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A look at the raw data for aid and growth

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It is well known that it is controversial if development aid causes economic growth or not. This note is written as a background note to several papers analyzing the connection. It is a basic look at the raw data for aid and growth before the data mining starts. Consequently it considers all data available in the most commonly used source: The WDI (2003), which is the World Development Indicators CD, from the World Bank. The data are defined as follow:

The time unit used is 4 years, so from 1960 to 2000 are 10 units: t = 61-64, 65-68, 69-72, 73-76, 77-80, 81-84, 85-88, 89-92, 93-96, 97-00. The observations are averages of annual values.

Real growth rates, *g*, are per capita, and given in per cent.

Aid shares are, *h* = ODA/GNI, and given in per cent.

We consider three sets of pairs: The (g_{it}, h_{it})-set that is unlagged, the (g_{it}, h_{it-1})-set where aid is before growth, and the (g_{it}, h_{it+x})-set where aid leads growth.

Box: The data excluding extreme values: $(h, g) \subset ([0, 30], [-10, 15])$, as shown on figures.

On the "a" figures 5-7 pairs have a negative aid share, $h < 0$. None of these are below -0.35%, so they are difficult to distinguish from the growth axis on the graph.

All aid shares and growth rates for the 156 countries classified as LDCs are included, and for the 10 non-overlapping 4-year averages from 1960 to 2000, the data are at most 156 *x* 10 = 1560 unlagged pairs, however only 1008 or 65% are available. If the data are lagged either way they potentially loose 156 observations. Once more only about 65% are available.

Figures 1-3 show scatter-plots of the raw data. The idea of the *box* is that growth rates above 15% are due to the start of exploitation of major new resource deposits. Growth below -10 is normally due to a major civil war or other "non-economic" catastrophes. In the same way aid shares outside the interval of 0 to 30% are taken to be exceptional.

Figure 1a. All (*h*,*g*)-pairs from WDI (2003)

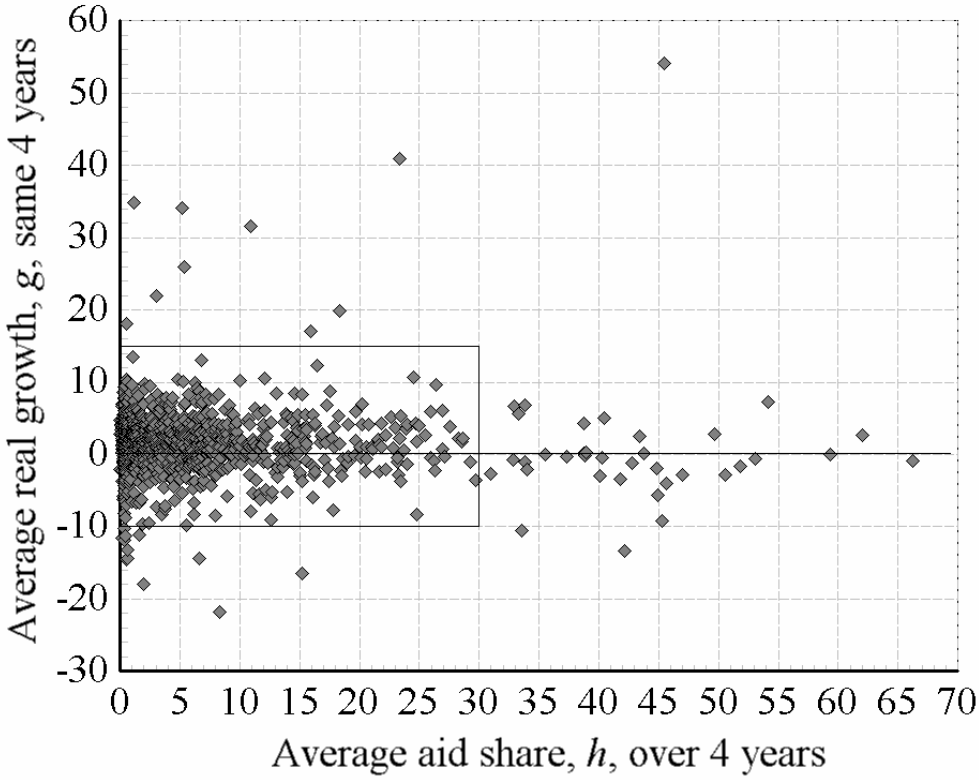


Figure 1b. The area in the box on figure 1a enlarged

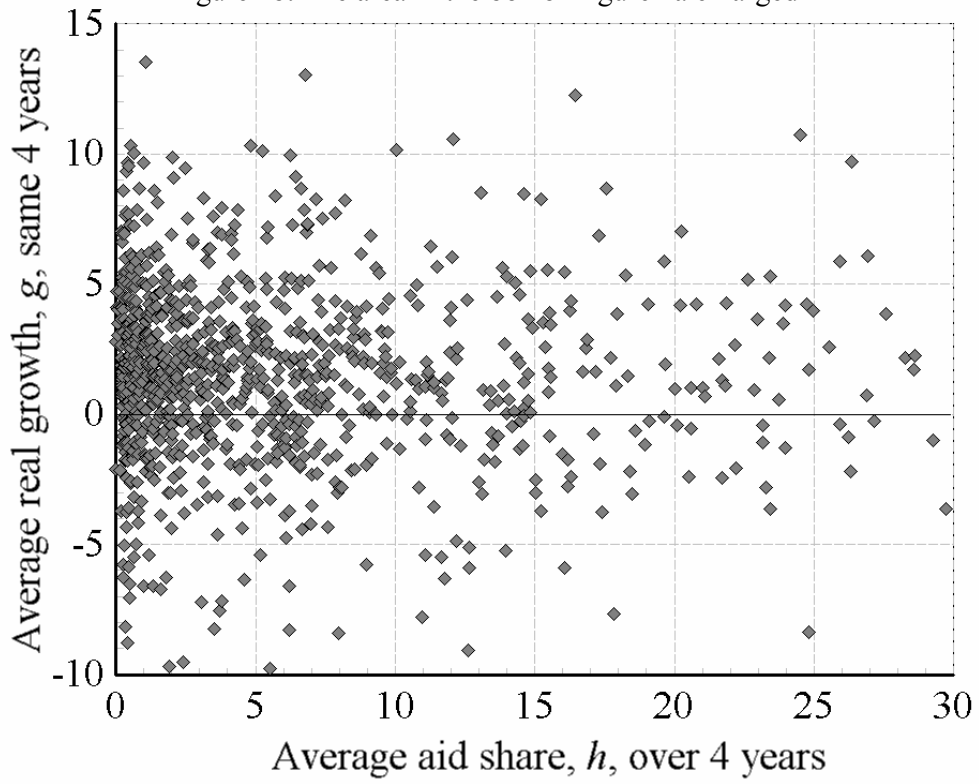


Figure 2a. All (h_{-1},g)-pairs available from WDI (2003)

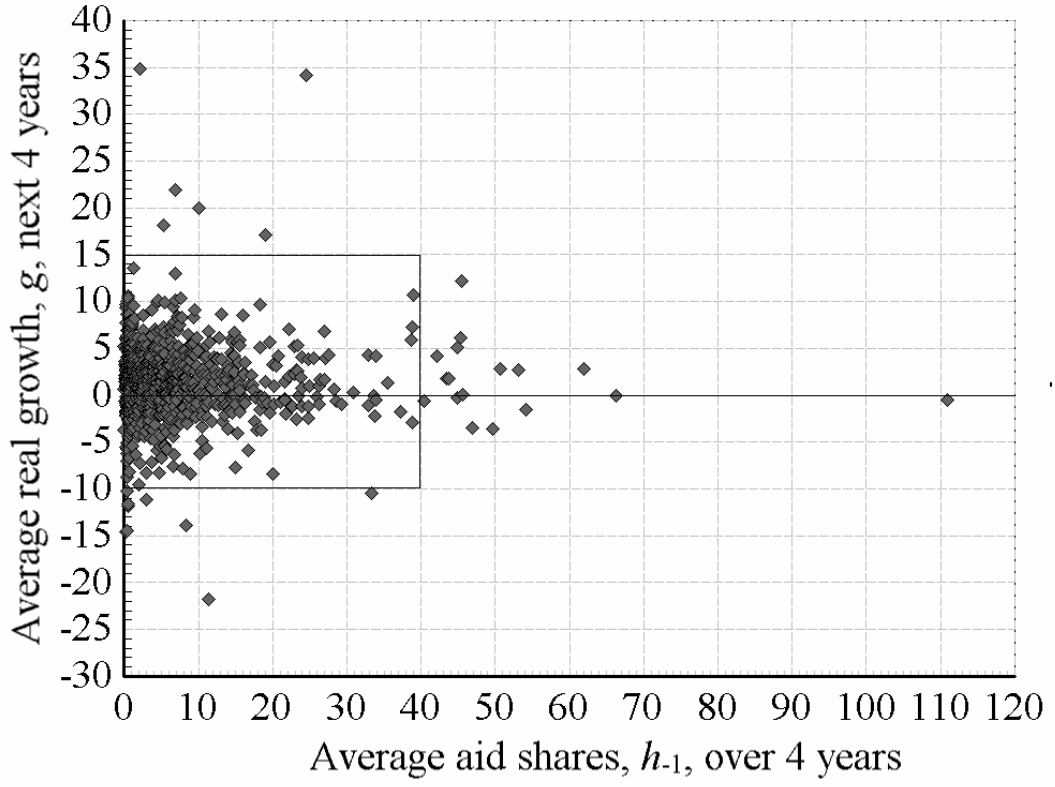


Figure 2b. The area in the box on figure 2a enlarged

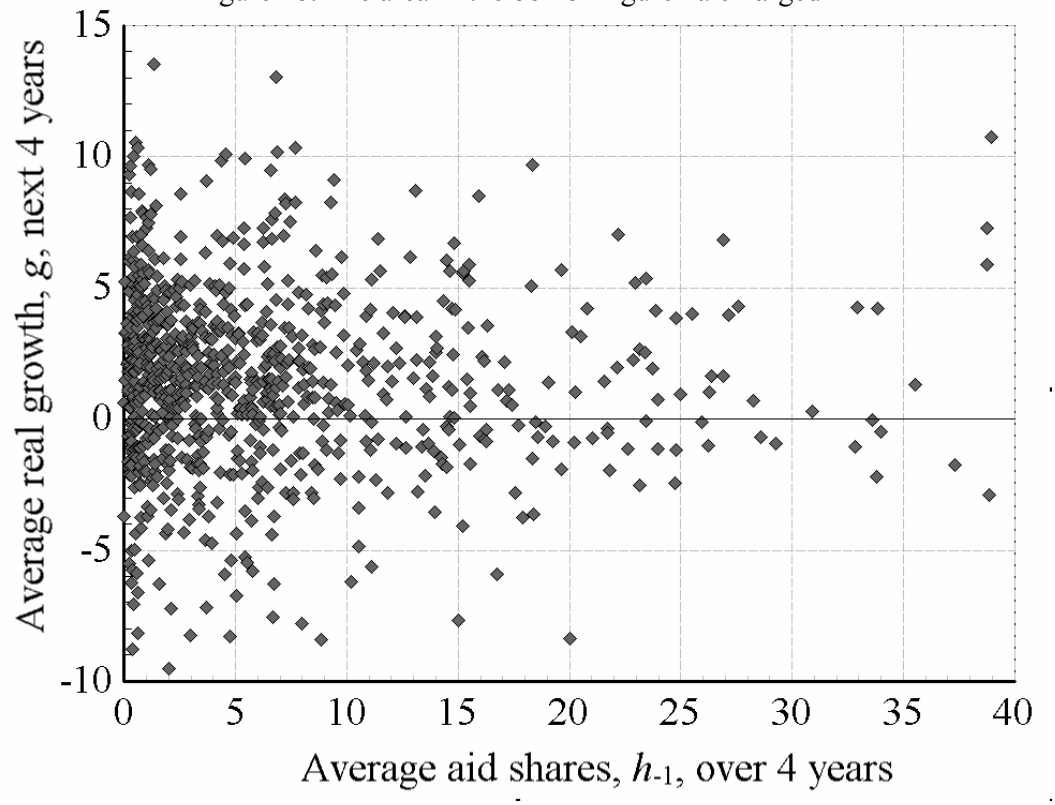


Figure 3a. All (h,g_{-1})-pairs available from WDI (2003)

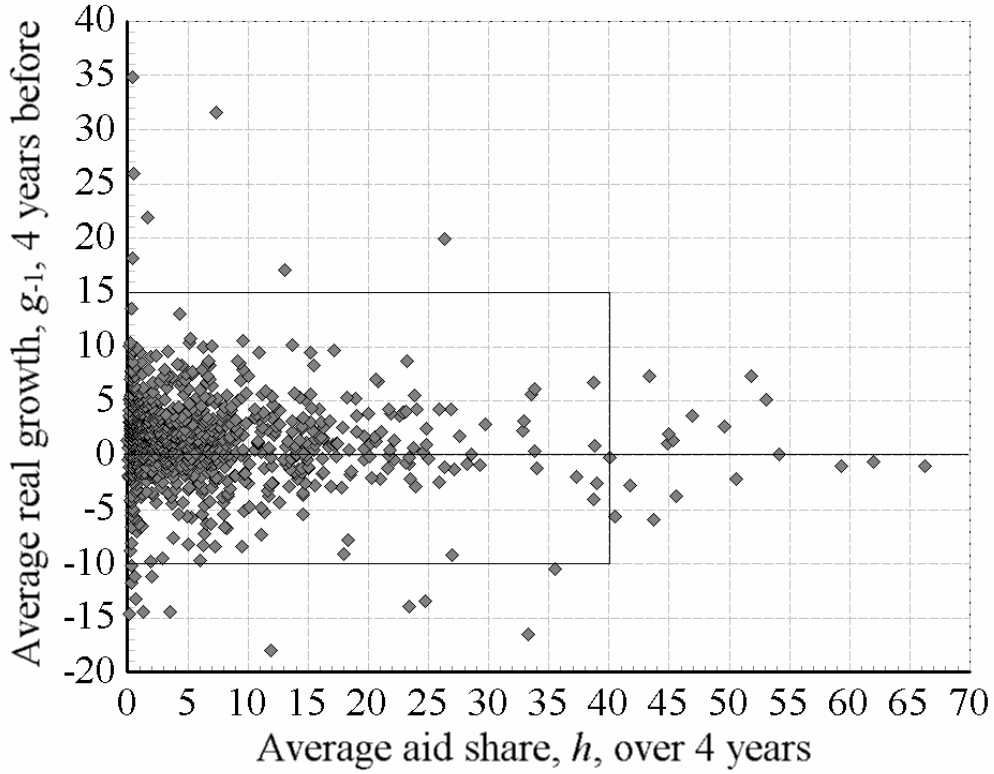
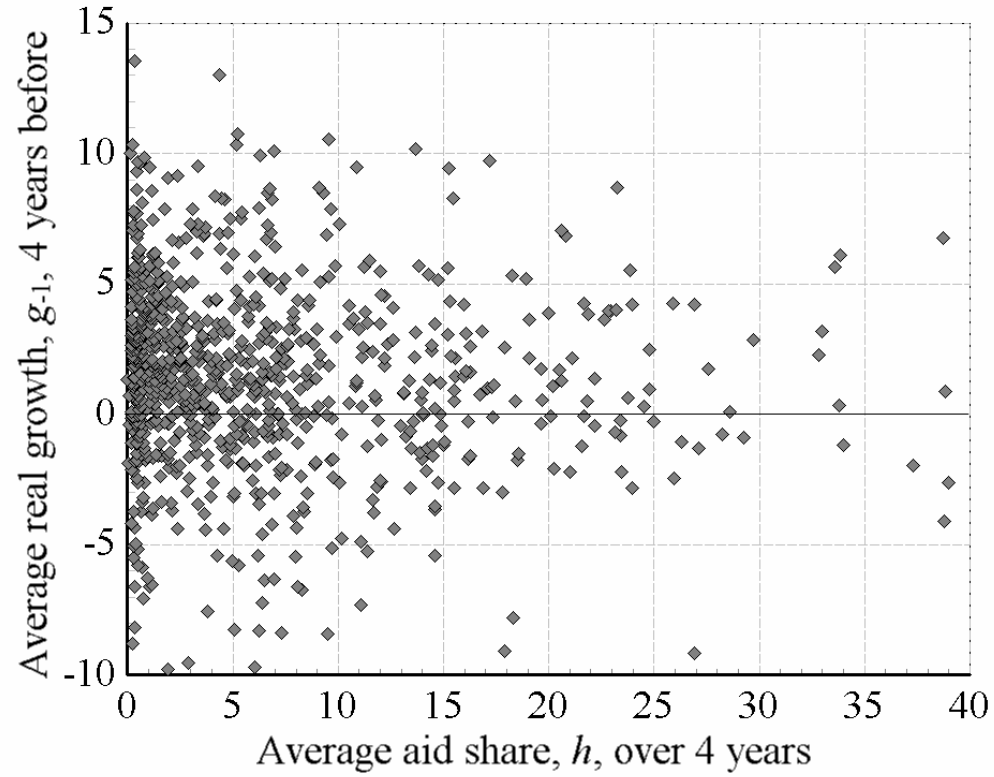


Figure 3b. The area in the box on figure 3a enlarged



The 6 graphs suggest that aid shares and growth rates are unconnected. To further analyze the relation table 1 gives some basic statistics. The last line of the table show that $R^2 < 0.01$ in all simple regressions.

The leaded regressions (x = +1) give the only significant coefficient to *h and it is negative.* The two leaded regressions are made to estimate the largest possible reverse causality bias in the other two regressions. The bias should be *smaller* in the unlagged (x = 0) relations, and it should be *considerably smaller* when aid is lagged (x = -1). There may hence be a small, and a very small, negative bias – for reverse causality – on the coefficient to the aid share in the other regressions.

Table 1. Some statistics for the (g_{it}, h_{it+x})-data depicted on figures 1 to 3

Time unit: 4 years		All observations			Inside box		
		Fig 1a	Fig 2a	Fig 3a	Fig 1b	Fig 2b	Fig 3b
Lag x on aid		0	-1, lag	+1, lead	0	-1, lag	+1, lead
Observations	N	1008	876	895	945	839	841
Growth, g_{it}	Avr	1.577	1.525	1.536	1.545	1.517	1.531
	St dev	4.922	4.226	4.791	3.430	3.393	3.535
Aid share, h_{it+x}	Avr	7.171	7.195	7.276	5.884	6.303	5.982
	St dev	9.405	9.799	9.431	6.290	7.129	6.304
Correlation	r	-0.010	0.007	-0.076	-0.041	-0.020	-0.093

Regression: $g_{it} = \alpha + \beta h_{it+x} + u_{it}$, for x = 0, -1, +1

α, constant	**1.579**	**1.504**	**1.816**	**1.676**	**1.578**	**1.843**
p-value %	0.0	0.0	0.0	0.0	0.0	0.0
β, coeff. to h_{it+x}	-0.010	0.003	**-0.039**	-0.022	-0.010	**-0.052**
p-value %	93.5	36.4	2.3	20.7	55.9	0.7
R^2	0.0	0.0	0.006	0.002	0.0	0.009

Note: All statistics are given with 3 digits (x = 0.0 thus means that x < 0.0005). Significant regression coefficients are bolded. The cells with gray shading are the cases where causality has to be from growth to aid.

We conclude: These data show ***no relation*** – with either sign – from aid to growth, precisely as expected from the six scatter-plots.