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MACROECONOMIC DETERMINANTS OF EXIT FROM AID-DEPENDENCE

Degol Hailu and Admasu Shiferaw*

ABSTRACT

This paper analyses macroeconomic aspects of exit from aid-dependence. By 'exit from aid', we mean substantial and enduring decline over time in Official Development Assistance (ODA) as a share of Gross Domestic Product (GDP). The relevant macroeconomic variables are identified by systematically comparing two groups of countries. These are countries that initially had similar and very high degrees of dependence on international aid but followed dramatically different trajectories of aid-dependence afterwards. This comparison was carried out over five decades since the 1960s using both non-parametric and parametric approaches. We find that the likelihood of exit from aid increases significantly with macroeconomic stability in the sense of maintaining moderate inflation, the rate of investment; aggressive effort at domestic resource mobilisation; and structural change in favour of a growing industrial sector, particularly manufacturing. We conclude that if donors and recipients were to coordinate their aid efforts to support the above-mentioned policy objectives, aid could still be a development tool with diminishing importance.

JEL Classification: E2, F13, F35, O1, O11, O14, O16

Keywords: Macroeconomic policy, foreign aid, economic growth, investment, savings, inflation, exports, manufacturing

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1 INTRODUCTION

Initial thinking around external assistance focused on the role of aid in filling binding resource gaps that developing countries face. These are the saving–investment gap and the foreign exchange gap (Chenery and Strout, 1966). For instance, aid would bolster domestic investment which in the long run would raise income levels and hence domestic saving rates. In such an environment, aid becomes increasingly less important as the economy achieves its domestic resource balance.

The subsequent literature on international aid has focused on three main areas. The first and largest component of the literature deals with the relationship between foreign aid on the one hand and economic growth and poverty reduction on the other. Studies that examined the effectiveness of aid on economic growth and poverty reduction found largely inconclusive results. The widely quoted and controversial work by Burnside and Dollar (2000) concluded that aid promotes growth only under 'good policy' conditions. The subsequent empirical work largely rejected this claim by showing the sensitivity of the finding to changes in the sample period and the specification of the model (see Easterly et al., 2000; Guillaumont and Chauvet, 2001).

The second and relatively small body of work focuses on the determinant of aid allocation across recipients. This literature examines donor motives for aid disbursements. Some clear conclusions are observed, which show that aid allocation is not entirely benign in terms of meeting the needs of the countries receiving it. Bilateral aid is largely driven by colonial history and geopolitical interests of donors, and multilateral aid is relatively more sensitive to the underlying socioeconomic conditions of recipients (see Berthélemy, 2006; Alesina and Dollar, 2000; Schraeder et al., 1998; Maizels and Nissanke, 1984). There are a few studies that suggest that even multilateral aid is influenced by the strategic interests of their main financial contributors (Dreher et al., 2009). Recent evidence, however, shows that aid allocation has become relatively sensitive to the Millennium Development Goals (MDGs) in the past decade (see Hailu and Tsukada, 2011).[1]

The third area of focus in the literature is on the ill effects of aid-dependence, with particular attention to governance issues, mainly the shift in government accountability to donors rather than to citizens in recipient nations. Opponents of aid vehemently argue that exiting from aid-dependence should be a top policy priority. McPherson and Gray (2000) assert that aid promotes irresponsible behaviour such as corruption and poor fiscal management. They argue that lack of political freedom and accountability in recipient countries is often associated with increased aid flows.

The sceptics further claim that aid might lead to moral hazard among governments of recipient countries. It undermines fiscal responsibility, promotes unproductive spending and reduces tax efforts and public savings (Moss et al., 2006). Opponents of aid further claim that aid creates a dependency mentality among citizens which erodes creativity and self-reliance. The critics aggressively advocate for a reduction of aid flows as rapidly as practically possible (Moyo, 2009; Glennie, 2011).

The call for exit from aid is gaining momentum. For instance, at the 2011 Fourth High Level Forum on Aid Effectiveness in Busan, the consensus and position on development effectiveness of the African Union and New Partnership for Africa's Development (*NEPAD*) stated that "The post-Busan Agenda for Africa is in essence a programme to reduce aid dependency and ultimately exit aid towards development effectiveness" (AU/NEPAD, 2011: 11).

However, despite the desire from many quarters to end aid-dependence, no systematic aid exit strategies, based on historical experiences and trajectories, have been offered. The natural conclusion from the literature which finds a positive effect of aid on growth under 'good policy' conditions is that more aid—not less—should be given to countries that follow good policies. While this literature is silent about a strategy to reduce aid-dependence, the underlying assumption seems to be that once aid recipients reach a certain level of per capita income through aid-supported economic growth, they will naturally be weaned from aid-dependence.

Researchers that did not find any significant association between aid and growth and poverty reduction also fail to provide any clues as to the desirability of—or any strategies for—exiting from aid-dependence. There seems to be a tacit acceptance that at least aid is not having a negative impact on growth and hence no pressing reasons to reduce its flow. Rather, they argue for using aid for specific interventions. For instance, Easterly (2007: 331) recommends that:

> "Once freed from the delusion that it can accomplish development, foreign aid could finance piecemeal steps aimed at accomplishing particular tasks for which there is clearly a huge demand–to reduce malaria deaths, to provide more clean water, to build and maintain roads, to provide scholarships for talented but poor students, and so on."

No clear guidance on the way out of aid-dependence emerges either from the literature that addresses donor's motives for aid allocation. This literature implicitly suggests that unless colonial ties and geopolitical interests become irrelevant for aid allocation, the current patterns of aid disbursement and hence aid-dependence could continue. The emphasis is on ensuring that aid is disbursed to countries that need it most.

The fervent opponents of aid indeed argue for graduation from aid. According to them, resources equivalent to aid flow could be raised from financial markets which demand productive and responsible use of resources. Large aid-dependence actually undermines the ability of developing countries to raise funds from the international markets by sending negative signals about their financial viability. They also emphasise domestic resource mobilisation, innovative financing mechanisms and reversing capital flight (as well as curtailing illicit financial flows). While these propositions are extremely important, what is missing is discussion of the key determinants of private capital flows and sources of domestic revenue. It is widely acknowledged that availability of infrastructure—for instance, electricity supply—determines private capital flows. Saving and investment also determine growth and the extent of domestic resource mobilisation. Aid sceptics also tend to ignore the need to frontload development financing, given the urgent resource gaps.

The purpose of this paper is neither to make a fresh attempt at investigating the aid-growth nexus nor to evaluate the merits of the arguments in favour of or against aid allocations and delivery modalities. Its primary objective is to sketch broad outlines of a strategy for countries aspiring to graduate from dependence on external assistance. To do this, we examine developing countries that over the last few decades have managed to significantly reduce their degree of dependence on aid and compare them with another group of countries which have seen their aid-dependence reinforced or increased over time. We then compare the trajectories of key macroeconomic variables to identify what ultimately determines exit from aid.

There is deadlock in the literature to conclusively resolve the debate on aid effectiveness, due essentially to methodological challenges to properly control for confounding factors. We believe that closer analysis of large and lasting reductions in aid dependence vis-à-vis persistent and growing aid-dependence is a much more sensible and, hopefully, fruitful research endeavour.

The paper is organised as follows:

- Section 2 presents a framework to analyse the changes over time in the degree of aid-dependence, identifying those countries that exited from aid-dependence and those that failed to do so.
- Section 3 uses a non-parametric technique to identify the variables that speed up graduation from aid-dependence.
- Section 4 conducts a formal econometric analysis to test the broad patterns observed in Section 3.
- Section 5 checks the sensitivity of the results to changes in the time period and composition of sample countries.
- Concluding remarks are provided in Section 6.

2 TRAJECTORIES OF AID-DEPENDENCE

We have ranked 132 aid-recipient countries based on their aid-to-GDP ratio.[2] Table 1 shows the average aid-to-GDP ratio of countries in each decile for the past five decades. It shows that countries whose average aid-to-GDP ratio has been below the 5th decile have had a very low and, most importantly, stable and even declining aid-dependence during the last five decades. Countries ranked at and above the 5th decile, however, have experienced a steady increase in aid-to-GDP ratio from the 1960s up until the end of the 1990s before experiencing a modest decline during 2000–2007. Perhaps more striking is the sharp increase in the aid-dependence of the 10th decile, where the aid-to-GDP ratio increased from about 15 per cent of GDP in the 1960s to more than one-third of GDP from the 1980s onwards. Countries in the 8th and 9th deciles have seen their average aid-to-GDP ratios more than double since the 1980s compared to the 1960s. This indicates a tendency for aid-dependence to be persistent particularly for countries located at the extremes of the distribution—a point that will be explored further in this paper.

We recognise that the composition of countries in the various deciles can change over the decades. Therefore, we introduce a simple tool to identify those countries which have significantly reduced their reliance on international aid from those countries that have become more aid-dependent as well as those that are persistently aid-dependent. We are particularly interested in countries that moved down the rank of aid-dependence by moving from above to below the 5th decile during the sample period, representing a significant shift in relative dependence on aid. Although the countries that were below the 5th decile at the beginning of the sample period are relatively of less interest to us, as they have been less dependent on aid to begin with, we will use them as comparator countries.

TABLE 1

Trends in Aid-dependence: Average ODA-to-GDP Ratio

Deciles of ODA-to-GDP Ratio	1960s	1970s	1980s	1990s	2000–2007	1960–2007
1	0.0	0.0	0.0	0.0	-0.8	-0.1
2	0.3	0.2	0.1	0.3	0.2	0.2
3	0.8	0.7	0.7	0.8	0.6	0.7
4	1.2	1.3	1.7	1.8	1.1	1.5
5	1.8	2.0	3.2	3.3	2.3	2.6
6	2.5	3.0	5.3	5.9	4.7	4.4
7	3.6	4.5	7.2	9.3	7.6	6.7
8	5.0	6.9	9.8	13.2	11.2	9.5
9	7.5	10.4	15.6	19.2	15.7	14.2
10	14.9	21.2	35.6	37.4	34.3	29.7
Average	3.7	5.0	7.9	9.1	7.7	6.9

Source: Authors' computation based on OECD data on ODA.

FIGURE 1

Changes in Aid-dependence: Deciles of Aid-to-GDP Ratio (2000s Relative to 1960s)

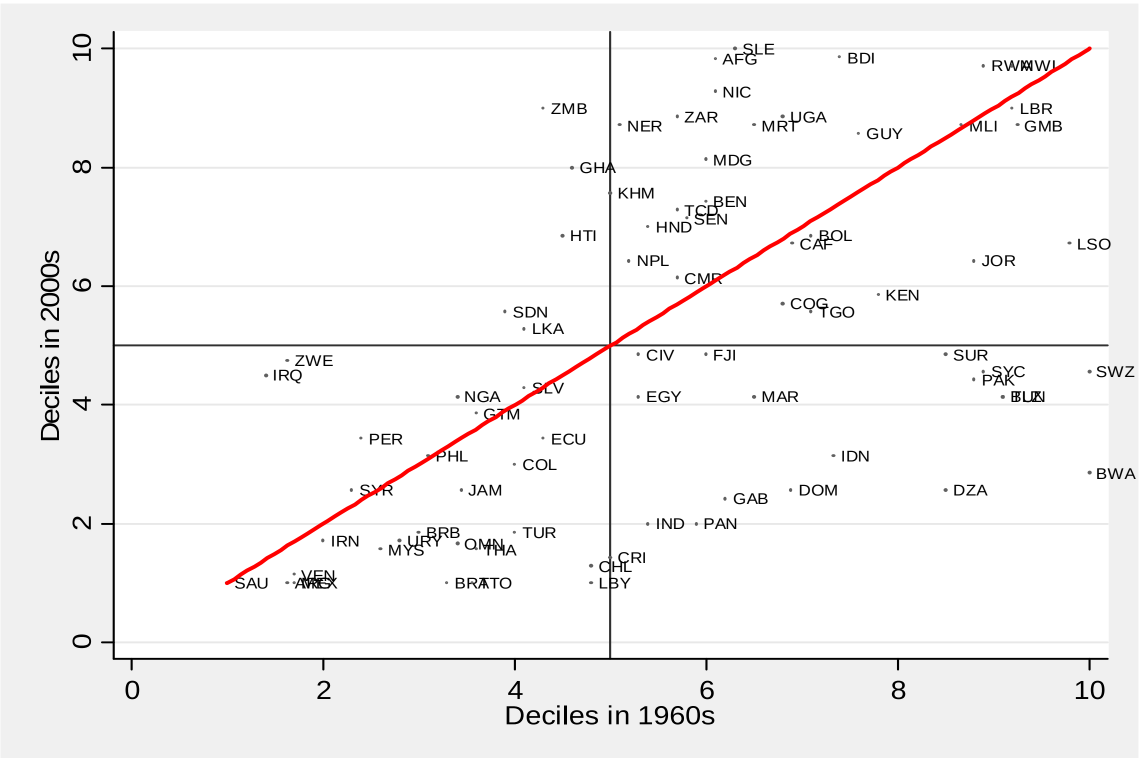


Figure 1 compares deciles of aid-to-GDP ratio during the 1960s and 2000s (2000–2007). The figure has four quadrants defined by the additional horizontal and vertical lines corresponding to the 5th deciles of the two decades under consideration. The 45° line is simply the locus of countries that have experienced no change in their ranking of aid-dependence from the 1960s to the 2000s. These include a highly aid-dependent country such as Mali as well as relatively less aid-dependent countries such as Syria and the Philippines.

Countries below the 45° line have experienced a reduction in their aid-dependence by moving down the rank of aid-to-GDP ratio since the 1960s. One example is Botswana, which was almost in the 10th decile in the 1960s but significantly reduced its aid-to-GDP ratio to be ranked below the 3rd decile in the 2000s. Conversely, countries positioned above the 45° line have witnessed an increase in aid-dependence in the 2000s relative to their position in the 1960s. For instance, Ghana and Zambia were ranked below the 5th decile in the 1960s but became relatively aid-dependent, joining those countries ranked in the 8th and 9th deciles in the 2000s. Appendix 1 shows the changes in the rankings or aid-dependence in the 2000s relative to the 1970s and 1980s.

The countries in the upper right quadrant are countries which have remained above the 5th decile both during the 1960s and the 2000s, showing a highly persistent aid-dependence. It is interesting to notice that the overwhelming majority of countries in this quadrant (about 70 per cent) are located above the 45° line, meaning that they have become *more* aid-dependent since the 1960s. These include Afghanistan, Benin, Burundi, Cambodia, Cameroon, Chad, Guyana, Honduras, Madagascar, Malawi, Mali, Mauritius, Nepal, Nicaragua, Niger, Rwanda, Senegal, Sierra Leone, Congo (DRC) and Uganda. Other countries that fall into this category if we take the 1970s or 1980s as reference points include Ethiopia, Ghana, Liberia, Mozambique and Zambia. It is easy to notice that this group is overly represented by sub-Saharan African countries.

The above countries contrast with those in the opposite or lower left quadrant, which not only had very low aid-dependence to begin with but the overwhelming majority of which (about 70 per cent) have moved below the 45° line. This means that they have reduced whatever small aid-dependence they started with during the 1960s. They include Argentina, Barbados, Brazil, Chile, Colombia, Ecuador, Iran, Jamaica, Libya, Malaysia, Mexico, Oman, Thailand, Trinidad and Tobago, Turkey, Uruguay and Venezuela. Countries with a low initial aid-to-GDP ratio are thus very unlikely to become more aid-dependent. In contrast, those countries with high initial aid-dependence are not only more likely to remain aid-dependent but tend to become increasingly so.[3]

However, there are a number of countries in our sample which started off with very high aid-dependence during the 1960s but significantly reduced it in the ensuing decades. These are countries in the lower right quadrant of Figure 1. Not only have these countries reduced their aid-dependence (as they lie below the 45° line), they have also moved from above the 5th decile during the 1960s to below it in the 2000s. They include Algeria, Belize, Botswana, Cote d'Ivoire, Dominican Republic, Egypt, Fiji, Gabon, India, Indonesia, Morocco, Pakistan, Panama, Seychelles, Suriname, Swaziland and Tunisia.[4] These countries demonstrate that it is possible to break out of the persistent cycle of aid-dependence. The aid-dependence that we noticed earlier is, therefore, not a universal phenomenon. Therefore, we explore these countries in further detail in the following sections to characterise an aid exit strategy.

The reverse side of this story is the experience of countries in the upper left quadrant of Figure 1. These are countries whose aid-dependence in the 2000s is way above what it was in the 1960s, as they cross the 5th decile from below. These include Ghana, Haiti, Sri Lanka, Sudan and Zambia.

3 MACROECONOMIC DETERMINANTS OF EXIT FROM AID

Let us consider the older literature that advocated for aid disbursements to fill the saving–investment and foreign exchange gaps. Aid would finance domestic investments that in turn increase income and savings. Crucial aspects of such a growth strategy include coordinated fiscal, monetary and exchange rate policies which help countries achieve their growth potentials, maintain sustainable internal and external accounts and prevent a destabilising rate of inflation. Within such a policy framework, the average rate of return on investment depends on the structure of the domestic economy. Different sectors have different potentials for productivity growth, and historical experiences reveal that a growing manufacturing sector has long been associated with rapid productivity gains (Rodrik, 2005). Productivity growth in turn provides the basis for generating sufficient resources for sustainable and ultimately aid-independent economic growth.

Since developing countries also face a foreign exchange gap, breaking into new export markets and increasing the share of exports in GDP are vital for meeting the investment demands of a growing economy. Further to export earnings, the ability to attract international finance including foreign direct investment (FDI) could accelerate the pace of reduction in aid-dependence, as it signals the viability of the domestic economy to the rest of the world.

With the above framework in mind, we compare the macroeconomic variables observed in the countries that managed to significantly reduce their aid-dependence with those that saw their aid-dependence increase over time. To sharpen the comparison we select countries which were in the same relative position during the 1960s—i.e. countries above the 5th decile in the distribution of aid-to-GDP ratio in the 1960s. However, in the ensuing decades these countries followed opposite trajectories, with one group becoming increasingly aid-dependent while the other group showed clear evidence of exiting from aid-dependence. It is interesting to note that although both groups of countries were above the 5th decile in the 1960s, the average initial aid-to-GDP ratio was slightly higher for the group of countries that subsequently reduced aid-dependence. This begs the question whether aid indeed has been used to facilitate exit from it. Table 2 provides the relevant comparisons.

We start by comparing domestic saving and investment rates (both expressed as percentage of GDP). Countries which progressively exited from aid-dependence already started in the 1960s with an average domestic saving rate about 7 percentage points higher than the group of countries which became increasingly aid-dependent. However, the crucial point is that in the subsequent decades the countries that exited from aid increased their saving rate to more than 20 per cent of GDP. In contrast, aid-dependent countries had a saving rate which slipped below 10 per cent of GDP. While this does not constitute a causal relation, it seems consistent with the claim by the opponents of international aid that more aid undermines the incentive for domestic saving, particularly of the public sector.

In terms of investment efforts, countries with a significant reduction in aid-dependence experienced a sharp increase in the investment-to-GDP ratio during the 1970s and 1980s, when it amounted to more than a quarter of GDP, and continued to invest at a respectable rate of about 23 per cent in the 1990s and 2000s. While the investment rate also increased in the countries with rising aid-dependence, it remained around 18 per cent of GDP for three decades and reached above 20 per cent only in the 2000s. A key observation is that the steady rise in the relative importance of international aid for the latter groups of countries did not translate into a higher rate of capital accumulation. On the other hand, the decline in the relative importance of aid among the countries that exited from aid was not accompanied by a slowdown in their capital accumulation rate.

TABLE 2

Comparison of Selected Macroeconomic Variables for Countries with Different Paths of Aid-dependence During 1960–2007

Countries	1960s	1970s	1980s	1990s	2000–2007
With aid-dependence					
Aid-to-GDP ratio	4.34	7.09	11.13	15.24	13.34
Domestic saving rate	10.62	9.52	5.52	6.07	6.82
Investment rate	14.19	17.74	18.49	18.77	21.32
GDP growth	3.52	3.44	1.97	1.93	4.14
Inflation	3.26	12.01	137.67	52.98	6.95
Export-to-GDP ratio	17.76	19.92	18.53	26.60	23.11
Manufacturing-to-GDP ratio	8.43	9.22	9.92	10.66	10.22
FDI-to-GDP ratio (net inflow)	1.19	1.03	2.67	5.04	1.19
Exiting from aid-dependence					
Aid-to-GDP ratio	6.85	6.01	3.81	3.23	1.19
Domestic saving rate	17.33	24.10	21.48	21.36	23.59
Investment rate	19.67	27.95	25.04	22.97	22.91
GDP growth	5.24	6.87	3.56	3.71	3.49
Inflation	24.13	10.31	9.45	13.12	5.82
Export-to-GDP ratio	23.74	27.24	29.55	31.32	33.78
Manufacturing-to-GDP ratio	12.95	12.60	12.90	13.70	13.16
FDI-to-GDP ratio (net inflow)	2.21	1.27	1.55	2.96	2.21

Source: Authors' computation based on data from WDI 2009.

Table 2 also shows that economies with persistent and growing aid-dependence experienced a steady decline in annual GDP growth up until the beginning of the 2000s, when growth started to recover strongly; GDP growth fell below 2 per cent during the 1980s and 1990s. In the meantime, the countries that exited from aid registered relatively strong economic growth (above 5 per cent) during the 1960s and 1970s. Although economic growth slowed down during the 1980s and 1990s, it stayed above 3 per cent on average for this group of countries. Even after the recovery in the 2000s, growth in the increasingly aid-dependent countries only marginally exceeded that of the countries that exited from aid. The significant reduction in the aid-to-GDP ratio in the latter group of countries is, therefore, not a result of their outstanding growth performance during the 2000s but rather a cumulative effect of what has happened since the 1970s.

Although inflation was lower in the 1960s for countries which became increasingly aid-dependent, their macroeconomic environment became very volatile in the subsequent decades, with very high inflation rates—sometimes reaching three digits. On the contrary, inflation was measured and relatively stable in countries that reduced their aid-dependence. Although one cannot draw causal relations from this trend alone, it is obvious that macroeconomic stability seems to be a very important attribute of an aid exit strategy, but not necessarily low inflation rates as often recommended under inflation targeting (which is often less than 5 per cent). In fact, the inflation rate among the countries that exited from aid can be said to be moderate and not low.

Not only have the countries which gradually exited from aid-dependence managed to grow faster over the last five decades, their economies were also becoming increasingly export oriented. The share of exports increased steadily for this group of countries from about a quarter of GDP in the 1960s to about one-third of GDP in the 2000s. In countries with growing aid-dependence, however, the export-to-GDP ratio stayed just below 20 per cent from the 1960s to the 1980s, before increasing in the 1990s and 2000s to reach a level of export ratio already attained by the countries that exited from aid in the 1960s and 1970s. Increased participation in export markets, therefore, seems to be a key covariate of potential exit from aid-dependence.

Countries which slashed their reliance on aid have a slightly higher share of manufacturing in GDP than aid-dependent countries, but in both cases the increase in the share of manufacturing over time is relatively slow.

Table 2 does not show any significant difference in net inflow of FDI to both groups of countries, suggesting that FDI perhaps did not play a critical role in determining the path of aid-dependence either.

4 THE PROBABILITY OF EXITING FROM AID-DEPENDENCE

In this section we consolidate the discussion in Section 3 by estimating the probability of exiting from aid-dependence conditional on the variables that are associated with it. Table 3 provides the results of a linear probability regression model. The dependent variable is a dummy variable which takes the value 1 if a country reduced its ranking of aid-dependence from above the 5th decile during the 1960s to below it during the period 2000–2007, and takes the value 0 if a country stays above the 5th decile in both decades. The explanatory variables are the logarithms of the variables discussed in the preceding section except for GDP growth rate.

Since the dependent variable in this model is a large change in the relative position (ranking) of countries rather than a continuous change in aid-to-GDP ratio, we expect the simultaneity problem with the continuous explanatory variables that are measured annually to be quite minimal. Moreover, the model only takes lagged values of the explanatory variables—i.e. before 2000—to further reduce the simultaneity problem. This is because we are comparing aid-dependence rankings during the 2000s versus the 1960s and it makes sense to exclude the macroeconomic conditions during the 2000s, which are likely to be correlated with aid flows since 2000.

If, for instance, the countries that significantly reduced aid-dependence did so because of the strong growth performance during 2000–2007 or because of better macroeconomic conditions since 2000, then according to our model specification, none of the lagged explanatory variables should be significantly associated with the change in the relative degree of aid-dependence. If, on the other hand, past macroeconomic management is a crucial aspect of an aid exit strategy, then we would expect the lagged values to have statistically significant coefficients. Similarly, if aid-dependence in our sample persisted or increased over the years due to an exogenous increase in international aid that is unrelated to domestic macroeconomic conditions, such as aid flow to Afghanistan after 2001, then the lagged values of the variables in our model should not be significant.

As both saving and investment rates are positively associated with the probability of exiting from aid-dependence, in Table 3 we specified the probability model by including the saving–investment gap (in logarithms) rather than including the two variables together. Since the explanatory variables in our model are likely to be correlated with GDP growth, Table 3 also reports the results of an alternative specification where we exclude GDP growth from the model. The standard errors are clustered at the country level to take into account country-specific idiosyncrasies.

The results obtained from the regression model are consistent with the descriptive analysis we discussed in Section 3. The investment-to-GDP ratio has a positive and highly significant coefficient in the regression model, suggesting that it is an important precursor of exiting aid-dependence. Investment is thus not only an indicator of the contemporaneous health of an economy but also a source of internal dynamics to reduce aid-dependence. This is consistent with the notion that public investments in infrastructure are particularly vital. For instance, in sub-Saharan Africa, only about 10 per cent of the population is said to have access to electricity. Investment climate surveys indicate that inadequate electricity supply is a major constraint to private enterprise development (Shiferaw, 2009). As Burnside and Dollar noted (2000: 847), "To the extent that it is invested, aid will be effective." As shown in Section 2 above, the countries with growing aid-dependence, most of which are African countries, did not manage to increase their investment rate. The report of the Commission for Africa (2005: 25, emphasis added) also argued that:

> "it is the public sector that creates the enabling environment [...] Yet, despite its clear benefits, African governments and development partners sharply reduced, over the 1990s, the share of resources allocated to infrastructure. In retrospect, this was a *serious policy mistake.* Another implication is that aid utilisation must focus on sustaining investment."

It is also interesting to note that countries with a growing saving–investment gap (hence growing aid-dependence) are less likely to reduce their aid-dependence compared to countries which finance most of their investment through domestic saving. In other words, two countries with the same investment rate will stand different chances of exiting from aid-dependence conditional on the source of finance. Graduation from aid is highly conditional on the domestic savings gap. As was evident in Section 3, the countries which slashed their aid-dependence during the sample period have not only increased their investment rate but have backed it up by higher domestic saving rates. The ability to mobilise domestic financial resources and to invest them in productive sectors is, therefore, a key attribute of an aid exit strategy. This result could alternatively be interpreted as an obvious case of reverse causality where an increase in aid permits investment rates to exceed domestic saving rates just as aid was supposed to do. However, the average investment rate in countries with growing aid-dependence has been stagnant, as indicated in Table 2, while their domestic saving rate was declining for most of the sample period. In other words, the saving–investment gap was not the result of increasing rates of investment fuelled by aid but rather due to decreasing rates of saving. Moreover, if indeed aid augmented domestic investment, it would have led to a reduction in aid-dependence in the long run as just discussed above, with only a short-term increase in the saving–investment gap.

TABLE 3

Linear Probability Estimates of Exiting Aid-dependence

	Coefficients	**T-statistic**	**Coefficients**	**T-statistic**
	Column 2	Column 3	Column 4	Column 5
Ln(Investment/GDP)	0.3053 (0.0981)	3.11	0.3029 (0.0993)	3.05
Ln(Saving–investment gap)	-0.1652 (0.0620)	-2.66	-0.1662 (0.0616)	-2.70
GDP growth	0.2622 (0.5564)	0.47		
Ln(Inflation)	-0.0711 (0.0276)	-2.58	-0.0727 (0.0276)	-2.64
Ln(Export/GDP)	0.0546 (0.0953)	0.57	0.0583 (0.0955)	0.61
Ln(Manufacturing/GDP)	0.2796 (0.1301)	2.15	0.2807 (0.1304)	2.15
Ln(FDI/GDP)	0.0089 (0.0287)	0.31	0.0101 (0.0285)	0.36
Constant	0.4608 (0.4426)	1.04	0.4936 (0.4451)	1.11
Number of countries	46		46	
R-squared	0.2986		0.2979	

Source: Authors' estimation results based on OECD and WDI data.

Table 3 also shows that economic growth is positively associated with the likelihood of graduation from aid-dependence, but the coefficient is not statistically significant. To make matters worse, countries that are aid-dependent did not grow as expected. This finding is consistent with the wider literature on aid, which fails to find a statistically significant long-term relationship between aid and economic growth in developing countries. The interpretation for our analysis is that economic growth does not necessarily lead to significant reduction in aid-dependence. To see if this lack of significance is due to collinearity with growth determinants such as investment, we run the model without GDP growth. As can be seen in the third column of Table 3, this did not lead to any change in the sign, size and significance of other coefficients.

Another important result from the regression analysis is the statistically significant negative effect of inflation on the chances of overcoming aid-dependence. After taking into account the effects of investment and the domestic resource gap, countries with rapid inflation will find it more difficult to break away from reliance on foreign aid. This suggests that tackling high inflation and maintaining moderate levels is crucial for healthy economies that in the long run can reduce aid-dependence.

Table 3 also shows that it is not the export orientation of countries as such that affects the likelihood of exit from aid but rather the structure of the economy in terms of the share of manufacturing value added in GDP. This is quite different from the story emerging from the simple bi-variate description in the previous section, where the countries with different trajectories of aid-dependence seem to have widely different performance in exports rather than in the share of manufacturing in national income. It appears that the variation in manufacturing value added is more systematic and its effect more precisely measured than that of export-to-GDP ratio with respect to reduction of aid-dependence (although the absolute difference between the two groups of countries in the share of manufacturing in GDP is relatively small). The policy implication, consistent with the findings of Adam and O'Connell (2004: 151) is that market access is key— "a dollar of donor resources transferred to the recipient via the donor's own import liberalization is better for the recipient's exports than a dollar transferred via grants."

5 SENSITIVITY ANALYSIS

In this section we check the robustness of the preceding results. Specifically, we examine the extent to which our findings could have been driven by the composition of countries and by the starting period of the analysis. Thus, we consider another initial point for the empirical analysis and select countries which were above the 5th decile in the global distribution of aid-to-GDP ratio in the 1970s (instead of 1960s). This exercise has also increased the sample size by nine countries. They include Bangladesh, Dominica, Grenada, Guineas-Bissau, Kiribati and Tonga, which became more aid-dependent over the years, as well as Chile, Costa Rica and Libya, which, although they were just below the 5th decile initially, have managed to move down to the 1st decile of the aid-to-GDP ranking in the 2000s, representing an unmistakable exit from aid-dependence.

The results with this new composition of countries are presented in Table 4. The different macroeconomic trends we observed earlier between the group of countries that did and did not reduce their aid-dependence by comparing the 1960s with the 2000s are intact. This is regardless of a different starting point for our analysis as well as a change in the composition of countries. In other words, the key aspects of the way out of aid-dependence discussed above are not driven by the fixed effects that are unique to individual countries at a particular point in time.

TABLE 4

Comparison of Selected Macroeconomic Variables for Countries with Different Paths of Aid-dependence (1970–2007)

	1970s	1980s	1990s	2000–2007
Countries with persistent and growing aid-dependence				
Aid-to-GDP ratio	7.85	13.75	16.25	13.39
Domestic saving rate	8.95	3.63	5.78	6.63
Investment rate	17.60	20.86	20.16	21.73
GDP growth	3.30	2.03	2.11	3.95
Inflation	12.10	122.89	46.73	6.59
Export-to-GDP ratio	20.20	18.13	24.44	21.67
Manufacturing-to-GDP ratio	9.21	9.73	10.32	10.08
FDI-to-GDP ratio (net inflow)	1.13	1.16	2.99	5.38
Countries exiting from aid-dependence				
Aid-to-GDP ratio	7.21	4.49	3.68	1.32
Domestic saving rate	25.57	21.26	20.61	23.26
Investment rate	27.93	25.06	22.02	21.70
GDP growth	7.01	4.11	3.84	3.37
Inflation	11.11	10.10	13.34	5.42
Export-to-GDP ratio	30.29	32.47	34.16	37.18
Manufacturing-to-GDP ratio	11.37	12.27	13.38	13.05
FDI-to-GDP ratio (net inflow)	2.26	1.48	1.29	2.75

Source: Authors' computation based on data from WDI 2009.

In Table 5 we re-estimate the linear probability model with two different specifications. The results in Column 2 refer to the likelihood of exiting from aid-dependence for groups of countries that were in similar levels of aid-dependence during the 1970s. The dependent variable in Column 2 is a dummy variable that takes the value 1 for countries positioned above the 5th decile during the 1970s but moved below the 5th decile in the 2000s, and takes the value 0 for any country that stays at or above the 5th decile both in the 1970s and 2000s.

In Column 4 we carry out another sensitivity analysis by considering a reduction in aid-dependence without limiting the sample only to countries that were highly aid-dependent in the initial period. The dependent variable in Column 4 is, therefore, a dummy variable distinguishing between countries that reduced their aid-dependence by any amount, although they might not have necessarily crossed the 5th decile from above (in which case the dummy variable will take the value 1). We also included those countries whose aid-dependence has increased in the 2000s regardless of where they were in the initial period (in which case the dummy variable will take the value 0). In essence we are considering countries that are below and above the 45° line regardless of where they were located initially in Figure 1.

The investment rate and the saving–investment gap in Column 2 of Table 5 have the same sign and significance as in Table 3, although the coefficients are a bit lower. Once again, GDP growth remains statistically insignificant. While inflation retains its negative association with the likelihood of exiting from aid, its coefficient is statistically significant at a level slightly beyond the conventional levels of significance. The manufacturing share of GDP remains as important for graduation from aid-dependence for this sample of countries as it was for the previous sample, while exports and FDI are not statistically significant.

TABLE 5

Linear Probability Estimates of Exiting Aid-dependence

	Coefficients	**T-statistic**	**Coefficients**	**T-statistic**
	Column 2	Column 3	Column 4	Column 5
Ln(Investment/GDP)	0.1947 (0.0953)	2.04	0.2254 (0.0853)	2.64
Ln(Saving–investment gap)	-0.1290 (0.0577)	-2.24	-0.1610 (0.0522)	-3.09
GDP growth	0.4752 (0.6475)	0.73	0.2854 (0.5070)	0.56
Ln(Inflation)	-0.0452 (0.0280)	-1.61	-0.0335 (0.0258)	-1.30
Ln(Export/GDP)	0.0996 (0.1043)	0.95	0.0694 (0.0782)	0.89
Ln(Manufacturing/GDP)	0.2885 (0.1347)	2.14	0.4139 (0.1037)	3.99
Ln(FDI/GDP)	0.0103 (0.0302)	0.34	0.0028 (0.0249)	0.11
Constant	0.7450 (0.4099)	1.82	0.9556 (0.3545)	2.70
Number of countries	48		64	

Source: Authors' estimation results based on OECD and WDI data.

If we make the distinction among countries less stringent by including even those countries that reduced aid-dependence without necessarily crossing the 5th decile, as we did in Column 4 of Table 5, the results remain similar except that inflation is not any more significant—i.e. managing inflation is only relevant for a drastic reduction of aid-dependence but not for a mild reduction.

The exercise in this section shows that there is a clear pattern in macroeconomic variables that distinguish countries which exited from aid-dependence (also countries on their way out of aid-dependence) from those countries that have become increasingly aid-dependent. These differences are robust to different starting points for analysis as well as changes in the composition of the sample.

6 CONCLUSION

This paper shows that countries with a low initial degree of aid-dependence are more likely to remain less aid-dependent and further reduce their aid-to-GDP ratio. Countries with a high initial aid-dependence are more likely to remain highly aid-dependent or even become increasingly so. While this shows a certain degree of path dependence in reliance on aid, this is not a universal phenomenon. There are developing countries that significantly reduced their initial high degree of reliance on international aid. The paper investigates the attributes of this group of countries which initially were heavily aid-dependent but managed to exit from it.

The analysis shows that the likelihood of exiting from heavy reliance on aid increases with the rate of investment. Strengthening policies and institutions that promote public and private investment is a reliable path to exiting from aid-dependence. Unfortunately, evidence shows that a declining share of aid is being allocated to infrastructure development. Increasing the flow of aid alone, therefore, does not in itself lead countries out of aid-dependence if it is not accompanied by aggressive capital accumulation.

A functional and well-developed financial system that could support high levels of investment is also equally important, as a widening saving–investment gap is more than likely to delay graduation from aid-dependence. Donors and recipient countries should, therefore, watch out for aid flows not to inadvertently stifle domestic savings even when levels of investment are high.

Consistent with this observation is the critical role of managing inflation, which has been shown to reinforce persistent aid-dependence if it remains unchecked. This calls for fiscal and monetary policies that will avoid high and destabilising inflation rates.

We also found that even a small increase in the share of manufacturing in GDP has a potential to facilitate an exit from aid-dependence. While the exact nature of policies will obviously differ across countries, a clear industrial policy is a key prerequisite for an aid exit strategy.

The paper did not set out to show that aid undermines macroeconomic management or stifles growth. However, the paper provides systematic evidence that aid-dependence tends to be tenacious especially when it is initially high. In as much as it is desirable to reduce aid-dependence, countries should pay attention to key macroeconomic variables including investment, domestic resource mobilisation, absence of rampant inflation and a growing manufacturing sector. If donors and recipients could collaborate and tailor aid allocation so that it bolsters the above-mentioned policy objectives or at least does not undermine them, then aid could be a development tool with diminishing importance.

APPENDIX 1:
CHANGES IN AID-DEPENDENCE

FIGURE A1

Deciles of Aid-to-GDP Ratio During the 2000s Relative to the 1970s

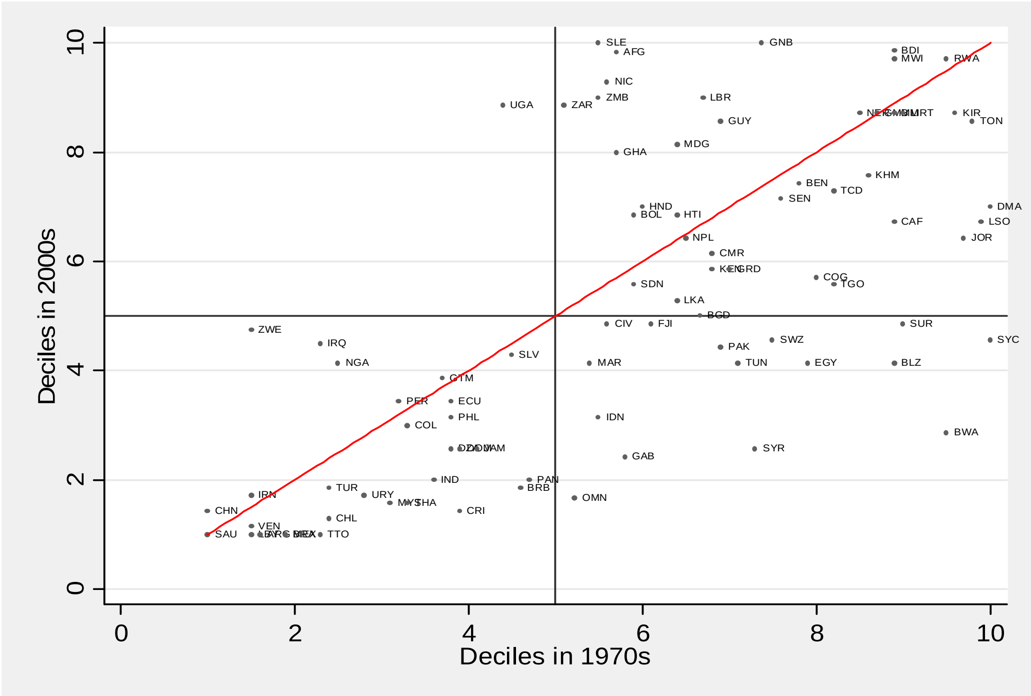
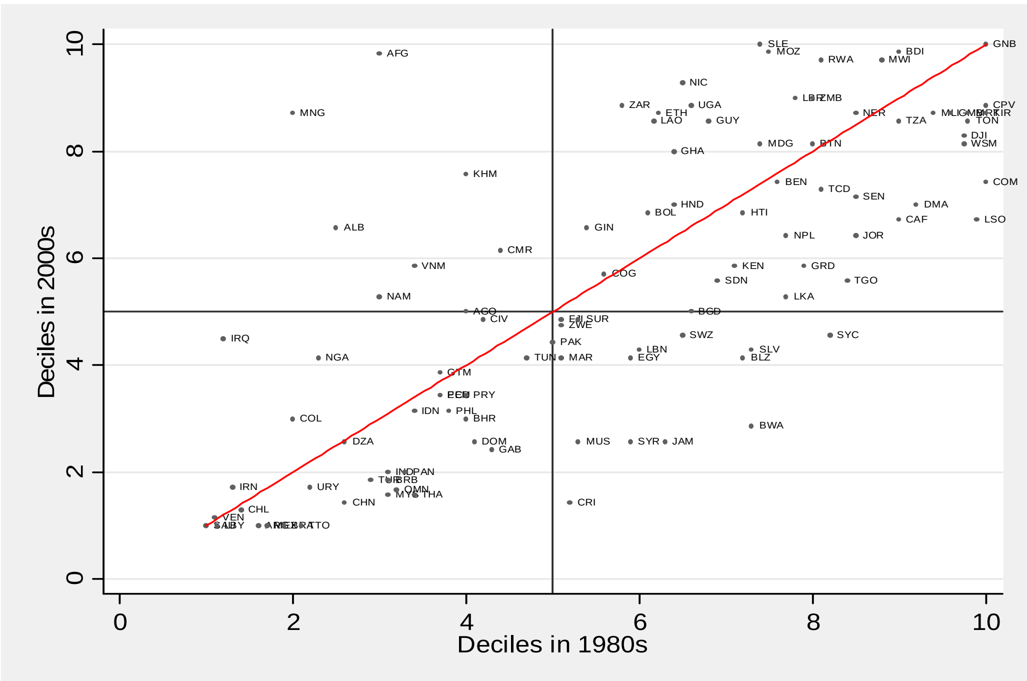


FIGURE A2

Deciles of Aid-to-GDP Ratio During the 2000s Relative to the 1980s



APPENDIX 2:
LIST OF COUNTRIES INCLUDED IN THE ANALYSES AND CODES

No.	Code	Country Name	No.	Code	Country Name	No.	Code	Country Name	No.	Code	Country Name	No.	Code	Country Name
1	AFG	Afghanistan	**31**	CHN	China	**61**	HUN	Hungary	**91**	NAM	Namibia	**121**	TON	Tonga
2	ALB	Albania	**32**	COL	Colombia	**62**	IND	India	**92**	NPL	Nepal	**122**	TTO	Trinidad and Tobago
3	DZA	Algeria	**33**	COM	Comoros	**63**	IDN	Indonesia	**93**	NIC	Nicaragua	**123**	TUN	Tunisia
4	AGO	Angola	**34**	ZAR	Congo, Dem. Rep.	**64**	IRN	Iran	**94**	NER	Niger	**124**	TUR	Turkey
5	ARG	Argentina	**35**	COG	Congo, Rep.	**65**	IRQ	Iraq	**95**	NGA	Nigeria	**125**	UGA	Uganda
6	ARM	Armenia	**36**	CRI	Costa Rica	**66**	ISR	Israel	**96**	OMN	Oman	**126**	ARE	United Arab Emirates
7	ABW	Aruba	**37**	CIV	Cote d'Ivoire	**67**	JAM	Jamaica	**97**	PAK	Pakistan	**127**	URY	Uruguay
8	AZE	Azerbaijan	**38**	HRV	Croatia	**68**	JOR	Jordan	**98**	PAN	Panama	**128**	VEN	Venezuela
9	BHS	Bahamas	**39**	CUB	Cuba	**69**	KAZ	Kazakhstan	**99**	PRY	Paraguay	**129**	VNM	Vietnam
10	BHR	Bahrain	**40**	DJI	Djibouti	**70**	KEN	Kenya	**100**	PER	Peru	**130**	YEM	Yemen
11	BGD	Bangladesh	**41**	DMA	Dominica	**71**	KIR	Kiribati	**101**	PHL	Philippines	**131**	ZMB	Zambia
12	BRB	Barbados	**42**	DOM	Dominican Republic	**72**	PRK	Korea, Dem. Rep.	**102**	QAT	Qatar	**132**	ZWE	Zimbabwe
13	BLR	Belarus	**43**	ECU	Ecuador	**73**	KWT	Kuwait	**103**	RWA	Rwanda			
14	BLZ	Belize	**44**	EGY	Egypt	**74**	LAO	Laos, Dem. Rep.	**104**	WSM	Samoa			
15	BEN	Benin	**45**	SLV	El Salvador	**75**	LBN	Lebanon	**105**	SAU	Saudi Arabia			
16	BMU	Bermuda	**46**	ERI	Eritrea	**76**	LSO	Lesotho	**106**	SEN	Senegal			
17	BTN	Bhutan	**47**	EST	Estonia	**77**	LBR	Liberia	**107**	SYC	Seychelles			
18	BOL	Bolivia	**48**	ETH	Ethiopia	**78**	LBY	Libya	**108**	SLE	Sierra Leone			
19	BIH	Bosnia and Herzegovina	**49**	FJI	Fiji	**79**	MDG	Madagascar	**109**	SOM	Somalia			
20	BWA	Botswana	**50**	GAB	Gabon	**80**	MWI	Malawi	**110**	ZAF	South Africa			
21	BRA	Brazil	**51**	GMB	Gambia	**81**	MYS	Malaysia	**111**	LKA	Sri Lanka			
22	BRN	Brunei	**52**	GEO	Georgia	**82**	MLI	Mali	**112**	SDN	Sudan			
23	BFA	Burkina Faso	**53**	GHA	Ghana	**83**	MRT	Mauritania	**113**	SUR	Suriname			
24	BDI	Burundi	**54**	GRD	Grenada	**84**	MUS	Mauritius	**114**	SWZ	Swaziland			
25	KHM	Cambodia	**55**	GTM	Guatemala	**85**	MEX	Mexico	**115**	SYR	Syria			
26	CMR	Cameroon	**56**	GIN	Guinea	**86**	MDA	Moldova	**116**	TWN	Taiwan			
27	CPV	Cape Verde	**57**	GNB	Guinea-Bissau	**87**	MNG	Mongolia	**117**	TZA	Tanzania			
28	CAF	Central African Republic	**58**	GUY	Guyana	**88**	MAR	Morocco	**118**	THA	Thailand			
29	TCD	Chad	**59**	HTI	Haiti	**89**	MOZ	Mozambique	**119**	TMP	Timor-Leste			
30	CHL	Chile	**60**	HND	Honduras	**90**	MMR	Myanmar	**120**	TGO	Togo			

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NOTES

1. Another area of debate relates to 'aid effectiveness'. For instance, Birdsall et al. (2010) and Barder and Birdsall (2006) offer the Payment for Progress (or Cash on Delivery) modality for aid disbursements. This modality is proposed to provide flexibility and autonomy for aid recipient nations, which can experiment and implement policies they see fit. For donors and their tax payer public, disbursing aid for results achieved is politically palatable, especially given the worry and allegations of aid mismanagement. On the other hand, the South Centre's critique of the Paris Declaration's aid effectiveness approach has led it to propose the following. On aid compliance, the South Centre argues for rules "laid out by people's movement— trade unions, peasant organizations, women's movement, civil society". On aid harmonisation, it argues for "people driven objectives—which could include protection of local industry, agriculture and SMEs [small and medium enterprises]". These propositions differ from the conventional aid effectiveness approach, which places emphasis on "compliance tests as laid out by donors" and harmonisation "with donor set objectives, e.g. trade liberalization, privatization etc." See <http://www.atlantic community.org/index/articles/view/promoting_development_through_an_exit_strategy>.

2. There are alternative ways to measuring aid-dependence including ratios to government revenue or export earnings. However, we believe that the aid-to-GDP ratio is relatively easy to calculate for a larger sample of countries, and less sensitive to differences in government structure and export orientation of countries.

3. One reason for this pattern is that large flows of aid relative to the size of the domestic economy tend to divert government effort toward activities that ensure the continuous flow of aid (McPherson and Gray, 2000).

4. Except for Cote d'Ivoire and Egypt, and to some extent Fiji, the shift in the ranking of these countries from the 1960s to the 2000s is very significant.

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