

Business Cycle Fluctuations, Large Macroeconomic Shocks, and Development Aid

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Abstract. — We examine the cyclical properties of development aid using bilateral data for 22 donors and 113 recipients during 1970–2005. We find that bilateral aid flows are on average procyclical with respect to the business cycle in both donor and recipient countries. While aid outlays contract sharply during severe downturns in donor countries, they rise steeply when aid-receiving countries experience large adverse shocks. Our findings suggest that development aid may play an important cushioning role in developing countries, but only during times of severe macroeconomic stress. Our results are robust to alternate definitions of aid flows, specifications, and estimation techniques.

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Key words — foreign aid, bilateral donors, business cycle, macroeconomic shocks

1. INTRODUCTION

In the run-up to the global financial crisis, development aid increased markedly, reaching a peak around the Gleneagles summit in 2005 (Figure 1).¹ However, the strains caused by the 2008–09 downturn on public finances in donor countries raised concerns that the supply of aid would decline. Although the immediate impact of the crisis on aid flows was not as deleterious as expected, the risk that development aid will fall is still looming. Given the prolonged recession and uncertain economic prospects facing a number of leading donor countries, it is natural to ask whether aid flows are at risk of being cut in the near future. To answer this question, we must examine the link between aid flows on the one hand, and macroeconomic fluctuations in donor and recipient countries on the other.

We empirically assess how donor- and recipient-country macroeconomic conditions affect foreign aid flows, focusing on both “normal” business cycle fluctuations and “unusually large” adverse shocks. Specifically, we provide answers to the following questions: To what extent does the business cycle in donor countries influence their aid outlays? Has this impact been large and persistent during past recessions? Similarly, how do macroeconomic conditions in aid-dependent countries influence their aid receipts? What happens to aid flows during synchronized recessions—in which both the donor and the recipient experience large negative shocks? We tackle these questions using an empirical aid allocation model to which we add a wide range of business cycle variables and measures of large macroeconomic shocks. Our dataset represents bilateral (country-pair) aid flows from 22 OECD donors to 113 aid recipients over 1970–2005.

We find that foreign aid is on average procyclical with respect to the donor and recipient output cycles, rising during expansions and falling during recessions.² In particular, donors reduce aid outlays significantly during periods of severe

economic stress. But bilateral aid becomes countercyclical when aid recipients are hit by large adverse shocks, increasing significantly during sustained episodes of negative growth and terms-of-trade (TOT) collapses. These effects tend to be persistent. When both the donor and recipient country experience large negative macroeconomic fluctuations, there is no additional impact on aid flows. Our results are robust to alternative definitions of aid flows and across specifications and estimation techniques.

We estimate an empirical aid allocation model using a rich panel dataset with information on country-pair aid flows and country characteristics. The three-way nature of the panel affords us a number of advantages over standard donor- or recipient-level models employed in the literature. First, bilateral data provide a rich amount of variation, allowing us to estimate the model on sample sizes of almost 90,000 observations and increasing the precision of our estimates. Second, we can

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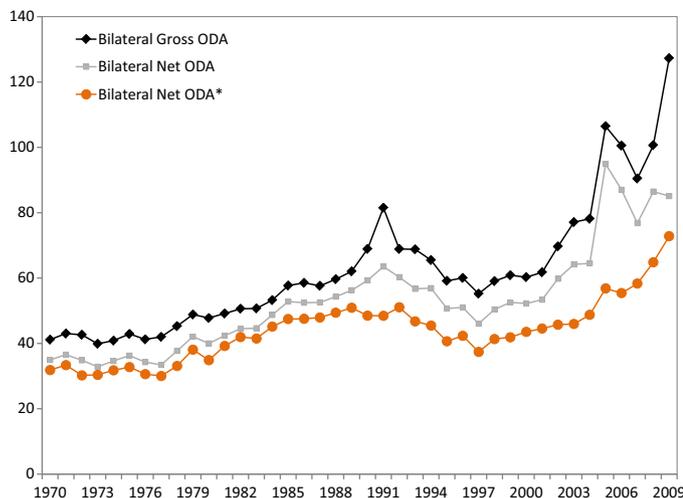


Figure 1. *Bilateral ODA, 1970–2009.* Notes: Figures are expressed in 2008 US\$ billion. Sample comprises 22 OECD donors. Bilateral Net ODA* excludes humanitarian aid, development food aid, and debt relief grants.

estimate the business cycle effects on aid disbursements while controlling for time-invariant unobserved heterogeneity in the donor-recipient relationships (which is subsumed into country-pair fixed effects). Third, the data enable us to assess the impact of country-level variables such as negative economic shocks that *simultaneously* affect the donor and the recipient. Fourth, bilateral data help reduce concerns regarding reversed causation that plague traditional country-level panel regressions because the dependent variable captures pair-level information while many regressors vary at the country level.

Our work closely relates to the handful of studies that have singled out the role of business cycles and crises in donor countries in determining aid allocations. Pallage and Robe (2001) find inconclusive evidence on the relationship between business cycles in donor countries and aid disbursements to Africa over 1969–92, but present some evidence of procyclicality of aid commitments. Mold, Olcer, and Prizzon (2008) argue that the relationship between economic growth in donor countries and their aid outlays is ambiguous. They show that aid flows and GDP tend to co-move over long periods, but aid often “decouples” from economic growth in OECD countries. Faini (2006) finds no statistical relationship between the output gap as a measure of the cyclical position of donor countries and aid flows over 1980–2004. By contrast, Bertoli, Cornia, and Manaresi (2008) document a robust positive relationship between the same measure of the cycle and aggregate aid flows over 1970–2004. Allen and Giovannetti (2009) argued that the output gap does not explain aid flows, but its cube has a negative and statistically significant coefficient, which they interpret as a more than proportional impact of the cycle on aid allocations.

The recent crisis has spurred new work on the link between conditions in donor countries and aid flows. Using donor-level regressions, Dang *et al.* (2009) show that aid falls substantially after systemic banking crises after controlling for their impact on output. Frot (2009) estimates that banking crises in donor countries cause reductions in aid by 13% on average (level effect) and by 5% yearly after the onset of a crisis (trend effect). Mendoza, Jones, and Vergara (2009) find that stock market volatility in the United States of America—a proxy for financial stress and economic uncertainty—is associated with lower aid disbursements. We expand this line of research by showing that there is a robust and systematic average relationship

between donor country conditions and aid disbursements. We also document interesting heterogeneity in donor behavior by showing that donors’ tendency to disburse procyclically relative to their own cycle is inversely related to the quality of their aid-related activities.

With respect to the recipient-country cycle, most of the existing evidence, including ours, suggests that foreign aid is procyclical with respect to output and revenues. For instance, Pallage and Robe (2001) show that in half of developing countries and in most African economies there is a high positive correlation between the cyclical component of aid receipts and that of domestic output.³ As Svensson (2000) shows analytically, this procyclical result can be explained by moral hazard arguments: in the second-best equilibrium with unverifiable government actions, the donor ties aid disbursements to the recipient country’s macroeconomic performance because they cannot distinguish whether downturns are caused by exogenous shocks or by macroeconomic mismanagement.

Pallage, Robe, and Beroube (2006) argue that foreign aid can act as insurance against macroeconomic shocks in developing countries, reducing macroeconomic volatility, and benefiting long-run growth. Our results support this idea but also provide some nuance: not only donors’ aid policy becomes countercyclical when developing countries experience unusually severe economic stress (caused, e.g., by TOT collapses or climatic disasters), this effect is stronger in countries with more transparent institutions. Our results then suggest that higher-quality institutions can help resolve the aid monitoring problem (see Banerjee, 2010).

The remainder of the paper is organized as follows. In Section 2 we describe the data and introduce our key variables. We discuss the baseline empirical model, the estimation method, and report the main findings in Section 3. Section 4 presents robustness checks and Section 5 concludes. Detailed information on the data sources, the list of countries, summary statistics, and additional results are available in an online appendix.⁴

2. DATA, DEFINITIONS, AND DESCRIPTIVE STATISTICS

(a) Data and definitions of aid and business cycle variables

We construct our dataset starting with OECD-DAC information on bilateral aid flows from 22 donors to 113 recipients over the period 1970–2005, giving us about 90,000 observations.⁵ Our dependent variable is real bilateral foreign aid, defined as bilateral official development assistance (ODA) net of principal repayments. From this aggregate we subtract humanitarian emergency aid, emergency food aid, and debt forgiveness grants, since these may be primarily driven by shocks in recipient countries and hence not have the same cyclical properties as regular development flows.

A potential problem with using bilateral flows is that the data contain many zero entries. Dropping these observations may bias our results if such entries were nonrandom, for instance by reflecting unobserved characteristics of the donor-recipient pair. Following Arndt, Jones, and Tarp (2010), we retain these zeros since they mainly represent *unreported null values* rather than absent data. In addition, we adopt a semi-log transformation of the form⁶:

$$aid_{ijt}^* = \text{sign}(aid_{ijt}) \log(1 + |aid_{ijt}|),$$

where aid_{ijt} denotes real bilateral aid from donor i to recipient j at time t . With this transformation of the dependent variable,

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