (Stanley 2001 and 2005)

The idea is that a connection between two variables, such as foreign aid and economic growth, should exhibit a positive relationship between the natural logarithm of the absolute value of the t-statistic and the natural logarithm (ln) of the degrees of freedom in the regression:

$$\text{(3A)} \qquad \ln|t_i| = \alpha_0 + \alpha_1 \ln df_i + u_i$$

As the sample size for the i[th] study rises, the precision of the coefficient estimate for the i[th] study rises also, i.e., standard errors fall and t-statistics rise. Stanley (2005) shows that the slope coefficient in equation (3A) offers information on the existence of genuine empirical effects, publication bias, or both. If $\alpha_1 < 0$, the estimates are contaminated by selection effects, because t-statistics fall as sample size rises. That is, studies with smaller samples report larger t-statistics, indicating that it is easier to mine smaller samples in order to increase the prospects of publication. If $\alpha_1 > 0$, there is a genuine association between aid policy interaction and economic growth, since t-statistics rise as sample size increases. If $0 < \alpha_1 < 0.5$, then there is a genuine association between aid policy interaction and economic growth, as well as publication bias in the literature.

A5. Funnel Asymmetry Testing: FAT-tests (Egger et al 1997; Stanley 2005)

Smaller samples have larger standard errors. If publication bias is absent from a literature, no association between a study's reported effect and its standard error should appear. However, if there is publication bias, smaller studies will search for larger effects in order to compensate for their larger standard errors, which can be done by modifying specifications, functional form, samples and even estimation technique.

$$\text{(4A)} \qquad e_i = \beta_0 + \beta_1 s_i + u_i$$

where e_i is the regression coefficient, and s_i is its standard error. Since the explanatory variable in equation (4A) is the standard error, heteroscedasticity is likely to be a problem. Equation (4A) (from Stanley 2005) is corrected for heteroscedasticity by dividing it by the associated standard error. This produces equation (5A):

(5A) $t_i = \beta_1 + \beta_0 (1/ s_i) + v_i$

If publication bias is present, the constant, β_1, in equation (3) will be statistically significant.

A6. Meta-Regression Analysis

The impact of specification, data and methodological differences can be investigated by estimating a meta-regression model (known as a MRA) of the following form:

(6A) $r_{oi} = \alpha + \beta_1 N_i + \gamma_1 X_{i1} + \ldots + \gamma_k X_{ik} + \delta_1 K_{i1} + \ldots + \delta_n K_{in} + u_i$

where

r_{oi} is the observed partial correlation (or any other standardized effect) derived from the i^{th} study,

α is the constant,

N_i is the sample size associated with the i^{th} study,

X_{ij} are dummy variable *j* representing characteristics associated with the i^{th} study,

K_{ij} are continuous variable *j* associated with the i^{th} study, and

u_i is the disturbance term, with usual Gaussian error properties (see Stanley and Jarrell 1998).

The regression coefficients quantify the impact of specification, data and methodological differences on reported study effects (r_{oi}). Both the MST and FAT tests can be combined with the MRA.

Appendix 2: The AEL, aid effectiveness literature. This paper cover studies of type (c)

Include only papers in English available till 1/1 2005. The column *Type* says the paper contains estimates of accumulation models, i.e. savings (*s*) relations of investment (*i*) relations. Eight early papers use aid proxies in the savings (*sp*) relation. Growth relations (*g*). Conditional (*c*) growth relations. Note that all models of type (*g*) are also models of type (*c*).

No	Type	Author and publication details
1	*sp*	Ahmed, N., 1971. A note on the Haavelmo hypothesis. *Review of Economics and Statistics* 53, 413-414
2	*g*	Amavilah, V.H., 1998. German aid and trade versus Namibian GDP and labour productivity. *Applied Economics* 30, 689-695
3	*ig*	Boone, P., 1994. The impact of foreign aid on savings and growth. WP London School of Econ.
4	*i*	Boone, P., 1996. Politics and the effectiveness of foreign aid. *European Economic Review* 40, 289-329
5	*sgc*	Bowen, J.L., 1995. Foreign aid and economic growth: An empirical analysis. *Geographical analysis* 27, 249-261. Estimates also in Bowen, J.L., 1998. *Foreign aid and economic growth: A theoretical and empirical investigation*. Ashgate, Aldershot, UK
6	*s*	Bowles, P., 1987. Foreign aid and domestic savings in less developed countries: Some tests for causality. *World Development* 15, 789-796
7	*gc*	Brumm, H., 2003. Aid, policies and growth: Bauer was right. *Cato Journal* 23, 167-174
8	*gc*	Burnside, C., Dollar, D., 2000. Aid, policies and growth. *American Economic Review* 90, 847-868 (Earlier WP 1777 World Bank Policy Research)
9	*gc*	Burnside, C., Dollar, D., 2004. Aid, policies and growth: Reply. *American Economic Review* 94, 781-784 (reply to Easterly, Levine and Roodman, 2004)
10	*sg*	Campbell, R., 1999. Foreign aid, domestic savings and economic growth: Some evidence the ECCB area. *Savings and Development* 23, 255-278
11	*gc*	Chauvet, L., Guillaumont, P., 2004. Aid and growth revisited: Policy, economic vulnerability and political stability. In Tungodden, B., Stern, N., Kolstad, I., eds, 2004. *Toward Pro-Poor Policies - Aid, Institutions and Globalization*. World Bank/Oxford University Press
12	*gc*	Collier, P., Dehn, J., 2001. Aid, shocks and growth. WP 2688 World Bank Policy Research
13	*gc*	Collier, P., Dollar, D., 2002. Aid allocation and poverty reduction. *European Economic Review* 46, 1475-1500
16	*i*	Collier, P., Dollar, D., 2004. Development effectiveness: What have we learnt? *Economic Journal* 114, 244-271
15	*gc*	Collier, P., Hoeffler, A., 2004. Aid, policy and growth in post-conflict societies. *European Economic Review* 48, 1125-1145
16	*gc*	Dalgaard, C.-J., Hansen, H., 2001. On aid, growth and good policies. *Journal of Development Studies* 37, 17-41
17	*gc*	Dalgaard, C.-J., Hansen, H., Tarp, F., 2004. On the empirics of foreign aid and growth. *Economic*

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