Document de travail de la série

Etudes et Documents

E 2009.17

Aid effectiveness for poverty reduction: macroeconomic overview and emerging issues

A report for the Department of Economic and Social Affairs (DESA),
Division of Social Development,
United Nations

by

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Third draft, provisional
April 2009

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1. Introduction: focus of the paper

Following the adoption of the MDG, particulary the first one that is to reduce poverty by half between 1995 and 2015, numerous studies have examined how external aid can contribute to their achievement. The formula "doubling aid to reduce the poverty by half" relied on the implicit assumption that aid was an effective instrument for poverty reduction. The formula and corresponding assumption have of course been debated. Two opposite views have clearly appeared, one, well represented by Jeffrey Sachs in his *End of Poverty,* underlining the need for a big push to get low income countries out of poverty traps, the other one, exemplified by the attacks of William Easterly against aid, a big push and the idea itself of a poverty trap, but also including arguments about a limited absorptive capacity. Elsewhere we have argued that the absorptive capacity of aid depends on aid modalities and can be enhanced by a reform of aid, a point to which we will come back to later (Guillaumont and Guillaumont Jeanneney 2007).

The aim of this paper is to examine the main reasons how aid can contribute to poverty reduction, the channels through which it can do so and the lessons of the literature on these issues, with a special focus on the way aid can address the vulnerability faced by many developing countries.

Focus on macroeconomic rather than microeconomic analyses of aid effectiveness

Aid effectiveness studies reveal a micro-macro paradox (already noted by Mosley in 1987), as found in other fields (education, health, etc.). Consideration of specific projects or operations financed by aid most often leads to a positive appreciation of their results, whereas the macroeconomic studies of aid effects seem to lead to more nuanced results. The paradox may result from the methodological pitfalls of the macroeconomic studies, or of, less frequently stressed, microeconomic ones. For instance it could result from negative externalities generated by aid specific projects, not captured by microeconomic studies. But, as we shall see, aid projects are also likely to generate positive externalities, not easily captured at the micro level.

Here we focus on macroeconomic and cross-sectional studies of the contribution of aid to poverty reduction. Although very numerous, country regressions used to test the effect of aid on any variable have been highly criticized for their inability to take the heterogeneity of the country situations into account (Bourguignon and Leipziger, 2007). But an appropriate specification of the models used, including conditional and non-linear effects, may address this issue to some extent. The quality of statistics, as well as the relevance of the aid concept, is often also criticized, and it is clearly for improvements. As we shall see, the most critical issue is the treatment of aid endogeneity. In any case, cross sectional macro-economic studies are needed to suggest general lessons on aid effectiveness, which cannot be delivered by micro-economic studies, regardless of their usefulness in other respects.

Assessing aid effectiveness: from growth to poverty

The impact of aid on economic growth has been largely debated in recent years. Most cross-country econometric studies of aid effectiveness have focused on economic growth. Indeed growth of income per capita is, on a cross-sectional basis, the most easily available and measurable summary indicator of economic outcomes. Consequently, the effects of aid on poverty reduction have been mainly investigated through the effect of aid on economic growth, in relation to a (supposed) given income elasticity of poverty (e.g. Collier and Dollar, 2001, 2002). Besides its effect on poverty through the rate of growth, aid may have either a direct impact on poverty for a given level of income growth or an impact on the income elasticity of poverty.

Almost never has the impact of aid on poverty measured by the traditional indices of monetary income poverty such as the headcount index or the poverty gap been directly examined[1]. Is the difficulty in gathering comparable estimates of poverty change enough to explain this strange missing? Some studies have considered the effect of aid on the change in the level of another summary indicator of development or of welfare, such as the Human Development Index (Boone 1995; Kosack, 2003; Gomanee et al., 2005a, 2005b), identifying aid effectiveness as its ability to improve the overall quality of life. Some authors have also looked for the impact of aid on the level of a specific indicator of human development, for instance infant mortality (Gomanee et al., 2005; Mosley and Suleiman 2007) or child mortality/survival (Burnside and Dollar 1998) or the school enrolment ratio (Michaelowa and Weber 2007, Dreher et al. 2008). Others have more specifically considered the impact on some well-being indicators of the poorest quintile of the population. Often studies have controlled for the effect of income (growth), trying to dissociate what is due to income and what is not.

Need to consider the various channels, direct and indirect

In this paper we present an overview of the state of knowledge of the various channels by which aid can influence the level of poverty. Three main macroeconomic channels of aid effectiveness for poverty reduction, each with its own lags, can be distinguished.

The first, traditional channel is from aid to growth and from growth to poverty reduction. Both relationships have been debated, the first identified with "aid effectiveness", the second, related to the income elasticity of poverty has been raised more recently.

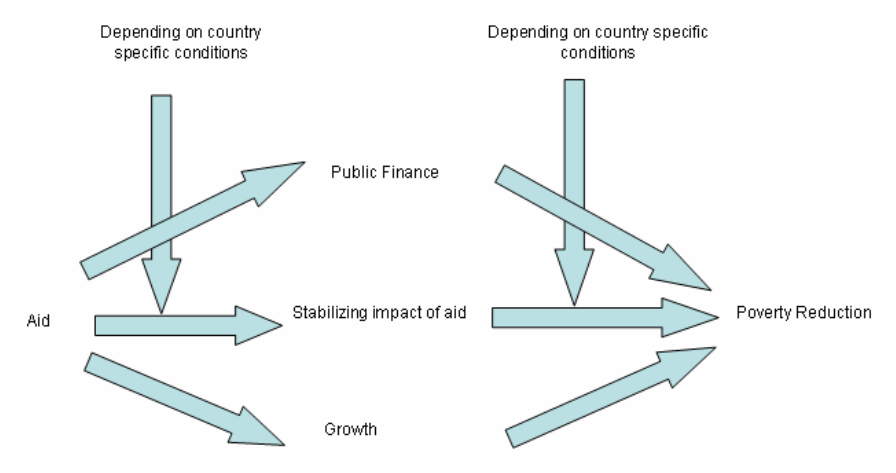
The second channel involves the impact of aid on the volume and composition of mainly social public expenditures, particularly on education and health, and the impact of these expenditures on corresponding poverty indicators. The impact of aid may involve its total amount or its social expenditures allocation, which raises a problem of fungibility. The various kinds of public expenditures likely to be influenced by aid have different effects on poverty reduction. Thus, we have to disentangle lessons from the literature on how aid can influence the structure of public spending in favour of the poor. Special attention will be paid to the kinds of conditionality attached to aid given in the form of budget support (section 3).

Macro vulnerability issues.

[1]Exceptions are found in Mosley and Suleiman, 2007, who consider the impact of aid on a rather limited and heterogeneous sample of 39 countries using annual data, and in Calderon et al. 2006.

Last but not least a third channel, neglected in the literature, has been linked to the macroeconomic stabilizing effect of aid, as suggested in several previous works. We argue that, to a large extent, the effect of aid on economic growth, and the contribution of growth to poverty reduction, are linked to their stabilizing impacts. By making growth less volatile, aid both accelerates growth and makes it more pro-poor. We also suggest, but with more equivocal findings, that this double stabilizing effect on poverty may be supplemented by a third one, as public expenditures are influenced by macro economic instability. Paying a special attention to macro-vulnerability issues is needed for an analysis of aid effectiveness focused on poverty, particularly in the present world economic context (section 4).

Graph 1: Various aid channels influencing poverty



The growth-poverty channel

For several decades, there was conflicting evidence in the macroeconomic literature on aid effectiveness, which was essentially related to growth, savings and investment (for a survey on the "old" and "new" literature see Guillaumont 1985, Guillaumont and Guillaumont Jeanneney 2006, Amprou and Chauvet 2007, Tarp 2006, Thorbecke 2000, …). As for the growth channels through which aid can reduce poverty two questions should be considered: What is the impact of aid on growth? What is the impact of growth on poverty? The answer to the first question, to a large extent depends on some specific features of recipient countries. The answer to the second one depends on the income elasticity of poverty.

The aid-growth relationship: where do we stand?

In the late 1990 was a water shed in the literature of aid effectiveness, from the circulation and publication of the paper by Burnside and Dollar (1997, 2000), and the debate which followed. Compared to the previous cross-country literature, the new one was led to consider that the effects of aid are heterogeneous, since they can depend on some characteristics of the recipient countries and on the level of aid they receive. These "non linearities" in the aid-growth relationship were captured

- in the first case by adding to the aid explanatory variable a multiplicative variable (aid x the indicator of the feature supposed in conditioning its effectiveness),

- in the second case by adding the squared aid variable (with an expected negative coefficient, so that beyond a threshold the marginal return of aid becomes negative).

The most innovative aspect of the Burnside-Dollar paper was to assess aid effectiveness by a way where it depends on specific features of the recipient countries. Its most debatable aspect was to consider the country policy as the only such feature.

The ABCD paradigm: aid effectiveness depending (only) on policy factors;

Research was focused on the policy and institutional factors conditioning aid effectiveness. Burnside and Dollar (1997, 2000) made effectiveness depending on an indicator of macroeconomic policy, an average of indicators of openness (the Sachs and Warner index), of fiscal balance and of monetary stability. For the consistency of their analysis, they also assumed that aid had no effect on policy, involving the inefficiency of conditionality. Their thesis was disseminated through the World Bank book *Assessing Aid*, where the same policy indicator was used.

The next step, Collier and Dollar (2001, 2002), aimed at designing an optimal aid allocation among countries in order to minimize the number of the poor in the world. These two papers used another concept and measurement of policy, the "Country Policy and Institutional Assessment" (CPIA) index, reflecting Bank staff opinions on the recipient countries[2] used for the allocation of IDA funds. Their model of the estimation of the aid-growth relationship included the squared value of the aid variable (negative coefficient), so that decreasing marginal returns to aid could lead to an "optimal allocation".

The third step measures the "selectivity" of the donors in their aid allocation, selectivity assessed mainly with regard to the assumed quality of policy (using the CPIA or another indicator). This "ABCD paradigm" (for Assessing, Burnside, Collier, Dollar), has been very influential in donors, bilateral as well as multilateral aid policies (see Dollar and Levin, 2004, for instance). This influence may have been the result of a policy choice ("to help the good guys"), rather than of a real consensus on the factors determining aid effectiveness, which have remained highly moot.

The paradigm criticized

The aid-growth relationship has been extensively debated. Several kinds of criticism of the ABCD paradigm have been presented.

First, the analysis is based on the assumption that aid does not influence economic policies and institutions of the receiving country. Relying on case studies launched by the World Bank (Devarajan et al. 2002), the research to support this thesis has instead reached more nuanced conclusions.

Second, measurement of the quality of policies and institutions seemed too narrow in the first papers of Burnside and Dollar and then too subjective through the CPIA, with circular reasoning (policies are likely to be considered as good when results are fine, particularly when aid is successful). Using one or another index of policy and institutional quality could result in quite different assessments of selectivity (Amprou et al. 2007).

[2] The CPIA is a composite index from sixteen components covering four areas (related respectively to economic management, structural policies, policies for social inclusion and governance).

There was also some discussion of the time and space dimensions of the econometric estimations. Referring to six four year periods (over 1970-93), while increasing the number of observations, only allowed the authors to capture short or medium term effects (Clemens et al. 2004). A major debate was related to the country sample of Burnside and Dollar, criticized in particular by Dalgaard and Hansen (2001), who discussed the elimination of outliers. Easterly *et al.* (2004) extended both the period and the sample covered, then using exactly the methodology of Burnside and Dollar they no longer found their results.[3] Actually studies considering all kinds of developing countries, including a number where aid is negligible, may lead to biased estimates when the effect of aid is supposed to be conditional on another variable.

More generally, specification of the model and the robustness of the econometric results have been cast in doubt, particularly by Hansen and Tarp (2001), who found a non-conditional positive impact of aid on growth[4]. Comparing the econometric robustness of several aid-growth regression studies, Roodman (2007a, 2007b) ranked Burnside and Dollar rather lowly.

Finally the works constituting the core of the ABCD paradigm encountered the typical difficulties of all cross-sectional studies of aid effects, the measurement of aid itself (Clemens et al. 2004) and the possible endogeneity of aid.

Other factors conditioning aid effectiveness

Using cross-sectional approach to the aid-growth relationship, but in a broader context than that retained in the ABCD paradigm, several authors have examined factors likely to improve aid effectiveness. The heterogeneity of the relationship has been addressed in three main ways.

First, by breaking down the sample into more homogeneous components, particularly to focus on low income countries or on Sub Sahara: only few papers have done it (see for instance Ram 2004, still considering how aid effectiveness depends on policy, for a focus on low income countries[5], or Gomanee et al. 2005b for an analysis related only to Sub-Saharan Africa[6]).

Second, the approach to heterogeneity is to consider that aid effectiveness depends on the level of aid itself. This issue has been mainly addressed with regard to possible decreasing marginal returns to aid, evidenced by the positive coefficient of the aid variable combined with the negative coefficient of its squared value. Several studies had found such results (beginning by Burnside and Dollar 2000, Collier and Dollar, 2001, 2002, Hansen and Tarp 2000, 2001, Lensink and White 2000), with a corresponding threshold where the marginal contribution of aid to growth becomes nil, which reflects limited absorptive capacity for aid. Besides, an upper threshold due to absorptive capacity, there may be also a minimum level of aid needed for effectiveness, justifying the need for a "big push" (Gomanee et al 2003, Guillaumont and Guillaumont Jeanneney 2007). New measures suggest the coexistence of such thresholds (Wagner 2008).

[3] Burnside and Dollar (2004) responded, arguing that expanding the sample explains the change in the results.
[4] See also Morrissey (2001) and Lensink and White (2001). Guillaumont et Chauvet (2001) working with longer periods (twelve years) could not find a significant coefficient for the interactive variable between aid and policy.
[5] They find more significant results for the sub-sample of low income countries.
[6] They argue that the impact of aid on growth is channelled by investment.

A third, by adding a multiplicative variable so that the aid variable, in the model, is multiplied by a variable on which its effectiveness is supposed to depend. The ABCD model may be seen as a special case. For instance Guillaumont and Chauvet (2001); argue that a major factor conditioning aid effectiveness in recipient countries is the economic vulnerability they face[7]. We examine this view later in more details. In another paper, looking for a variety of factors likely to influence marginal aid effectiveness, Chauvet and Guillaumont (2004) have found the following: aid effectiveness simultaneously depends positively on the quality of present policy (ABCD hypothesis), negatively on the previous level of policy (support for catching up), positively on economic vulnerability (insurance effect, see below), negatively on political instability (as also found by Islam, 2005), positively on an index said of absorptive capacity combining infrastructure and education[8]. However, Gomanee et al. (2003) found the level of education as a factor of lower aid effectiveness (higher marginal productivity of the transfer of knowledge associated with aid). Still other factors conditioning aid effectiveness have been suggested in the literature such as geographical location (distance from the Equator in Dalgaard *et al.* 2004)[9], are not necessarily enlightening[10]. Actually, as noted above, when the effect of aid is conditional on another variable, the results may be highly sensitive to the extent of the country sample: it is the case if the countries receiving nearly no aid or an exceptionally high level of aid are also on the queue of the distribution for the conditional variable.

Needed, but more difficult is to combine the two previous methods of treatment of the heterogeneity, so that marginal aid effectiveness both depends on the level of aid and on some characteristics of the recipient countries. It is easily conceivable that the thresholds (for big push and absorptive capacity) differ according these characteristics, but estimations are almost non-existent (except for Wagner 2008).

Issues to address

Following criticism of the ABCD paradigm, there has been a tendency to disregard the findings of all the aid-growth cross country regressions, and of any new attempt of this kind.

First, heterogeneity is considered too strong to allow such cross-sectional treatment. We have noted above that improvements in the treatment of heterogeneity are conceivable, in so far as comparative data are available.

"Meta-analyses" of aid-growth regressions are used to support for agnosticism (Doucouliagos and Paldam 2005a, 2005b and 2006). Such studies, comparing nearly one hundred of studies and the several hundreds regressions they contain, treat all of them in the same way, often without considering the quality of the estimations, and are quite less appropriate to compare the "conditional" results. They seem more relevant as a tool of political science, to explain the factors influencing the authors, than a basis for an economic diagnostic.

[7] See in Annex more detailed results
[8] Id.
[9] A relationship shown by Roodman (2007a) to be dependent on outliers (Jordan), and also criticized by Rajan and Subramanian (2005).
[10] Other variables are considered in the literature as possibly conditioning aid effectiveness, such as social capital Baliamoune-Lutz (2006), or the role of elites (Angeles and Neanidis, forthcoming).

A real problem is in the measurement of aid itself. The concept of net ODA flows, set for four decades by OECD and used in most of the papers, obscures its heterogeneous composition, including elements which do not correspond to a transfer to "recipient countries" (e.g. the cost of "sponsored" foreign students)[11]. Figures for real disbursements in the countries are not yet available for long time series. A close issue is related to the possible need of disaggregating aid flows and considering their impact on various time horizons (as done by Clemens et al 2004, then by Reddy and Minoiu 2006).

The most difficult issue is probably the endogeneity of aid variables in growth regressions. This has been addressed by using instrumental variables: the relevant instruments should be correlated with the explanatory variable, aid, but not with the explained variable, growth, otherwise than through the instrumented variable, aid. But these instrumental varaibles are difficult to find, and those used have been moot. The most frequently used ones are those proposed by Tavares (2003), themselves debated because of their fixity. New and more relevant aid instruments can be found in other works related to growth and other variables (Brun et al. 2008, Guillaumont and Laajaj, 2006). However the possibility to adequately address the aid endogeneity issue has been challenged by Roodman (2007b, 2008). A recent paper by Deaton (2009) discusses the limits of the process of instrumentation in the case of aid-growth regressions without considering the various attempts to address the issue.

Finally general criticisms obscure lessons which can be drawn from the most robust analyses of aid effectiveness for economic growth, which rely on relevant hypotheses on the effects of aid, use acceptable instruments for aid and control variables, and estimate the conditional effects of aid. There are reasonable cross sectional ground to support the view that aid is likely to contribute to growth, particularly in specific circumstances. Part 5 highlights how vulnerability matters in this regard.

Is the income elasticity of poverty independent of aid?

If foreign aid has a positive impact on growth and if growth reduces poverty, such aid contributes to poverty reduction. For a given impact of aid on the growth rate, its impact on poverty depends on the income elasticity of poverty. Here, poverty refers to the headcount index of poverty (number of people under the poverty line as a percent of the population). Simple versions consider elasticity as given and identical for all developing countries, while in more elaborated versions, specific elasticities are found for each country, depending on its domestic characteristics. Full assessment of the channel implies to considering how aid can influence the income elasticity of poverty.

When elasticity is supposed to be uniform

To be consistent with the works referred to, we presume that aid only contributes to poverty reduction through economic growth: in their influential model Collier and Dollar (2001, 2002) consider that aid reduces poverty only by its impact on growth and according to a given and uniform income elasticity of poverty. Collier and Dollar thus sought to determine the optimal inter-country allocation of aid that would reduce greatest the number of the poor in the world. The optimal allocation among countries then depends on the quality of their respective

[11] Treating financial conditions on a dichotomous basis according to the level of the grant element.

policies (conditioning growth effectiveness of aid, with decreasing marginal returns, as discussed above), on the income elasticity of poverty (assumed to be identical among countries and equal to 2), and on the initial number of poor in each country. The optimal allocation, resulting in a minimum headcount index of poverty at the world level, is obtained by allocating more to countries with good policies and a high number of poor (due to the initial headcount index, and to population size as well). Since it would lead to allocating too much to India, a cap was put on allocations to India.

Using another approach, the Millennium Project and other authors sought to determine the amount of aid needed to reduce the index of monetary poverty (headcount index) by half in each country (from 1995 to 2015). It can be implemented with various aid-growth relationships and an income elasticity of poverty either unique or varying by country. For a given elasticity and an aid-growth model *à la* Collier and Dollar, the aid allocation needed to meet the MDG1 is then higher the worse the quality of policy (Anderson and Waddington 2007). Thus, according to the two approaches the quality of policy influences "optimal" aid allocation in opposite directions.[12]

Domestic factors influencing elasticity

In their study on how much is required to achieve MDG 1, the reduction by half of poverty at the country level, Anderson and Waddington (2007) refer (without more explanation) to elasticity measures for each country, as drawn from a paper by Datt (1998). Indeed we can expect this elasticity varying according to the income distribution of each country, and income per capita in each country [13]. So any estimate of the impact of aid on poverty through the growth channel should include a discussion of factors underlying the income elasticity of poverty.

As shown by Bourguignon (2003), the absolute value of this (negative) elasticity (sometimes called the growth elasticity of poverty) mechanically depends on the level of initial income per capita (+), on the initial level of unequality (-), and on the change in this level (-)[14]. As a result of the first two factors, the income elasticity of poverty (any index) can be expected to be lower (in absolute value) when the initial level of poverty is higher. The impact of this initial level on changes in poverty, with various specifications, is confirmed by econometric tests (Adam 2004, Guillaumont and Korachais 2008).

This has important implications for the contribution of aid to poverty reduction through the growth channel. It means that if the aid-growth relationship does not vary with the initial level of income (and poverty), this contribution is likely to be smaller when the extent of poverty is large. Leading to less aid in very poor countries following to the Collier-Dollar model, and to more aid with the Millennium Project model. However it does not hold when the elasticity refers to the poverty gap instead of the headcount index.

[12] This opposition can be solved in an appropriate model of optimal allocation (Guillaumont 2008)
[13] Moreover it is probably non linear: suppose everybody lives well below the poverty line, the elasticity of the headcount index will be zero, but it will be the same with everybody well above the poverty line, a case which can be ignored here.
[14] See also Heltberg 2004

Possible impact of aid on the elasticity (through a change in income distribution)

Another factor in elasticity, as underscored by Bourguignon (2003) and confirmed by the previously quoted econometric estimations, should also get attention, namely the change in income distribution. If aid has an impact on this change, it could influence the elasticity this way.

Very few studies have tried to directly test hypotheses on the effect of aid on the income elasticity of poverty (see Verschoor and Kalwij (2006) who consider both the effect of aid and that of the budget share of social services on the elasticity, without obtaining significant results for either[15]). They find that the aid volume increases the share of social services in the budget , an issue to which we come back later. We will see also later that that the income elasticity of poverty may depend on the growth volatility (Guillaumont and Korachais 2008) and that aid may lower this volatility.

These studies may reflect a more general effect of aid on the change in income distribution, which in turn influences the poverty level directly and/or through the income elasticity of poverty. However cross-sectional researches considering how aid influences the income distribution are rather few and their results offer weak evidence (Calderon et al. 2006, Chauvet and Mesple-Somps, 2006).

The impact of aid on poverty through the growth-poverty channel has led to the focus on poverty by the traditional indices of monetary poverty. Broadening the concept of poverty may lead to different and possibly more positive conclusions. For instance Morrissey (2001) argues that probably no more than a third of aid is directed at uses that would be expected to have an observable medium-term impact on growth, while other forms of aid can have an impact on welfare. For Gomanee et al. (2005a) aid used to deliver health and education services, can only influence growth in the long term, but can influence aggregate welfare immediately. Thus, considering only the growth channel would underestimate the impact of aid on aggregate welfare and poverty. We now consider how aid can influence poverty through the public expenditure channel.

The public expenditure channel

For some who still have doubts about the impact of aid on growth, and in this way, on poverty reduction, a major issue for public opinion is what effects aid can have on poverty through its impact on public expenditure. By softening the budget constraint aid may induce a higher level of expenditures in the social sectors, such as health and education, those which are most likely to benefit the poor. Moreover, if targeted on the social sectors, aid, can directly lead to an increase of these expenditures. By financing these expenditures, aid is expected to enhance human development, measured by indicators such as child survival or adult literacy. We try to review how these various relationships have been tested in cross sectional studies.

Of course, health and education public expenditures, on which the interest of the international community has been focused, do not always mainly benefit the poorest, while some other public expenditures may have an important effect on their economic situation, for instance

[15] They also consider the impact of aid and share of social services on the income elasticity of infant mortality, which these ones appear significant.

feeder roads in poor areas and even security expenditures in some cases. But the impact of the overall structure of public expenditures on the poor is better assessed on a case by case basis. Relying on cross-sectional findings, we follow the conventional approach of considering health and education public expenditures as those most important for the poor.

Following the same approach as in the previous section, we now consider the impact of aid on public social expenditures and the impact of these expenditures on corresponding social outcomes, with special attention to how aid can influence this second phase.

From aid to social public expenditures

We firstly consider the impact of the total amount of aid on public social expenditures, secondly the effects of aid specifically targeted on such expenditures. A caveat is needed. The difficulties of cross country aid growth regressions (heterogeneity, endogeneity) are all still present, and often they are not more successfully addressed. In particular the heterogeneity of state behaviour is likely to be high.

The impact of the total amount of aid on public social expenditures

The level of public social expenditures depends on the total amount of public revenue and the preference given by the recipient country to this kind of expenditure compared to others.

On the risk of crowding out fiscal revenue: the need for dynamic perspective

The total amount of public revenues and expenditure depends on the level of national income and its growth. It may be influenced by aid, as examined in the previous section, but considered here income as given. It also directly depends on the level of aid. The degree to which additional aid is transformed into additional public revenue has been debated. Numerous works, not reviewed here, have examined to what extent aid increases total public revenue, considering possible crowding-out of domestic sources of revenue. In the recent literature on the impact of aid on public revenue, as pointed out by Morrissey *et al.* (2006), there was "no consistent and robust relationship between aid, the composition of aid, and the tax to GDP ratio in developing countries". However Brun et al. (2008) come to a different conclusion, using broader data to measure public revenue and treating aid endogeneity more adequately (see supra). As a result, they observe a positive impact of aid (loans or grants) on tax effort, instead of crowding out tax revenue. This result is explained by the fact that aid can improve the effectiveness of public administrations in order to compensate for the negative effect due to additional funding.

The main lesson for this literature is that even when aid weakens the fiscal effort, it only partially substitutes for domestic sources of public revenues: the net effect on total public revenue is likely to be positive (as appeared to be the net effect of foreign capital inflows on investment in the earlier literature on the possibility they were crowding out savings, Guillaumont 1985). In other words, even if not one for one, an aid increase generally results in a rise in public revenue and expenditure. A positive impact of aid on public revenue is found in most of the panel works recently done (Ghura, 1998; Ouattara, 2006; Morrissey *et*

al. 2006)[16], as well as in several country studies using time series analyses (Osei *et al.* 2005; Mavrotas and Ouattara 2006) (for a survey of the literature, see Brun *et al.* 2008).

Anyway, the issue should also be addressed in a dynamic framework. The level of the tax-GDP ratio is likely to increase when aid enhances growth, since the marginal ratio is generally higher than the average. This effect is here kept aside since the level of income per capita is generally controlled for in earlier studies. Moreover the impact of aid on growth can itself be reinforced by the stronger incentives induced by lowering the pressure on tax payers, particularly small enterprises, and the risk of discriminatory treatment, so visible when the state is short of resources (Gunning 2004, Guillaumont and Guillaumont Jeanneney 2007).

The public marginal propensity to spend in social and other sectors

We should examine the marginal propensity to dedicate aid receipts to social or pro-poor expenditures ignoring the possible substitution of aid to domestic public revenue. If aid increases the amount of expenditure dedicated to sectors such as education, health, water access and sanitation, it can enhance social outcomes.

Many econometric studies investigate the relationship between the volume of aid and social public expenditures, with very different results. Actually they study either the impact of aid on the absolute level or relative share of expenditures, which does not at all have the same meaning. Aid can contribute to increasing the level of these expenditures (positive marginal propensity to spend in social sectors), but not to increasing their share in all public expenditure (if the aid elasticity of social expenditures is lower than the aid elasticity of all public expenditures). Then there is no surprise to find more significant positive results at this level than on the share of social expenditure.

The impact at this level is well established in a paper by Mosley et al. (2004): they estimate a system of equations using data for some 46 countries in the 1990s and find that aid is associated with higher levels of pro-poor spending. Similar lessons may be drawn from Audibert *et al.* (2003): observing important differences in health public spending between developing countries, they examine the impact of financial constraints (debt servicing and overall budget constraints) on public health spending. They found that these external financial constraints have a negative effect on public health spending and that net transfers and grants have positive impact.

Three studies suggest that the impact of aid on the share of social or pro poor expenditures can be positive. Gomanee et al. (2005a) argue that total aid influences public spending allocations among the different sectors in favour of the social sectors. Gomanee et al. (2005b) in another paper find that aid tends to increase pro-poor expenditure for low-income countries: they also found that pro-poor expenditure tends to be higher in countries receiving more aid, ceteris paribus. Both papers use the lagged aid variable to deal with the endogeneity of aid problem. Then, Verschoor and Kalwij (2006) testing the factors affecting the share a government allocates to expenditures on social services, found that total aid increases this share and aid thus promotes pro-poor growth (1 per cent point increase in total aid leads to a 0.25 per cent point increase in their share). However, the problem of aid endogeneity is not addressed because of limited data.

[16] An exception is Gupta et al. (2003) whose results are criticized by Morrissey *et al* (2006) (see Brun *et al.* 2008).

However, some other econometric studies present results suggesting the absence of impact of aid on social expenditures. For instance, Masud and Yontcheva (2005) test the impact of two different kinds of aid on public spending between 1990 and 2001, suggesting a substitution effect between bilateral aid and public social expenditures.

Effects of aid targeted on social expenditures

A positive impact of total aid on public social expenditure seems all the more likely when a large share of aid is targeted on such expenditures. Indeed, aid targeted on social expenditure is expected to have a positive effect on these expenditure. However, aid is often considered as ultimately fungible within the budget. There is fungibility when aid targeted for a particular purpose which would have been financed anyway is freeing resources for another purpose that would not have been financed otherwise[17]. The debate on aid fungibility is an old one[18]. It has been revived after the publication of the book *Assessing Aid* (World Bank, 1998) where the risk of fungibility is presented as an argument against project aid. How far fungibility lessens aid effectiveness for poverty reduction is not clear, for several reasons, some are linked to the difficulty of assessing the extent of fungibility, and others to uncertainties in the consequences of fungibility for poverty reduction.

A brief review of the debate on aid fungibility is required before considering some evidence on the link between aid targeted for social purposes and corresponding expenditures.

Assessment of the extent of fungibility: Ambiguous results

Any test of fungibility involves in looking at the (partial) correlation between targeted aid and corresponding public expenditure: to what extent does an increase in targeting to health or education result, *ceteris paribus,* in increased health or education public expenditures? Actually there is no convincing evidence of the extent of fungibility, particularly in the social sectors.

Two studies, using cross-country panel data and used for supporting the view presented in *Assessing Aid*, are often quoted. One is Feyzioglu *et al.* (1998) who found that aid is fungible in agriculture, education and energy, but not in the transport and communication sectors where aid leads to a one-for-one increase in public spending. The Word Bank's own study (by Devarajan *et al*., 1999), focused on African countries (where fungibility was suspected to be the cause of aid ineffectiveness) concluded that aid is partially fungible. However, these two studies have been criticized because the sectoral aid data used only include concessional loans (due to availability), while grants represent two thirds of sectoral aid (Berg, 2003; Lensink and White, 2000).

New panel studies from the IMF still give an ambiguous picture. Masud and Yontcheva (2005) found bilateral aid to be fungible (58 counties considered from 1990 to 2001), but, more interesting for our purpose, Mishra and Newhouse (2007) focusing on health aid (118 countries from 1973 to 2004), concluded that aid targeted at health does not appear fungible.

[17] Fungibility is said to occur when the marginal increase in sectoral expenditure following the receipt of aid is lower than the marginal amount of foreign aid dedicated to this particular sector. Fungibility can be total, if aid does not have any impact on the targeted sector, or partial, if the impact is lower than the total amount of aid affected.

[18] See Guillaumont (1985) for historical perspective and an analysis of the main factors affecting fungibility.

Doubling health aid is associated with a 7 per cent increase in health spending per capita (for the average country, rising aid by one dollar increases public health spending by $1.5).

Besides these panel studies, some older country studies using time-series data[19] also produced ambiguous results, while Mavrotas and Ouattara (2006) found no evidence of fungibility (in Philippines, Costa Rica and Pakistan).

Finally, it remains difficult to econometrically test the fungibility of sectoral aid and there is even less evidence of fungibility of aid targeted at social sectors compared to aid targeted at other sectors.

Implications of fungibility: When fungible does not mean less effective

Even when fungible according to the meaning given in the previous studies, aid targeted at social sectors may be effective in improving these sectors. The relevance of fungibility for our purpose may then be overestimated.

First, even when aid targeted at specific social expenditures appears fungible, it does not necessarily mean that its use is less pro poor. It is conceivable that the government takes the opportunity from targeted assistance to finance expenditures for the international fashions of the day, but are "pro-poor" in the country context (for instance agriculture). The result depends on the government use of freed resources.

Second, it could be that a part of sectoral aid may not be channelled through the budget and is then not likely to increase (budget) public expenditure correspondingly. If in this case there is fungibility in budget expenditures, targeted aid should not result in improved sectoral outcomes but in the converse case, it should. Thus, the existence of a link between targeted aid and corresponding sectoral outcomes suggests the absence of full fungibility (direct and indirect). A striking result of some cross-sectional studies is that public aid targeted at social sectors such as health or education evidences more easily produces this aid impact on the sectors themselves than on the corresponding public expenditures. For instance, investigating the impact of aid on school enrolment, Dreher et al. (2008) find that aid allocated to education does not lead to an increase of public expenditures for education (fungibility), but has a positive impact on enrolment.[20]

The relevance of fungibility may also be challenged for a third reason. Even if fungible in terms of sectoral allocation, aid targeted at social or pro-poor expenditures may have a technical content making its implementation different from that of domestically financed expenditures in the same sector. Beyond the transfer of money, targeted aid may thus bring ideas and know-how. Conditionality and technical assistance may be used to reinforce this effect. Pettersson (2007) found sectoral aid fungible in a sample of 57 aid-recipient countries but did not find any evidence of non-fungible sectoral aid working better than fungible aid.

[19] Pack and Pack found fungibility in Indonesia (1990), but not in the Dominican Republic (1993).

[20] Another example, different but leading to a similar conclusion, is given by a paper of Mishra and Newhouse (2007): finding the impact of total aid on health outcomes is relatively low and not significant whereas the impact of health aid is significant, they conclude that health aid does not seem to be fungible.

In conclusion, what matters is whether fungibility results in lower aid effectiveness in the target sectors. The existing literature does not allow any definitive conclusion on this matter.

From social expenditures to social outcomes: The role of aid

Following the public expenditure channel, aid effectiveness for poverty reduction involves both an aid impact on public expenditures and an impact of public expenditures on poverty. Paradoxically in the cross section literature, the latter is debated. But the debate can be enlightened by the consideration of the role of aid in this relationship. After reviewing the debate, we examine the effects of aid, both global and targeted, on social outcomes in so far as they are supposed to result from public expenditures (in or out of the budget). Then, we review the micro-economic research on impact analysis to address the link between social expenditures and corresponding social outcomes. Finally, we underscore the impact of budget support on social outcomes depends on the kind of conditionality applied.

The social expenditure-outcomes puzzle: a failure of cross sectional studies?

Despite a vast macro-economic literature, the impact of public expenditures on social outcomes is still debated, and for health even more than for education. As for health, no relationship was found by several studies summarized by Musgrove (1996), as well as by Filmer and Pritchett (1999) and Wagstaff and Claeson (2004), while Bokhari et al (2007) found a positive link. As for education, weak or insignificant link is also reported by some studies (Roberts 2003, Dreher *et al.* 2008). Why increased public health or education expenditures could not result in an improvement of the main health or education indicators associated with the MDGs? Several issues are raised by this question.

First, public expenditures may be biased in favour of the rich. For example, Morrisson (2002) argue that, in Madagascar and Tanzania, education and health services did not primarily benefit the poor. In addition, services for the por were mostly of lower quality. Castro-Leal *et al.* (1999) showed that increasing social expenditures in Africa did not benefit the poor and did not guarantee welfare improved welfare because of unequal distribution of benefits. Berthelemy (2006) argued that public education public expenditures are not necessarily pro-poor as they are mainly for secondary and tertiary education and are biased against primary education in most African economies, leading to an unequal distribution of human capital. Similar findings for health expenditures are evidenced by Berthelemy and Seban 2009.

Some other authors have identified cases in which public social expenditures have been pro-poor. For instance, Lanjouw and Ravallion (1999) underline (on the case of India) that the benefits of public expenditures are becoming more pro-poor when social programs expand, early benefits being captured by non-poor. Similar non-linearities have been noted as for the income elasticity of poverty, which is lower, the higher the initial extent of poverty (cf supra).

Second there may be leakages between the initial state disbursements and the final delivery of the corresponding social service (Reinikka and Svensson 2001, Gauthier and Wane 2008).

One can also wonder which type of expenditure benefit the most the poor? For instance, expenditures dedicated to agriculture are generally pro-poor, as found by Mosley and Suleiman (2007).

Finally the weakness of the correlation between public social expenditures and social outcomes may result from the general problems discussed above about the aid–growth relationship (well emphasized by Deaton, 2009): the problem of endogeneity that necessitates special treatments (i.e. the use of instrumental variables) and the problem of heterogeneity, that needs to condition the effect to he level of another variable (i.e., the use of a multiplicative variable). The Deaton "misunderstanding use of exogeneity" and "handling of heterogeneity" are the two main issues to be considered.

The effects of aid on social outcomes: are public social expenditures more effective when supported by aid?

Aid can benefit the poor without necessarily having any impact on monetary or income poverty, since aid can finance expenditures that improve the welfare of the poor, such as universal access to primary education and health care. Therefore most empirical analyses of the impact of aid on poverty refer to non-monetary indicators of welfare, such as education and health status indicators. We focus on the effects of aid targeted to the educational sector, then to those of aid dedicated to the health sector.

We have already noted that targeted aid has clearer effects on social outcomes (health and education) than on corresponding public budget social expenditures, either because they are not channelled through the budget or because, when they are, they may be both fungible and more productive. It appears that aid, in particular targeted aid, has clearer effects than public social expenditures on social outcomes. These paradoxes suggest that the public expenditure channel through which aid can contribute to poverty reduction should not be examined only for its impact on the size of the flows, but also as a factor of enhancing productivity in social sectors.

Let us take as an example supporting this hypothesis a paper by Gomanee et al. (2005b): they tested the direct effect of aid on welfare or poverty for a sample of 104 countries and found a positive direct impact on the quality of life, measured by HDI, and on infant mortality, but no impact of public social spending, although they found that aid tends to increase pro-poor expenditures for low-income countries.

Aid to education. Cross sectional studies of the impact of aid on the educational sector are still limited. Two main studies provide recent information on this issue[21].

Michaleowa and Weber (2007) has investigated the relationship between aid to the education sector and primary, secondary and tertiary school enrolments, using aid data from DAC. As for outcomes, they use primary completion rates and gross enrolment rates for secondary and tertiary levels. Estimations done either with the Generalized Method of Moments (GMM) or fixed effects show a rather small impact of aid on school performance at all levels. However, the results may be under-estimated because of data problems disaggregating aid.

In a major study Dreher et al. (2008) found an important and robust positive impact of aid targeted at education on primary school enrolment. In a panel of 105 countries for the period 1970-2005, they estimate the impact of aid for the education sector (measured as a percentage

[21]Wolf (2007) also finds a positive impact of aid targeted to education on literacy, primary completion rate for a panel of developing countries in line with the two studies.

of GDP) on net primary school enrolment, with three methods (GMM system, SUR and 3SLS). They found an important and robust effect.

To be noted, these results do not hold when considering aggregate aid as the explanatory variable, what is consistent with our hypothesis of the specific productivity of aid targeted at social sectors. Anyway these studies confirm the need to disaggregate aid to measure its effectiveness in terms of poverty reduction.

Aid to health. The impact of targeted aid on health outcomes has mainly been examined with reference to infant or child mortality. Let us refer to some recent studies, done after that of Gomanee (2005b) quoted above.

Mishra and Newhouse (2007), found a statistically significant, but small effect that doubling per capita health aid was associated with a 2 percent reduction in the infant mortality rate for 118 countries between 1973 and 2004. However the Country Reporting System (CRS) database used are for aid commitments, not disbursements, with very limited coverage at the beginning of the period. Wolf (2007) also found a positive impact of aid targeted to health on infant mortality, and on child (under-five) mortality.

Also using the CRS commitments database (from the 1980s), Chauvet et al. (2008) found a non-linear impact of health aid on infant mortality, decreasing with income per capita. Hence, aid allocated to the health sector should be more effective in the poorest countries.

Knowledge transfer: Lessons from micro studies and impact analyse

If aid for the social sectors induces increased productivity in these sectors, the effect is likely to depend on knowledge of best practices. Since such progress is costly, it is often associated with aid operations, often financed by (public or private) aid. Macroeconomic analysis of aid effectiveness for poverty reduction cannot be disconnected from improvements in the microeconomic analysis of the effectiveness of specific public projects, programmes or expenditures. The main improvements are briefly reviewed below.

What can be expected from impact analysis

A growing micro-economic literature uses new techniques of impact analysis, designed as randomized trials or evaluations addressing the endogeneity problem encountered in macroeconomics (see an assessment by Deaton 2009). Proponents of randomized evaluations claim that this method has eliminated the problem of mining data and is rich in policy implications. Nevertheless, as underscored by Deaton, random evaluation results cannot be extrapolated to other settings. It is not known in which situations a project works and what the results will be in a different and uncontrolled situation[22]. For Duflo *et al.* (2008), randomized trials can be multiplied in order to deduce general results. What is the number of trials

[22] "The price for this success (of randomized controlled trials) is a focus that is too narrow to tell us "what works" in development, to design policy, or to advance scientific knowledge about development processes. Project evaluation using randomized controlled trials is unlikely to discover the elusive keys to development, nor to be the basis for a cumulative research program that might progressively lead to a better understanding of development" (Deaton, 2009)

necessary to generalize results? What part of aid should be dedicated to these costly investigations? The answers to these questions are not clear.[23]

Where lessons can be drawn for poverty reduction

The micro level evidence on social impacts is growing concerning health or education operations or programmes. Such social technologies have improved with such investments, possibly financed by aid, but not due to the fact of aid financing, compared to another one (mainly domestic budget).

A major area of impact analysis has been education. There has been significant progress made in increasing enrolments (the second Millennium Development Goal), but they are limited both by corresponding cost increases and often by high drop out rates. Impact analyses have helped to evaluate the usefulness of various programmes focused on reducing costs and/or drop out rates[24]. In particular they have shown the effectiveness of conditional cash transfers (CCT thereafter) programs, consisting in giving money to the parents conditional on child school attendance, as children are often used to cope risk when households are exposed to shocks (de Janvry et al., 2006). PROGRESA, a famous programme implemented in Mexico has been shown to have positively affected school enrolment (Schultz, 2004). Impact analyses have also shown the effectiveness of other interventions to increase school attendance[25].

As primary school enrolment is growing quickly, another challenge is to make children learn effectively. Low achievement is not only linked to high drop-out rates. Numerous tools can be used to enhance schooling quality such as teacher preparation and reducing teacher absenteeism with financial incentives. In order to know which tools are more effective in improving school quality, impact studies are both still needed and difficult, because long and costly, since the trial experiment should be conducted until the completion of schooling.

Impact analyses for health (as well as many studies conducted in this field before the extension randomized experiments[26]) are also useful, bringing rich information for health policy, in particular for preventive policy, such as immunization. Recent impact studies (with trial experiment) have noticeably shown the high level of price elasticity of demand for preventive goods and services, then the usefulness of a system of incentives (for instance for the price of deworming drugs in Kenya, Kremer et al. (2004), or insecticide treated bednets in Kenya Cohen and Dupas, (2008), for picking up results of HIV tests in Malawi, Thornton, (2008), or for immunization in India, Banerjee et al. (2008).

[23] To quote Easterly (2008), randomized evaluations are "far from being a panacea in development, or even just to "make aid work," and the randomized experiments proponents overstate their potential".

[24] See for example, Duflo *et al.* (2008) on the effects of the distribution of uniforms in Kenya where the purchase of uniforms is the only school expenditure: they find that it leads to a significant reduction of drop-out rates.

[25] Another program that has encouraged school attendance for girls is merit scholarships for girls in Kenya. The random experiment processed by Kremer et al. (2004) show a positive effect on school enrolment, better results for these girls and also some externalities to boys' performance in the same classroom.
Miguel et Kremer (2004) also show that absenteeism in Kenya was reduced by 25% following a mass treatment with deworming drugs, they also point out the huge externalities for children and school that did not receive the treatment. Such a randomized trial evidences that in this case deworming is the most cost-effective way to increase school enrollment.

[26] See Levine (2004) review of successes of aid interventions in terms of health improvements

The impact of global budget support according by type of conditionality

An increasing share of ODA is delivered as budget support. Commitments, and especially disbursements of this kind of aid, as with balance of payment support, are generally linked to "conditions" the recipient country should meet. The traditional type of conditionality involves specific economic policies the country should follow (ostensibly to grow or reduce poverty, etc.) and includes specific policy measures. In the last two decades such policy conditionalities have been repeatedly criticized as ineffective, arbitrary, inconsistent with the promotion of ownership, (an issue more recently underlined by the Paris Declaration, and of democracy. Proposals have emerged from the mid-nineties to substitute with conditionality based on outcomes or results policy traditional conditionality based on policy instruments (see Collier *et al.* 1997, Guillaumont and Guillaumont Jeanneney 1995, 2006, Kanbur 2005). Some changes have occurred in practice, with increasing concern to promote national ownership, particularly following an initiative of the European Commission (explained below), but they remain limited.

The kind of conditionality applied has significant implications for the likely contribution of budget support to poverty reduction.

It first should be noted that the criticism of the traditional conditionality was initially consistent with what we have called above the ABCD paradigm, although the perspective has evolved over time. We remember that a corollary of the Burnside-Dollar model was that (the amount of) aid was without effect on policy, implying a critique of traditional conditionality. The logical consequence was to replace the policy-based conditionality with policy-based selectivity (in total aid allocation) with the view of increasing aid effectiveness. But as far as the empirical basis for the model (effectiveness dependent on policy) appeared weakened, the message became to use selectivity based on policy as an incentive for the adoption of good policies…Thus the message became closer to the traditional view of the policy based conditionality. And the border between policy based conditionality (for budget support) and selectivity became even less clear as for aid targeted at social outcomes (whether or not passing through budget support). [27]

Conditionality is supposedly favourable to the poor when, in the context of the MDGs, donors evidenced high aversion to poverty and put pressure on recipient countries to increase the social expenditures in their budget and take other appropriate measures in these sectors. However, the usual criticism still seems valid: national ownership is weakened and effectiveness uncertain (for instance, health expenditures can be increased, without improving child mortality rates).

The European Commission has partially reformed its conditionality and adopts a "performance-based" approach for a part of its budget support. This consists of determining a part of the global support according to results or outcome indicators, instead of policy measures. This approach comes with some advantages it encourages national "ownership" of political reforms, but also improves transparency and coordination among donors. However, such *ex post* conditionality remains based on "performance" indicators intermediate between

[27] There is mitigated evidence that aid targeted to social sectors is more effective when macroeconomic policy and institutions are "good": Mishra and Newhouse (2007) find that health aid has been more effective in reducing infant mortality in countries with better policies and institutions; Dreher et al. (2008) (as Gomanee et al., 2005) for aid to education find no relationship with the quality of institutions.

policy measures and outcome indicators, such as the number of schools built or public health facility attendance, rather than indicators of final impact on poverty, such as the reduction of child mortality or the improvement in the real literacy (Adam et al. 2004).

Genuine performance-based conditionality would rely on improvements in MDG indicators. This kind of conditionality can improve both national ownership and the impact of aid on poverty reduction. However, the reform towards this *ex post* conditionality will take time and also needs to take the exogeneous shocks faced by the countries into consideration (Adam *et al.* 2004).

The stabilization channel: aid as a factor dampening vulnerability

At the macroeconomic level, a major effect that can be expected from aid is due to its possible stabilizing impact. The reason is simple. Exogeneous sources of instability, either external or natural, and the growth volatility they induce are significant factors lowering average growth. They also contribute to higher inequality, making growth less favourable to the poor. If aid does stabilize income growth, it is likely to enhance growth and to make it more pro-poor. To present this neglected, but essential effect of aid on poverty, we first suggest how to assess the stabilizing impact of aid, then how it influences the working of the previous channels examined, in particular how it conditions the effects of aid on growth, and how, by influencing the distribution of income, it conditions the impact of growth on the reduction of poverty. By these two ways the stabilizing impact of aid constitutes a third channel from aid to poverty. It also could influence the public expenditure pattern, reinforcing this third channel, but we do not here examine this influence, due to a lack of empirical evidence.

The stabilizing impact of aid: how to assess

There has been a recent growing concern about aid instability and unpredictability. Aid has even been criticized for "pro-cyclicity" with regard to public revenue, what may not be very meaningful due to the endogeneity of this revenue. And, even if there is some ground for the concern about unpredictability, it does not involve that aid has a destabilizing macroeconomic impact. Empirical evidence rather suggests the opposite.

There are two main ways by which the stabilizing or destabilizing impact of aid can be assessed (Chauvet and Guillaumont, 2008, Guillaumont 2006).

The first one is to compare the evolution of aid to that of the exogeneous flow the most likely to be a source of instability in low income countries, the export of goods and services. To see whether aid is stabilizing with regard to exports, an index is built an index which is the difference between the index for volatility of exports and the index for the volatility of the aggregate flow "aid plus exports". Aid is generally stabilizing when it is countercyclical, but also in some cases when it is pro-cyclical, if its cycle is dampened compared to that of exports. From 1970 to 1999, aid appears to have been stabilizing in 71 per cent of cases.

The second more general method, taking into account all the sources of exogeneous shocks is to estimate a model of the instability of national income (or of growth volatility) including the aid to GDP ratio as an explanatory variable. The coefficient of this variable is found to be significant and negative (Chauvet and Guillaumont 2008). A new estimate made for this

report with the EVI control variable confirms this result, as well as evidencing a significant and positive coefficient for EVI[28]in a growth volatility regression.

In conclusion, even if aid instability may have a harmful character in some cases, the average level of aid is a factor of macroeconomic stability in most cases.

The more aid is stabilizing, the more it is growth enhancing

In the discussion of factors conditioning aid effectiveness for growth, we have suggested that aid may be more effective in countries exposed to strong and/or recurrent exogenous shocks. This argument can be briefly presented in two steps.

Structural vulnerability is harmful for growth.

It is well established that macroeconomic instability has harmful consequences for development (see a review in Guilaumont 2006). Indeed, numerous works have shown the negative effect on the average growth of income either of income growth instability (Ramey and Ramey, 1995; Hnatkovska and Loayza, 2005; Norrbin and Yigit, 2005), or of specific exogeneous instabilities, more particularly export instability, especially in Africa (Guillaumont *et al.* 1999). The negative effects of instability on growth come both from uncertainty and risk-aversion (*ex ante* effect) and from asymmetric responses to positive and negative shocks (*ex post* effect). As income growth is a major factor in poverty reduction (cf supra) income instability hurts the poor through its negative effect on income growth.

Aid effectiveness higher in vulnerable countries: aid enhances growth by dampening instability

If aid contributes to dampening the degree of income instability, it can be expected to contribute to faster growth. We have developed and tested this hypothesis in different ways in three previous papers (Guillaumont and Chauvet, 2001; Chauvet and Guillaumont, 2004, 2008)[29]. As seen above, following the debate opened by Burnside and Dollar (2000), it is clear that aid effectiveness is likely to be conditional on specific features of the receiving countries (an interactive term between the aid variable and the feature of interest being expected to capture this conditional effect).

Here the feature is structural vulnerability, measured in one way or another. Various measures of vulnerability have been used (composite indices or only instability of exports of goods and services), with different specifications, control variables, instrumentation, etc. In all cases, while the structural vulnerability variable had a negative effect on economic growth, it increased aid effectiveness: aid is more effective in more vulnerable countries: in other words, aid dampens the negative effect of vulnerability on growth. Moreover, it seems that vulnerability (instability) enhances the absorptive capacity, as evidenced by a higher threshold for negative marginal returns of aid when vulnerability is high (Wagner 2008).

Additional support for these macroeconomic tests, subject to the usual limitations of growth regressions, have come from "meso-analysis" of the factors determining the rate of success of World Bank projects. Vulnerable countries appear less exposed to decreasing returns from

[28] On-going research.
[29] More detailed results are presented in annex.

projects when the aid level increases (Guillaumont and Laajaj, 2006). It is another way of saying that aid enhances the absorptive capacity.

4.3. The more aid is stabilizing, the more growth is pro-poor

Macroeconomic instability is harmful for poverty, through income distribution

It is also reasonable to suppose that, for a given income, macroeconomic instability influences income distribution and then poverty. Instability may increase inequalities because of the asymmetry of responses to positive and negative shocks, depending on whether people are initially rich or poor: poor and near poor people are more vulnerable to instability than richer people. They have less diversified sources of income, are less skilled and less mobile between sectors and areas (Laursen and Mahajan, 2005)). Likewise, they have little access to credit and insurance markets and depend more on public transfers and social services (Guillaumont Jeanneney and Kpodar, 2005). The inability of poor people to face negative shock result in losses of human capital, which are difficult to reverse, e.g. nutritional status (Dercon and Krishnan, 2000, for Ethiopia), or removing children from school (Thomas et al., 2004, for Indonesia).

There are a few cross-country econometric analyses of instability on inequality have been performed. Laursen and Mahajan (2005) find a negative effect of income instability on the poorest quintile, while for Breen and Garcia-Penalosa (2005) the next to last quintile (rather than the last one) appears to be the most affected, suggesting that almost poor people may become durably poor under unstable conditions.

Besides income instability affecting poverty reduction through its effect on income growth, instability also affects poverty reduction by increasing inequalities. Such an effect is evidenced by Guillaumont and Korachais (2008)[30]: when income instability increased by one percentage point over a six year period, then the poverty (headcount) level increased by about one percentage point on average. Similarly, Guillaumont *et al.* (2008) find negative effects of macroeconomic instability (income volatility and primary instabilities) on child survival, once controlled for the effects on income level[31].

4.3.2. A potential contribution to pro-poor growth?

If macro economic instability generates poverty and if aid has a stabilizing impact, it follows that aid thus contribute to poverty reduction. This potential effect is particularly important in the present context of word financial and economic turmoil. The risk is high that vulnerable low income countries will be badly affected by the world recession (through commodity prices, migrant remittances, foreign direct investment, etc.). Many people within these countries are at the risk of becoming poorer or falling into poverty traps. In that perspective the evolution of aid flows may have a crucial role. If sustained, they will be an important stabilizing factor, all the more that it will be possible to implement compensatory finance schemes. Aid will then work as an insurance. But if aid flows are also affected by the crisis, they can cease to be stabilizing and even contribute to the countries' difficulties. Anyway,

[30] Id.
[31] Id.

current concerns are very far from the concern a few years ago of the risk of Dutch disease induced by scaling up aid.[32]

Conclusion: How to make aid more "poverty reducing"

The main policy conclusions of the proceeding review of the channels through which aid contributes to poverty reduction can be summarized in a few principles (see details in Guillaumont 2008, Guillaumont and Guillaumont Jeanneney 2006, 2007).

1) *Reforming aid allocation criteria with regard to the poverty MDG*. Aid allocation criteria particularly those of the multilateral development banks, should be adapted to better reflect both the needs of recipient countries and potential effectiveness. It involves taking structural vulnerability into account.

2) *Improving compensatory finance schemes*. To reinforce the stabilizing impact of aid, likely to have important consequences on poverty in the present world economic context, as well as its predictability, compensatory finance should be mobilized quickly and effectively. Although some schemes have been recently reformed, further reforms are needed.

3) *Targeting more effectively*. For targeting to be effective for poverty reduction, it should meet two conditions. One is to balance the search for supporting growth and reinforcing public social expenditures, without limiting to the latter. The second one is through targeting on social expenditures, to increase the transfer of knowledge on efficient and equitable delivery of social services.

4) *Moving to results-based conditionality*. Both to reinforce ownership and to make budget support more effective for poverty reduction, the move towards conditionality based on final poverty outcomes or the impact on health and education should be accelerated.

[32] Discussed in Guillaumont and Guillaumont Jeanneney (2007)

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Annex : Summary of some previous econometric results supporting the points made in the paper

	Equations	Estimator	Source
Impact of aid on growth	$G_{i,t} = -0.185 + 1.041^{***} Inc_{i,t-1} - 0.008^{***} Vol_{i,t}$ $- 0.002 ODA_{i,t} + 0.0002 Vol_{i,t} * ODA_{i,t} + 0.008^{***} AidStab_{i,t}$ G: growth of GDP per capita Inc: Ln of income per capita Vol: Volatility of exportations ODA: Net aid disbursements as a percentage of GDP AidStab: stabilizing character of aid = Volatility of exports – volatility of (exports plus ODA)	Estimation in GMM-System, 5-year average, 1970-1999 with time dummies	Chauvet, L. and Guillaumont, P. (2008). Aid, volatility and growth again. *UNU-WIDER Research Paper No. 2008/78.* forthcoming in *Review of Development Economics*, August 2009
	$Inc_{i,t} = 0.022^{***} + 0.581^{***} Inc_{i,t-1} + 0.579^{***} Pol_{i,t} + 1.005^{***} Pol_{i,t-1}$ $+ 0.116 SPI_{i,t} - 1.971^{***} EV_{i,t} + 0.491^{***} AC_{i,t} - 2.139^{***} ODA/GNP_{i,t}$ $+ 7.622^{**} ODA/GNP_{i,t} * Pol_{i,t} - 7.131^{***} ODA/GNP_{i,t} * Pol_{i,t-1}$ $- 16.165^{**} ODA/GNP_{i,t} * SPI_{i,t} + 19.918^{**} ODA/GNP_{i,t} * EV_{i,t} + 17.818 ODA_{i,t} * AC_{i,t}$ Inc: Ln of income per capita Pol: Economic policy (weighted sum of an inflation variable and an openness policy variable) SPI: Political instability (weighted sum of the number of coups d'état, of the number of demonstrations and of a dummy equals to one when a civil war breaks out) EV: Economic vulnerability (weighted sum of the trend of terms of trade and exports of goods and services instability) AC: Absorptive capacity (weighted sum of the electricity generating capacity and of the second level educational attainment of the total population aged 15 and over) ODA: Net aid disbursements	Estimation for 59 developing countries in two-step GMM, 5-year average, 1970-1999 with time dummies	Chauvet, L., and P. Guillaumont (2004). 'Aid and Growth Revisited: Policy, Economic Vulnerability and Political Instability'. In B. Tungodden, N. Stern and I. Kolstad (eds), *Toward ProPoor Policies—Aid, Institutions and Globalization*. Annual World Bank Conference on Development Economics, Europe. Washington, DC: World Bank and New York: Oxford University Press
	$G_{i,t} = 9.42 + 3.91^{***} Dummy70 - 2.21^{***} GDP_{i,t} + 0.89 Sch_{i,t}$ $- 0.81^{***} Pop_{i,t} + 0.062^{***} M2/GDP_{i,t-1} - 2.56 Pol_{i,t-1}$ $- 2.07^{***} Frag_{i,t} + 0.66^{***} Ei_{i,t} + 0.94^{***} P_{i,t}$ $+ 0.84^{**} ODA_{i,t} - 0.13^{**} ODA_{i,t} * E_{i,t} - 0.018 ODA_{i,t} * P_{i,t}$ G: GDP growth per capita GDP: Log of initial GDP per capita Sch: Average years of schooling, initial Pop: Rate of population growth M2/GDP: Financial depth (lagged) Pol: Political instability (lagged) Frag: Ethnolinguistic Fragmentation E: Low vulnerability indicator (weighted sum of agricultural added value and of real value of exports instabilities, trend of terms of trade and log of initial population) P: Policy indicator (weighted sum of the inflation rate, the budget surplus and trade-openness) ODA: Net aid disbursements as a percentage of GDP	Estimation with TSLS, 1970-1993, two pooled 12-year periods	Guillaumont, P. and Chauvet, L. (2001). Aid and performance: A reassessment. *The Journal of Development Studies*, 37(6), 66-92

<table>
<tr>
<td rowspan="2">Impact of instability on poverty</td>
<td>Impact on monetary poverty

$\frac{\Delta Pov}{Pov}_{i,t} = -0.768^{***} - 3.608^{***}\frac{\Delta Inc}{Inc}_{i,t} + 0.057^{***}\frac{\Delta Inc}{Inc}_{i,t} * Pov_0$
$+ 5.665^{***}\frac{\Delta G}{G} - 0.111^{***}\frac{\Delta G}{G}_{i,t} * Pov_0 + 23.628^{***} Ins_{i,t}$
$- 0.428^{***} Ins_{i,t} * Pov + 0.012^{**} Pov_0$

Pov: Poverty headcount (% of population)
$\frac{\Delta Pov}{Pov}$: Relative poverty change
Inc: Average income per capita
Pov_0 : Initial poverty headcount
$\frac{\Delta G}{G}$: Relative Gini change
Ins: Income instability
G: Gini coefficient (comprised between 0 and 100)</td>
<td>Panel estimation with fixed-effects for a sample of 70 countries from 1981 to 1999 composed by six three-year spells.</td>
<td>Guillaumont, P. and Korachais, C. (2008). When unstable, growth is less pro poor. Document de travail de la série Etudes et Documents CERDI E 2008.27</td>
</tr>
<tr>
<td>Impact of instability on child survival

$Surv_{i,t} = -4.560^{***} - 0.096^{***} Ins_{i,t-1} + 0.868^{***} Inc_{i,t} + 0.135^{**} Vacc_{i,t}$

$Surv_{i,t} = -4.350^{***} - 0.082^{**} Ins_{i,t-1} + 0.789^{***} Inc_{i,t}$
$+ 0.202^{**} Vacc_{i,t} + 0.110\ Sch_{i,t}$

Surv: Logit of under-five survival rate
Ins: Instability of per capita income
Inc: Ln of GDP per capita
Vacc: Ln of rate of diphtheria-pertussis-tetanus (DPT) vaccination of children less than one year of age
Sch: Ln of average years of schooling for women over 25 years</td>
<td>Estimation in GMM system based on a panel of 97 developing countries from 1980 to 1999, 5-year period</td>
<td>Guillaumont, P., Korachais, C., and Subervie, J. (2008). How Macroeconomic Instability Lowers Child Survival. UNU-WIDER Conference on Advancing Health Equity</td>
</tr>
</table>

With:
i: countries
t: time