

Economic Volatility and Inequality: Do Aid and Remittances Matter?

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We examine the adverse impact of macroeconomic volatility on inequality and the role that aid and remittances could play in mitigating this effect. Using a panel of 142 countries over 1973-2012, we find that macroeconomic volatility widens income inequality with the poorest being most exposed. However, while aid and remittances do not seem to have a direct impact on inequality, we both find evidence that aid helps to mitigate the negative effects of volatility on income distribution and has a stabilizing impact on income while remittances do not.



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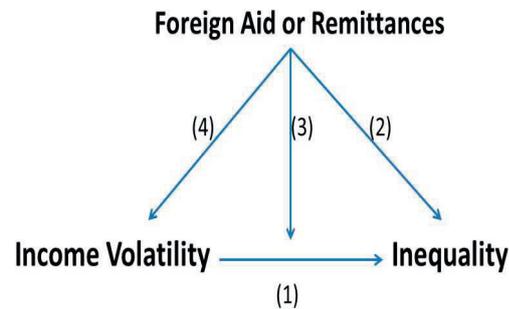
► Introduction

Not only does income volatility have a negative impact on economic growth, it also affects its distribution. As documented at length, volatility increases income inequality, making growth less favourable to the poor. In many developing countries, foreign aid and remittances remain an important source of external financing. In this paper, we explore whether foreign aid and remittances could mitigate the adverse effect of macroeconomic volatility on income inequality.

Our analysis builds on three streams of literature. The first one documents the detrimental effect of income volatility on income inequality based on several cross-country econometric analyses. The second strand of the literature focuses on the relationship between external financing (including aid and remittances) and inequality but it has not reached a consensus.¹ The third issue highly debated in the literature is the stabilizing role of aid and remittance against external shocks and macroeconomic volatility.² Therefore, we analyse whether foreign aid and remittances reduce the negative effect of income volatility and induce lower inequality.

The aid-inequality and remittances-inequality nexuses are complex. The figure 1 summarizes the various potential channels between income volatility, aid or remittances and inequality, as suggested by the literature. First income volatility might directly affect inequality (1) as well as foreign aid or remittances (2). Second, foreign aid or remittances might or not mitigate the detrimental effect of income volatility, increasing the resilience of countries facing negative

income shock (3). Third foreign aid and remittances might also contribute to stabilize country income preventively (4).



- Notes: (1) Direct effect of income volatility on inequality
(2) Direct effect of aid or remittances on inequality
(3) Resilience or mitigating effect of aid or remittances
(4) Stabilizing effect of aid or remittances on income

Figure 1 : Channels between aid, remittances, economic volatility and inequality

In a first section we present our results concerning the two first channels; in a second section we explain how income volatility increases inequality and then we investigate the resilience and the stabilizing effects of foreign aid.

► The impact of macroeconomic volatility, aid and remittances on inequality

We estimate an inequality equation in which we include macroeconomic volatility along with our variables representing external financing (either foreign aid or remittances). Moreover, we add an interaction term of aid or remittances with volatility to assess whether aid or remittances help to mitigate the negative impact of macroeconomic volatility on inequality. We include country fixed effects and period fixed effects to account for country unobservable heterogeneity and global business cycles respectively.

1. See for instance Guillaumont and Wagner (2013) for a survey with a special focus on the interactions between aid, poverty, and macroeconomic volatility and Rapoport and Docquier (2006) for a review of the literature about the relationship between remittances and inequality. All the useful references figure in the Working Paper.

2. See mainly Bulir and Hamann 2001, 2008, Pallage and Robe 2001, Chauvet and Guillaumont 2009, Guillaumont and Tapsoba 2009 for foreign aid; Combes et al. 2014 for remittances and Guillaumont and Le Goff 2010 for both.

Inequality, the dependent variable, is measured by the GINI index and by quintiles of income shares as well as ratios of the two lowest quintiles with respect to the highest quintile (issued from “World Income Inequality Database”, produced by the United Nations University – WIDER). Economic volatility is the standard deviation of the cycle (relative to the trend) of GDP per capita. We measure foreign aid, using the net disbursements of official development assistance provided by the OECD-DAC as a share of GDP. Finally, usual control, all retrieved from the World Development Indicators, are included: income per capita and its square term, gross secondary school enrolment rate, public expenditure-to-GDP ratio, the share of rural population in total population, the rate of inflation, and the population growth rate. All variables (except population growth and income volatility) are in logarithm terms. Aid and the control variables are averaged over five-year periods, from 1973 to 2012. Our sample of countries includes a maximum of 142 countries.

We first use the fixed effects estimator although it suffers from many caveats. The first one is that it does not control for the likely endogeneity of our variables of external financing and income volatility with inequality. The second is that it does not control for the high level of persistence in the data captured by $INEG_{i,t-5}$. To address these shortcomings, we turn to a dynamic system GMM estimator and include a lagged dependant variable on the right hand side of the model. It also allows us to control for endogeneity by using lags and difference in lags of the right-hand side variables as instruments.

With both methods, we find robust evidence suggesting that volatility increases inequality in line with the literature. We also find that while aid does not seem to affect inequality directly, the interaction term of aid and volatility is significantly associated with a less skewed income distribution. These results are consistent with

the premise that aid helps to mitigate the adverse effects of volatility on inequality. The results are less conclusive for remittances. Although significant when using the fixed effects estimators³, remittances are not found to be robust to the GMM specification.⁴ In a second step, we focus on the channels through which aid manages to reduce inequalities.

► The adverse effect of output volatility on income distribution and poverty

In line with the literature, our results indicate that output volatility has an adverse effect on income distribution and poverty. The first channel through which volatility alters income distribution is by affecting the poorest and richest households asymmetrically. The income of the poor could decrease by more during a period of recession than it increases during a period of growth, especially in the absence of adequate social safety nets. This is because the less-educated workers are the first to be made redundant and remain unemployed for longer, which makes it less easy for them to find employment when the situation is reversed (Agenor, 2002). Their income, which is generally not indexed to the price of goods, is especially affected in real terms by the variability of inflation (the last one being then unanticipated) that goes together with financial instability (Guillaumont Jeanneney and Kpodar 2011). Moreover, output contractions tend to affect disproportionately the poorest households (Calderon and Levy Yeyati 2009). It is more difficult for the poorest households to cope with adverse income shocks. Their sources of income are less diversified than that of the richest households, and they have little access to credit. In time of output contractions, the poorest people are more likely to cut their investments

3. The level of remittances negatively affects the income share of the poorest and the interaction with income volatility is significant, positive and offset the negative effect of remittances.
4. Our results reveal to be robust to different tests, using alternative measures of income volatility and introducing an index of democracy.

in physical and human capital. This in turn has long-term effects on income distribution and poverty, which are difficult to reverse in time of expansion.

► The channels through which aid manages to reduce inequalities

Our findings suggest that aid tends to mitigate the adverse effect of output volatility. The first question relates to the mechanisms that may be at play in explaining why aid helps to mitigate the negative effect of output volatility on inequality. Aid is likely to reduce the positive impact of income volatility on inequality as far as it allows more public spending in favour of the poor (as safety nets or social expenditure). It seems to be the case for education (Flug et al. 1998, Thomas et al. 2004). Regressing the secondary school enrolment on GDP per capita volatility, ODA and its interaction term with volatility, we find that that income volatility reduces secondary school attendance and that foreign aid tends to dampen this negative impact. No significant result is observed for remittances.

Aid may be favourable to the poor by a second channel. It may be the case that aid mitigates the negative effect of macroeconomic volatility on the poor by decreasing income volatility directly. This second effect cannot appear from the estimation of the previous equation, as the income volatility is included in the regression. This is why we have estimated the impact of aid on income volatility.

Volatility in developing countries comes both from internal and external factors (Raddatz, 2007). The offsetting effect of aid regarding the external sources of volatility is easier to assess than the effect with respect to the internal ones given that external sources of volatility are more likely to be exogenous to aid and to the economic conditions prevailing in the recipient country.

In order to examine whether aid decreases output volatility by mitigating the destabilizing impact of exports instability, we estimate a model⁵ where volatility of income per capita is a function of the volatility of exports weighted by the size of exports (exports in GDP, as a proxy for the exposure of the economy to exports volatility), and controlling for exports in GDP. Aid as a function of GDP may directly decrease income volatility. However, the volatility of aid may be an additional source of external volatility, which is more pervasive in country highly dependent on aid. Thus the share of aid in GDP weights aid volatility. We control for a set of country characteristics (initial income volatility, inflation rate, GDP per capita, etc.). This model is augmented with a triple interaction term of export volatility weighted by the share of exports in GDP and multiplied by aid. The negative coefficient of this variable indicates that aid dampens the output volatility inducing effect of export instability. The magnitude of the coefficient is rather small; this shows that aid significantly reduces income volatility in large exporting countries with important exports volatility. This result highlights the role played by international aid on the adverse effects of exports volatility on income fluctuations and points out one of the channels through which aid reduces income inequalities. Again we do not find similar results for remittances.

► Policy implications

In this paper, we find that volatility has a robust and positive impact on inequality and that aid tends to reduce volatility and simultaneously to dampen its positive impact on inequality (or negative impact on the poor). The effect of remittances is more uncertain as their mitigating action seems to occur only when volatility is high.

These results imply that in order to reduce

5. Model built on Chauvet et Guillaumont 2009

poverty foreign aid should be allocated preferentially to the countries, which are the more vulnerable to external shocks. It is at the opposite of the practice of the Development Banks (notably the World Bank) whose “performance based allocation formula” gives priority to good governance (Guillaumont, Guillaumont Jeanneney and Wagner 2010, Guillaumont and Wagner 2015). Taking vulnerability to external shocks into account would be in accordance with the will of the international community to help mainly the Least Developed Countries (LDCs) as economic vulnerability is one of the three criteria of inclusion of a country in the category, beside a low income per capita and a low level of human capital (Guillaumont 2009).

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