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International Aid and Financial Crises in Donor Countries

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Abstract

The global financial crisis has already led to sharp downturns in the developing world. In the past, international aid has been able to offset partially the effects of crises that began in the developing world, but because this crisis began in the wealthy countries, donors may be less willing or able to increase aid in this crisis. Not only have donor-country incomes fallen, but the cause of the drop—the banking and financial-sector crisis—may exacerbate the effect on aid flows because of its heavy fiscal costs. This paper estimates how donor-country banking crises have affected aid flows in the past, using panel data from 24 donor countries between 1977 and 2007. The analysis finds that banking crises in donor countries are associated with a substantial additional fall in aid flows, beyond any income-related effects, perhaps because of the high fiscal costs of crisis and the debt hangover in the post-crisis periods. In most specifications, aid flows from crisis-affected countries fall by an average of 20 to 25 percent (relative to the counterfactual) and bottom out only about a decade after the banking crisis hits. In addition, the results confirm that donor-country incomes are robustly related to per-capita aid flows, with an elasticity of about 3. Because all donor countries are being hit hard by the current global recession, and several have also suffered banking-sector crises, there are reasons to expect that aid could fall by a significant amount (again, relative to the counterfactual) in the coming years—just when aid may be most clearly justified to help smooth exogenous shocks to developing countries.

This paper—a product of the Human Development and Public Services Team, Development Research Group—is part of a larger effort in the department to determine how aid can more effectively promote development.. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The corresponding author may be contacted at hrogers@worldbank.org.

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Produced by the Research Support Team

International aid and financial crises in donor countries

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1. Introduction: Financial crises, economic downturns, and aid outflows

This paper investigates how financial crises and economic conditions in donor countries have affected flows of international aid in the past, with the aim of understanding how the current global financial crisis could affect future flows. We do this by using fixed-effects regressions on a 24-nation panel dataset covering 1977-2007 to estimate the effects of banking crises and other economic and political variables on aid. Consistent with other research, we find that donor-country income levels are strong predictors of aid flows, suggesting that a recession that has driven incomes well below their trend could substantially reduce aid in the years to come. Our main contribution is to estimate the effects of donor-country banking crises on aid. These effects turn out to be large, significant, and surprisingly long-lived, with aid from crisis-stricken countries falling relative to the counterfactual by 20 to 25 percent even 10 years after the banking crisis hits. Moreover, because they are estimated in regressions that control for donor-country per-capita income, these banking-crisis effects are additional to those of the economic downturns that coincide with the banking crises.

Aid and economic slowdowns in donor countries

In recent past crises that have hit the developing world, development finance has helped to cushion the effects of private capital flow reversals and economic decline. During the East Asian financial crisis of 1997-98, for example, multilateral and bilateral donors provided almost $100 billion in loans and grants to the crisis-afflicted countries (International Monetary Fund 1998). While some of this lending was ostensibly at market rates (as in the case of IBRD lending from the World Bank) and therefore would not count as official development assistance (ODA), in practice even these loans had a substantial subsidy component in a crisis in which private finance had largely dried up. Official development flows were also crucial in helping Mexico to rebound from its 1994-95 crisis, for example.

But the current crisis has brought new and perhaps unparalleled stresses to the developing world. Unlike most recent past crises, which have primarily affected one developing region (such as East Asia or Latin America) or group (such as major emerging markets), this one has affected all regions. In 2009, growth is expected to be nearly 7 percentage points lower for the developing and emerging economies as a group than it was in 2007, with the drop exceeding 4 percentage points in every

region (International Monetary Fund 2009c). This means that any international aid to cushion the effects of the downturn has to be shared across a larger number of countries and regions than in past crises.

And it is not only the per-recipient flows that could fall; there is also a risk that aggregate aid budgets could come under strain. A key difference from the East Asian and Tequila crises of the 1990s is that both of those took place at a time of sustained growth in donor countries. This time, it is the donor countries that have been hit first by the financial crisis, and GDP is projected to decline 3.8 percent in 2009 for rich countries as a group (International Monetary Fund 2009c). Donors' willingness to give aid could decline, just when the need for aid will be greater. In times of economic slowdown, donor-country policymakers are likely to be pressed to redirect aid funds to domestic needs such as unemployment benefits and emergency infrastructure programs. There may be political pressure to reduce aid budgets, or at a minimum to postpone or eliminate planned increases in aid. Recent research, for example, finds that higher levels of financial insecurity in donor countries are associated with weaker voter support for foreign aid (Paxton and Knack 2008).

What do we know empirically about the sensitivity of aid flows to donor-country economic and financial conditions? While there is an established literature that examines how recipient-country characteristics – such as income level, population, and political system – affect aid inflows (see, for example, Alesina and Dollar 2000; Dollar and Levin 2006), much less is known about these *donor-side* determinants of aid. Several recent papers have begun to fill this gap, mostly using panel data with donor fixed effects. Aid is positively associated with income per capita in most of these studies (Round and Odedokun 2004; Boschini and Olofsgard 2007; Chong and Gradstein 2008), although one finds no significant relation (Faini 2006). Faini finds aid is lower when budget deficits and the stock of public debt are higher, but others find no significant relationship between deficits and aid provision (Round and Odedokun 2004; Boschini and Olofsgard 2007). None of these studies explore the impact of financial crises in donor countries on aid provision, although two recent studies (discussed below) do.

The possible exacerbating effects of donor-country banking crises

Not all economic slowdowns are created equal, and it is possible that the nature and causes of any particular slowdown may influence its effects on aid flows. Roodman (2008) shows graphically that

several OECD donor countries – Finland, Japan, Norway, and Sweden – reduced their aid flows substantially after they suffered domestic banking crises in the 1990s. Although Roodman does not provide further analysis, there are reasons to believe that banking crises could have direct effects on aid beyond their effects on incomes.[2] Bank rescues and recapitalizations place massive new fiscal demands on the public sector; even if the government is eventually able to recoup many of the costs of these rescues through asset sales, the short-term effect is to worsen sharply the government's cash flow. In their comprehensive analysis of systemic banking crises, Laeven and Valencia (2008) estimate that fiscal costs of banking crisis management, even net of recoveries from asset sales, average more than 13 percent of GDP. For the advanced economies, the fiscal cost has typically been less than that – perhaps 3 to 5 percent of GDP (in gross terms) – but Finland is estimated to have spent 12.8 percent of GDP to resolve its banking crisis in the early 1990s. With these additional costs added to the usual cyclical revenue shortfalls from recession, donors may find it more difficult to continue giving aid during and after those crises than they would in a normal downturn of the same magnitude.

This direct banking-crisis effect may be particularly relevant for aggregate aid flows in the current crisis, for two reasons. First, two of the largest donors (in absolute terms), the United States and United Kingdom, were the major economies whose banking sectors were hit by systemic crises in 2007. Second, the banking sectors in other major donor countries have also suffered, even if few are likely to be classified as having entered systemic crises. Two other new papers try to estimate the impact of donor-country financial-sector troubles on aid provision. Mendoza, Jones, and Vergara (2009) use 1967-2007 data for the U.S. only and show that stock market volatility, which they call "a proxy for financial volatility and economic uncertainty," is associated with reduced ODA. The other new study is more directly parallel to this one: Frot (2009) uses data for a panel of donors for the 1986-96 period to estimate how financial crises affect aid flows. He finds that a banking crisis in a donor country decreases aid by 13 percent (when estimated as a level effect) or that aid falls by 5 percent per year after the onset of a crisis (when estimated in trends). Frot also estimates the

[2] Devarajan questions this analysis, pointing out that since 1960 the only sustained decline in aid came in the 1990s, and not necessarily for economic reasons (Devarajan, S. (2008). "Will the financial crisis reduce foreign aid?" *Africa Can . . . End Poverty (A blog by Shanta Devarajan, World Bank Chief Economist for Africa)*, October 22.). He cites results from Paxton and Knack (2008) in arguing that "aid is motivated largely by non-economic factors."

impact of GDP, unemployment and budget deficits on aid, using a vector autoregression (VAR) model.

In this paper, we investigate the hypothesis that banking crises have dampening effects on aid, independent of their effects on per capita income in donor countries. Our analysis differs in several respects from Frot (2009), most notably in covering a much longer time period with more banking crises.

The methodology and data are described in the following section, and results for overall ODA volumes are presented in section 3. We explore more tentatively the impact of banking crises on the composition of aid in section 4. The final section considers the implications of these findings for the coming years.

2. Methodology and data

Methodology

Our general approach is to estimate some version of the following equation:

$$\text{Aid}_{it} = \alpha \text{ banking crisis}_{it} + \beta X_{it} + \gamma Z_{it} + \mu_i + \eta_t + \varepsilon_{it} \quad ,$$

where i indexes the donor country and Aid_{it} is overall aid from the country. As our primary dependent variable, we use the log of net ODA disbursements in constant (2007) dollars.[3] Banking crisis_{it}, the primary variable of interest, captures whether the country has recently been hit by a banking crisis (with crises coded as described in the next section). X_{it} is a vector of two time-varying control variables: per-capita GDP and population. These variables are included in virtually all studies of aid determinants, either individually or combined as total GDP, and so we include them in all of our specifications. Given the heterogeneity among countries and the likely importance of unobservables correlated with the error term in determining aid flows, we use donor fixed effects (μ_i) to capture time-invariant country-specific influences on aid provision. Coefficient estimates for

[3] Boschini and Olofsgard (2007) and a few other studies also use this dependent variable. Faini (2006) uses aid's share of GDP, while Frot (2009) uses (log of) aid per capita, without including population as a regressor. Our results change very little if we substitute aid/GDP or aid per capita as the dependent variable. Detailed results available on request.

the X_{it} are therefore informed only by within-country variation over time. In all specifications we include year dummies (η_t) to account for common shocks to aid volumes in any given year.

The vector Z_{it} represents a set of other plausible time-varying control variables, most of which have been included in one or more studies in the literature; these variables have typically not been shown to be robustly significant, but we use them in our robustness tests.[4] The economic control variables from the literature include fiscal budget surplus (Round and Odedokun 2004; Faini 2006; Boschini and Olofsgard 2007; Frot 2009), unemployment (Boschini and Olofsgard 2007; Frot 2009; Mendoza, Jones, and Vergara 2009), inflation (Mendoza, Jones, and Vergara 2009), and trade integration (Boschini and Olofsgard 2007); we add to this list government expenditures and real exchange rates. The political variables include inequality (Boschini and Olofsgard 2007; Chong and Gradstein 2008; Mendoza, Jones, and Vergara 2009), corruption (Chong and Gradstein 2008), and political orientation of the governing party (Round and Odedokun 2004; Boschini and Olofsgard 2007; Chong and Gradstein 2008; Mendoza, Jones, and Vergara 2009).

In all regressions, we report results using standard errors clustered at the country level, to correct for heteroskedasticity and within-panel serial correlation. Using conventional standard errors yields much higher levels of significance, and could be equally valid given the small number of countries (Wooldridge 2002, 275-76). However, we use the corrected standard errors to be more conservative.

Aid data

Data for our main test are taken from the OECD-DAC database, which is the standard source used in the literature, and cover the period from 1977 through 2007. In the empirical work reported below, we follow most other studies in using data on net aid disbursements rather than aid commitments. There is typically a wide gap between commitments and disbursements, and ultimately it is the disbursements of aid – and not the higher committed amounts – that matter to the recipient countries.

[4] Summary statistics are shown in Appendix Table 3 for our main sample.

We also test the robustness of our findings by re-running our estimations using two other measures of disbursements, in addition to net disbursements. The first alternative is gross disbursements, which measures only total disbursements and does not net out repayments of loan principal. The second alternative measure of aid is Net Aid Transfers (NAT), using data made available by the Center for Global Development and described in Roodman (2006 and 2009). NAT subtracts out not only repayments of principal but also interest payments and cancellation of non-ODA loans (aka "debt relief"). Thus NAT more closely approximates the current budgetary outlays associated with ODA.

Our sample covers 24 donor countries during the 1977-2007 period. (For a list, see Appendix Table 1.) For 19 of these countries, aid data are available for the entire 31-year period. For the other five, which became donors after 1977, the period of coverage is between 17 and 28 years. We omitted several new donors that began reporting aid data to the DAC only in the late 1990s.[5] Most of these are transition economies also dropped by Demirguc-Kunt and Detragiache from their recent banking-crisis analysis (2005: 71) because "[banking] problems in these countries were of a special nature."

Data on banking crises

Our primary source on banking crises is the comprehensive new database assembled by Laeven and Valencia (2008) covering 1970-2007. This dataset includes only systemic crises, which Laeven and Valencia define as those in which "a country's corporate and financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time." The authors note that they thereby "exclude banking system distress events that affected isolated banks but were not systemic in nature". Between 1977 and 2007, according to this dataset, banking crises struck 9 of the 24 donor countries in our dataset: Finland, Japan, Korea, Norway, Spain, Sweden, Turkey, the United Kingdom, and the United States. Because Turkey and the U.S. each had two banking crises, there were a total of 11 systemic crises among our DAC donors over that period. Laeven and Valencia's dataset (hereafter "LV") provides the year in which

[5] These recent donors reporting only low levels of aid include Czech Republic, Greece, Hungary, Poland, Slovak Republic, and Thailand.

each crisis started; unlike earlier databases, it does not provide end years, perhaps because the end of the crisis is usually much less clear-cut than its onset. (See Appendix Table 1 for a list of crisis onset years.)

As a secondary source of crisis data, we use an earlier dataset compiled by Caprio, Klingebiel, Laeven, and Noguera (2005). Although less recent than LV, the Caprio et al. database (hereafter "CKLN") is a useful complement to LV in two ways. First, it provides estimated end years for each crisis, allowing us to test whether effects on aid are larger during or after a crisis. Second, it includes both systemic and non-systemic banking crises, allowing tests of how the effects on aid vary with the extent of the crisis. Counting both types of crisis, CKLN identifies 23 crises in 17 of the DAC donor countries in our dataset. The systemic crises identified by CKLN generally match those of LV, with the main exception being the start date of the crisis in Japan. We have updated CKLN from its end date of 2002 through 2007, to match the LV year coverage. This entailed adding the only two crises that LV identifies as having begun since 2002 in the donor countries – the current banking crises in the US and UK, which LV codes as beginning in 2007. It also required specifying an end date for Japan's crisis; we use 2006, but our CKLN results are qualitatively robust to assuming that it ended in 2005 or 2007 instead.

Data on income, population, and other control variables

For per-capita income, population, and the other control variables in Z_{it}, we use data from a variety of sources, including the World Development Indicator database (World Bank 2009), World Development Reports (World Bank, various years), World Economic Outlook (IMF 2009), Luxembourg Income Study project (2009), International Country Risk Guide (ICRG 2009), Database of Political Institutions (Beck et al. (2001); updated 2008). Appendix Table 2 provides a detailed list of variables and sources for the data we use in this paper.

3. Results: Donor-country financial, economic, and political characteristics and ODA

Do donors give less aid after suffering banking crises? Figure 1 gives a straightforward first-cut answer to that question, by comparing aid flows for crisis and non-crisis countries before and after a

crisis hits.[6] Crisis countries are defined as those that suffered any systemic banking crisis during 1977-2007, according to the LV definition; non-crisis countries are those that did not. For the crisis group, the figure shows the indexed unweighted mean of the indices of aid volumes (in real dollars) before and after the onset of the crisis, with the first year of each crisis synchronized to t=1. For example, year 1 refers to 1991 in Finland, 1997 in Japan, and 1988 in the United States. For non-crisis countries, we take the mean of aid levels from t-10 to t+15 for each of the different crisis years t=1, then take the mean of those means to come up with the non-crisis trend line shown in the figure. Aid levels are indexed to 100 for year t=0 for both crisis and non-crisis countries. The crisis countries include only those for which aid data are available both before and after the crisis hit (e.g., not Spain, Turkey, and the UK), to ensure a reliable comparison.[7]

Figure 1a shows clearly a correlation between banking crises and subsequent declines in (relative) aid flows. For years t-10 through year t, aid from crisis countries follows roughly the same upward trends as non-crisis countries. After the crisis hits, in years t+1 through t+15, aid from the crisis countries stagnates, bottoming out in relative terms only after a decade of declines that cumulatively drive aid at least 30 percent below the levels in non-crisis countries. By contrast, aid from non-crisis countries on average continues on roughly the same upward trend as before the crisis.

This post-crisis gap in aid flows is even larger and clearer if we omit Korea from the list of crisis countries (Figure 1b). In some ways Korea is a special case, because it is a less mature donor during this period than the other crisis countries (Finland, Japan, Norway, Sweden, and the US). Its aid started from a relatively low base and grew rapidly through much of this period as Korea sought a stronger role on the global stage. The countries going through banking crises this time around – Ireland, the UK, and the US – are arguably much more like the other mature donors that are depicted in Figure 1b. These countries show an average absolute drop in real aid over the first decade after the crisis hits, and a growing relative gap with non-crisis countries over that whole period.

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[6] The figure thus generalizes and averages the individual country crisis-aid relationships shown by Roodman (2008) in his original post on this issue.

[7] The inclusion of country fixed effects in the regressions reported below accomplishes the same purpose without dropping these countries.

Of course, these drops in aid from crisis countries could reflect other factors – most obviously, the fall in per-capita income that tends to accompany crises. The rest of this section therefore explores this result econometrically, to add income and other control variables and to account for country fixed effects and common shocks.

Table 1 shows our core results on banking crises and aid for the full 1977-2007 period and the full set of donor countries. We first discuss the banking-crisis variables, before returning below to the effects of donor-country incomes and populations.

Banking crises: Effects on aid during and after the crisis

Banking crises emerge as a strong predictor of lower aid, using a variety of different measures of aid disbursements (see Table 1). We capture the crisis effects using a counter variable that records the number of years since a banking crisis hit, with the first year of the crisis taking a value of 1. To allow the effect to diminish over time, we include the counter in both linear and square terms; both turn out to be highly significant, and the magnitudes are large. The results for net aid disbursements (column 1) imply that five years after a crisis hits, aid is 17 percent lower than it would have been in the absence of a crisis. Perhaps surprisingly, at that point aid is still declining relative to the no-crisis counterfactual. It does not bottom out until 10 or 11 years after the crisis hits, at which point aid is down 24 percent.

This banking-crisis effect does not vary much with different measures of aid, as shown in columns 2 and 3. For both gross disbursements and net aid transfers, the point estimates of the effects are very similar to the estimates for net disbursements (although the significance of the coefficients declines somewhat in column 3).

An alternative way to measure the crisis effects is to enter dummies for year intervals after the crisis hits (column 4). These regression intervals are derived from Figure 2, which depicts graphically the coefficient estimates for an exhaustive set of individual-year post-crisis dummy variables constructed from the counter variable. Most of these dummies are not individually statistically significant (even when their coefficients are large), but they are useful for identifying a smaller set of dummies that group years without losing too much information in the data.

Based on the pattern exhibited in Figure 2, we differentiate among three intervals: years 1-6 after the start of the crisis, years 7-13, and years 14 and above. Consistent with the quadratic results in equation 2, we find the strongest effects in the middle interval. Whereas the first six years of the crisis do not have any significant effects on disbursements, in years 7 to 13 disbursements are down by an average of some 30 percent (significant at the 10 percent level). But while the effect is very long-lasting, it is not permanent: the dummy for the last period, 14 years and beyond, is not significantly negative in any of the tests reported in Table 1.

Banking crisis effects: Robustness to changes in crisis countries and years

These estimates are based on a number of assumptions about financial crises – most notably, when they started and whether they were systemic or not. Table 2 shows the results of reversing some of these assumptions (one at a time, so as not to shrink the sample too much), and checks the robustness of results to dropping potentially influential cases. We use the model specification of Table 1, equation 1, but to conserve space report in Table 2 only the banking crisis coefficients for comparison.

In every case, the crisis coefficient estimates are consistent with those reported in Table 1. The first row shows that the results are not sensitive to dropping a very small donor (Iceland) rather than giving it equal weight. Row 2 instead drops Finland, shown by Roodman (2008) to have the deepest post-crisis trough in aid among the four cases he examined. Korea is the donor dropped in row 3. It became a donor only in 1990, and its aid exhibits substantial volatility around an overall upward trend, and with a banking crisis beginning in 1997. Dropping Korea strengthens the negative impact of crises somewhat.

In row 4, we change the onset date of Japan's banking crisis from 1997 (Laeven and Valencia's preferred year) to 1992, right after the Japanese asset bubbles burst (CKLN's view). In row 5, we examine how results are affected by re-coding the U.S. as having no banking crisis until 2007. Although LV includes the U.S. savings and loan crisis beginning in 1988 as systemic, CKLN codes it as non-systemic. Results in rows 4 and 5 show that the estimated impacts of banking crises on aid are fairly insensitive to these judgments on crises in the U.S. and Japan.

In row 6, we omit Spain, because its crisis was already underway when it became a donor in 1980, so that we have no pre-crisis "normal" data for that country. Also, as the donor with the earliest banking crisis, Spain is also potentially a very influential case in estimating when the dampening effects on aid eventually end or reverse. But omitting Spain does not reduce the coefficients at all.

Our counter variable applies only to one crisis per country, so in row 7 we drop Turkey, which had crises beginning in 1982 and again in 2000. Turkey's 1982 crisis, like Spain's in 1975, is also potentially very influential in estimating the longer-term impact on aid. Like Korea, Turkey is also a new donor with large fluctuations around an overall upward trend in aid. Results prove however not to be sensitive to Turkey's inclusion.

In row 8, we drop observations from the onset of a second crisis. Specifically, we drop Turkey's observations for 2000-2007, and the U.S. observation for 2007. Including those years in the sample but ignoring the second crisis can be viewed as measurement error potentially affecting results for our crisis variables. Results in row 8 differ only trivially, however, from those in Table 1. In an alternative test, in row 9, we retain all observations for Turkey and the U.S., but add a second set of dummy variables (shown in the last two table columns) defined with respect to their second crises. Results for the first-crisis variables are unaffected. Aid does not drop significantly with the onset of a second crisis, an unsurprising finding given the small number of observations in our data corresponding to second crises.

Finally in row 10 we net out aid that takes the form of contributions to multilateral aid institutions. These contributions reflect multiyear agreements among donor countries that might be more difficult than many bilateral aid programs to reduce quickly when adverse economic conditions arise. Results in row 10 are not affected much by this change, however, and the negative impact on aid is still fully realized only about 10 years after onset of the crisis.

In Table 3, we exploit the CKLN data on crisis end dates (in equations 1 and 2) and non-systemic crises (in equations 3 and 4), neither of which are coded in LV. Results in this table corroborate the major finding from Table 1 of large and long-lived effects on aid disbursements. The crisis ending dates allow us to test impacts on aid both during the crisis and afterward. For example, the impact in year t+5 of a crisis that began in year t is potentially larger if the crisis is still ongoing than if it has ended. In equation 1, we drop the 42 country-year observations with ongoing crises. Coefficients

on the banking crisis variables change only trivially compared to the full sample in Table 1. In equation 2, we retain all observations but add two variables: number of years and number of years squared from the onset of an ongoing crisis, i.e. they equal 0 for all years subsequent to the crisis end year. Again, results on the original set of banking crisis variables are changed only trivially, and coefficients for the added set are insignificant, and far smaller in absolute value. Time from crisis onset appears to matter equally for aid disbursements, whether or not the crisis has "officially" ended (as coded by CKLN). This finding is consistent with the finding, discussed below, that the fiscal effects of crisis linger long after the bank bailouts have ended.

Equation 3 of Table 3 includes the non-systemic crises coded by CKLN, in addition to the LV systemic crises, more than doubling the number of crises in the sample. This change does nothing to reduce the estimated depth of the crisis-induced fall in aid, and in fact deepens it somewhat by reducing the coefficient on the quadratic term (and hence weakening the eventual rebound in aid). Including non-systemic crises expands the number of donors with multiple crises over our sample period, thus introducing more noise into our crisis variables, which count up from the onset of the first crisis. We therefore in equation 4 drop the four countries (Turkey, Iceland, UK, and US) with multiple crises. Point estimates on the crisis variables change very little, but significance weakens with this one-sixth reduction in the sample size.

To summarize, banking crises reduce predicted aid by perhaps 20 to 25 percent below trend, with the largest effect coming only about 10 years after crisis onset. Moreover, it is likely that the relationship is a causal one, flowing from financial-sector troubles to reduced aid. It is implausible that future reductions in aid outflows trigger banking crises, of course. And while it is theoretically possible that an omitted third variable (such as unbridled greed, or poor executive governance) could cause both banking crises and aid reductions several years after the crisis, we find this unlikely. In the case of the current downturn, for example, the Bush Administration had increased aid substantially even as the conditions for a financial crisis were gathering.

Effects of donor-country income levels

As expected, the level of per-capita income (in logs) of a donor country is a strong, robust, and very significant predictor of the amount of ODA that the country gives each year. In the Table 1 regressions predicting disbursements, we find that the coefficient on log GDP per capita is

persistently about 3.1 or 3.2. Even when other economic control variables are added (in Table 4 below), the coefficient on income usually varies only from about 2.8 to 4.2.

These fixed-effects estimates are substantially higher than OLS coefficients (not shown), probably because of omitted variable bias. Most notably, the United States, one of the highest-income donors, has historically given less aid relative to its income than most other OECD countries, for reasons that clearly have little to do with the slope of the aid-income relationship. To some extent, control variables such as the trade/GDP and fiscal deficit/GDP ratios may capture these unobserved variables, and we include those in the later regressions. But because heterogeneity in unobservables is likely to be important as well, the fixed-effects results are likely to be the most illuminating.

Because the dependent variable is also in logs, this coefficient on income can be interpreted as an elasticity, implying that a 1 percent increase in GDP per capita is associated with an increase of about 3 percent in aid outflows. To gauge the reasonableness of this finding, consider what it implies for aid shares in GDP. With an elasticity of 3, a decade of steady per-capita income growth of 1 percent per year (with no population growth) would raise a donor country's aid/GDP ratio from 0.35 percent to 0.43 percent.[8]

Given that the incomes of donor countries have grown consistently over recent decades, why do the data not show the steady increase in aid/GDP ratios predicted by these results? From an econometric perspective, a major reason is that over much of the 1977-2007 period, the coefficients on the *year dummies* were consistently shrinking, indicating a secular decline in average propensity for aid-giving that partially offset the tendency toward higher aid-giving associated with higher donor incomes. The post-1990 decline has been attributed in part to the end of the Cold War, which reduced the geopolitical motivation for aid-giving. Since the late 1990s, however, the year dummies suggest that this secular decline has leveled off.

[8] We also re-ran the regressions with aid/GDP as the dependent variable. In those cases, the coefficient on log GDP per capita was typically on the order of 0.004. From an initial average aid/GDP share of .0035, say, this translates into an increase of a little more than 1 percent in the aid share with 1 percent income growth. This coefficient magnitude is very similar to those reported by Round and Odedokun (2004).

The result that donor-country income is a significant and quantitatively important predictor of aid is consistent with findings of some other recent studies (Round and Odedokun 2004; Boschini and Olofsgard 2007; Chong and Gradstein 2008). Our elasticity estimates are much larger than those reported by Boschini and Olofsgard, which range only from .47 to .62 in their various specifications. (The difference is explained largely by the fact that Boschini and Olofsgard control for lagged aid; when we do this with our specifications, the elasticity drops to about 0.8, which is not very different from their result.) Note that our results on income are not particularly sensitive to the indicator of aid that we use.

While we focus primarily on the banking-crisis and income variables, we also include population (in logs) as a control variable in the core regressions in Table 1. Perhaps surprisingly, population is rarely a significant predictor of aid disbursements in our fixed-effects specifications, in either this table or subsequent ones. In OLS regressions (not shown here), where estimates are informed by cross-country variation in the data, population is a stronger predictor of aid outflows. But over time for a given donor, years with higher population are not associated with significantly higher aid disbursements.[9] Overall our results indicate that donor-country population changes matter far less than per-capita income changes as determinants of aid.[10]

Correlations with other economic variables

In addition to income levels, several other possible economic determinants of aid have been examined in the literature: size of government, budget surplus or deficit, unemployment rate, inflation rate, real exchange rate, and trade exposure. In Table 4, we enter each of these in turn. Given the focus of this paper, the most important insight is that none of the other economic variables substantially reduce the size (in absolute value) of the banking-crisis coefficients. In the

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[9] This result is consistent with Boschini and Olofsgard (2007). Log of population is negative and significant in Round and Odedokun (2004), who use aid/GDP as their dependent variable. These studies all use donor fixed effects, so they are not merely showing that aid is low relative to GDP in the most populous donors, the U.S. and Japan. With aid per capita as the dependent variable in our tests, the effect of population is significantly negative (results available on request). Frot (2009) uses aid per capita but does not include population among his regressors.

[10] Thus, even though aggregate GDP is a good predictor of aid levels (in regressions that are not shown here), the elasticity of aid with respect to GDP is not constant. Its magnitude will depend on whether income has increased as a result of population growth or growth in per-capita income. A corollary is that the current downturn in OECD economies may have larger negative effects on aid than would a downturn of equivalent size caused by a fall in population growth (to suggest an unrealistic thought experiment).

only notable change in point estimates, when unemployment is introduced (in equation 3), the coefficient on the linear counter variable increases in absolute value, i.e. becomes even more negative. Unemployment is strongly correlated with per capita income, however, and when we test unemployment without income as a regression (equation 4), the coefficient falls back to its usual range of a 4 to 5 percent annual decline and loses significance.[11]

Most of these economic variables are strongly significant predictors of aid, although not always in the expected direction. Perhaps surprisingly, the share of government expenditures in GDP is not significant (equation 1). The lagged *budget surplus* is negatively associated with aid disbursements (equation 2). Despite lagging budget surplus by a year, we cannot rule out the possibility that surpluses are achieved by cutting aid along with many other spending categories. This would be consistent with Faini's (2006) finding that a larger public-sector debt is associated with lower aid, if debt necessitates budget surpluses[12]. In any event, the effect quantitatively is quite small.

Unemployment is positively correlated with disbursements (equation 3) when income is also included in the regression but this counterintuitive result disappears when income is omitted (equation 4). Higher *inflation* is associated with lower aid disbursements in equation 5.[13] A stronger *domestic currency* is associated with higher aid (equation 6). Contrary to the evidence from bilateral trade relationships (Boschini and Olofsgard 2007), greater *openness* as measured by trade share/GDP (equation 7) is not a significant predictor of aid flows.

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[11] Unemployment data are unavailable for many countries in the earlier part of our sample period, so we lose one-sixth of our observations when unemployment is included in our regressions.

[12] We tried testing directly the hypothesis that debt stocks could explain aid disbursements, by including a measure of debt stock/GDP from the OECD. There are a lot of missing observations on debt stocks from our 24 donors, however, and so including that variable cost us over one-fifth of our observations (although we still ended up with substantially more than Faini's analysis did). The coefficient did not prove significant, nor did it significantly affect the estimated coefficients on the banking crisis, per-capita income, or budget surplus variables.

[13] Mendoza, Jones and Vergara (2009) show that U.S. aid over time is inversely related to a "misery index" equal to the inflation rate plus the unemployment rate. They do not test them separately. Nor do they offer a theoretical justification for their assumption that a percentage point increase in unemployment has the same impact on aid as a percentage point increase in the inflation rate.

Correlations with political variables

Table 5 shows the effects of including other variables that are political in nature or thought to work primarily through the political process. The first is inequality, as measured by the Gini coefficient, which Chong and Gradstein (2008) find is a significant predictor of lower aid but other studies have not found to be significant. Equation 1 confirms Chong and Gradstein's result, with the coefficient point estimate implying a Gini increase of 5 points – roughly the rise in earnings inequality in the US between 1985 and 2000 – is associated with a 15 percent fall in aid. The relationship could be causal, if higher inequality makes it harder to justify spending resources to reduce poverty in other countries. Alternatively, both higher inequality and lower aid could reflect underlying shifts in the electorate's willingness to spend for poverty alleviation anywhere.

Having less *corruption* (as measured by ICRG, with a higher index indicating less corruption) also predicts higher aid, and the effect is large: a one-point increase in the corruption index increases predicted aid by 12 percentage points (equation 2). This finding is also consistent with results in Chong and Calderon (2008), who argue that the corruption index proxies for voter attitudes regarding their government's competence to spend resources effectively. However, in our regressions the coefficient is not significant. Nor are the coefficients on variables capturing the political leanings of the party in government (as coded by Beck et al. (2001)); this non-result is consistent with the findings from the other studies in the literature (Round and Odedokun 2004; Boschini and Olofsgard 2007; Chong and Gradstein 2008; Mendoza, Jones, and Vergara 2009).[14]

Again, the most important result from these analyses is that including these variables does not challenge the main conclusions from earlier tables. Overall, the key banking-crisis dummy remains highly negative and statistically significant, albeit somewhat less so in columns 1 and 3.[15]

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[14] Round and Odedokun (2004) and Boschini and Olofsgard (2007) also find no evidence that government ideology matters. Chong and Calderon (2008) similarly test leftist governments against all others, finding no significant result in fixed effects regressions similar to ours, but a positive effect in dynamic panel data regressions.

[15] The sample in equation 3 is missing data for Switzerland, which had a four-party ruling coalition over the whole period that spanned the left-right spectrum. France, Portugal and Turkey are also missing observations for a few years on the party ideology classifications.

Interpreting the crisis results

What drives these large banking crisis effects on aid? As noted earlier, one likely channel is the major fiscal costs of crises. Aid is forced to compete with other priorities, most of them with larger domestic constituencies, as aid to the financial sector and other expenditures necessitated by the crisis crowd out pre-crisis spending. Articles on aid spending in crisis countries show this effect in action. In the years after the S&L bailout in the United States, Lancaster (2006) notes that ". . .new purposes . . . were not enough to protect foreign aid -- especially development aid -- from being slashed during the efforts of the 1990s to cut the federal budget deficit and the size of government." Similar pressures restrained Japan's aid in the early 2000s, as suggested by this quote from 2003: "Japan has relied heavily on aid to project influence overseas. But it has been forced to scale back on this diplomatic clout by a fiscal crisis that will see public debt soar to ¥686 trillion at the end of this fiscal year" (Watts 2003). In the current global crisis, conflicting needs are already putting aid budgets under pressure; for example, the *Financial Times* reported in July 2009 that "in 2009 Italian aid administered by the foreign ministry is being cut by 56 per cent" (Peel 2009). And aid is being forced to compete with domestic programs for those in need: as Ireland cut its aid budget substantially in 2008 and 2009, newspapers noted that leading development campaigner Bob Geldof "refused to condemn the cuts", citing " 'people in this country who are seriously hurt by this current malaise' " (Cunningham 2009).

A natural follow-up question is why banking crises should have their most severe effects on aid only in the medium to long term. The negative effects on aid do appear to start soon after the crisis hits, as suggested by both the raw data in Figure 1 and the regression results, as well as the example from Ireland given above. But according to our analysis, the effects continue to deepen (relative to counterfactual) for 7 to 10 years, which seems remarkably long.

Recent analysis of the effects of banking crises by Reinhart and Rogoff (2008) suggest a possible explanation. That paper finds that major banking crisis have effects on growth and fiscal positions that are especially large and long-lasting. In particular, they cause a major shock to government revenue, which flips from rising at an average rate of 3 percent per year in the years immediately before the crisis to declining at about 3 percent in the first three years of the crisis. At the same time, governments must pay not only for the banking-sector bailouts – the full cost of which are not typically known for years – but also other expenditures needed to address the economic effects of

the crisis. As a result, public debt increases by a daunting 86 percent on average in the first 3 years of crisis. Reinhart and Rogoff conclude that "[a]rguably, the true legacy of banking crises is higher public indebtedness—far over and beyond the direct headline costs of big bailout packages."

Given the size of the debt overhang, it is quite plausible that debt pressures lead governments to cut back or at least restrain growth in aid for years afterwards, as suggested by Faini's (2006) finding that a larger public sector debt predicts lower aid levels. And in fact, the US and Japanese examples cited above both refer to aid cutbacks that took place five years or more after banking crises hit, during a period of attempts to deal with the debt legacy. In the case of Sweden, an OECD development co-operation review from 1996 – five years after that county's banking crisis broke out – makes this link explicitly as it explains the recent fall in ODA: "Because of budget deficits Sweden has embarked on a stringent budget cutting exercise to definitively halt the large deficits of recent years and reverse the serious buildup in public debt", leading the OECD to expect "a further large fall in [aid] disbursements" (Organisation for Economic Co-operation and Development 1996).

4. Implications for aid in a time of global financial crisis (and beyond)

What do these results on income and banking-crisis effects imply for the likely path of aid disbursements over the next decade? Past is not necessarily prologue, particularly given the unprecedented magnitude of the current crisis. And without a fully worked-out general equilibrium model, we cannot credibly estimate the joint effects of the numerous variables that we have identified as significant predictors of aid flows. Nevertheless, we can learn something by tracing out the joint effects of the income and banking-crisis variables, both of which have large and consistently significant effects.

Consider a stylized version of a country moving along a crisis and recession path like that of the United States, starting with the short-term effects on aid. In 2009, according to the IMF (2009c), US GDP is estimated to have fallen 2.6 percent compared with 2008. But this is only a portion of the relevant income loss. To understand the effects on aid relative to the counterfactual, we have to estimate what would have happened to income in the absence of a crisis. Assume that GDP growth would have continued through 2010 at its 2007 growth rate of 2.0 percent, instead of falling to 1.1, -2.6, and 0.8 percent as projected by the IMF. Then as a result of the crisis, by 2010 per-capita incomes (assuming no significant effects on population) will be about 6 percent below where they

would have been in the absence of the downturn. If the aid-income elasticities of 2 to 3 operate cyclically the way they do in the long-term panel regressions, then this could imply aid levels 12 to 18 percent below the counterfactual. At the same time, the banking crisis coefficient estimates from Table 1 imply a fall of perhaps 11 percent relative to the counterfactual. Three years into the crisis, then, the combined effect of the per-capita income and banking crisis variables could therefore keep aid 20 to 30 percent below where it would have been otherwise.

Over the longer term, the situation may not improve for some time despite the expected economic recovery. GDP should eventually return to its potential as the economy comes out of recession, but based on the experience of past crises, the IMF expects the annual growth rate of potential output to fall by 0.5 percent as a result of this crisis (International Monetary Fund 2009b). The authors therefore project GDP to be nearly 6 percent lower in 2014 than it would have been in the absence of the crisis, and they note that this estimate is within the range suggested by the literature on banking crises and growth.[16] Again, this 6 percent lost output could translate into aid levels 12 to 18 percent below the counterfactual. However, seven years after the crisis hit, our estimates suggest that the banking-crisis effect will have grown rather than attenuated. The point estimates from the quadratic specification suggest a drop in aid of 20 percent after 7 years, a figure that is consistent with the coefficient on the dummy from the intervals estimate in later regressions. Thus after seven years, the combined effects of the financial crisis through these two channels could be to reduce aid by some 30 percent or more relative to the counterfactual.

These estimated aid effects are very rough, and they do not take into account the effects of other determinants that will also be shifting and that will offset each other. In the short term, for example, the crisis has already led to higher budget deficits and lower inflation relative to trend, both of which are associated with higher aid; but it has also led to higher unemployment, higher inequality, and a lower trade share, all of which are associated with lower aid. Since we do not jointly estimate these effects, these casual simulations should not be interpreted too literally. The point is that, especially in the donor countries that have suffered financial crises (including the US, UK, Ireland, and Iceland), aid could fall well below the counterfactual and remain lower for the next decade. And in some of these countries, the effects on aid could be larger than in the stylized case considered above,

[16] By contrast, after a "normal" recession growth would likely have returned to the original potential output path. This is an important way in which this financial-crisis-induced recession will differ from other recessions in its effects on aid.

because the crisis effects are more severe. In the case of Ireland, for example, the IMF estimates that GDP will drop more than 13 percent from 2008 through 2010, and that even in 2014 the potential GDP growth rate will not have recovered to its pre-crisis level (International Monetary Fund 2009a).

One caution is that this analysis does not take into account any possible strategic interactions among donors. The economic fluctuations and banking crises between 1977 and 2007 tended to affect smaller groups of countries, whereas this time the macroeconomic downturn and banking crises are highly synchronized across countries. This synchronization could either exacerbate or dampen the effects of crisis on aid, depending on the strategic interactions among donor countries. Imagine that the standard approach of the aid community in the past has been for donors to compensate for each other in the case of economic shocks – that is, for one donor to increase its aid when another is forced to cut back in a recession. In that case, the effect on aggregate aid of a downturn in one country would be less than the effect on that country's own aid. But with the synchronized global recessions this time around, there may be no donor-of-last-resort that is willing to step in and compensate for shortfalls elsewhere, so aid could drop farther than predicted. Alternatively, if donor countries become concerned about the dangers of simultaneous cutback in aid across many countries, they may be able to coordinate to maintain aid above the levels that would otherwise emerge from their unilateral decisionmaking. In that case, aggregate aid would not drop by as much as predicted.

5. Conclusions

Using panel data from 24 donor countries between 1977 and 2007, the results presented above show that banking crises in donor countries are associated with substantial declines in aid flows. Even after controlling for income and other factors, net ODA disbursements from crisis-affected countries fall by an average of 20 to 25 percent (relative to the counterfactual) and bottom out only about a decade after the onset of the banking crisis. One possible channel for this effect is governments' attempts to deal with the large fiscal debt overhangs that typically result from banking crises. Our results also confirm that donor-country per capita income is strongly related to aid flows, with an elasticity of about 3.

What is the relevance of these findings to the current situation? If aid flows follow historical patterns, the current global financial crisis could reduce aid significantly over the medium term (at least relative to counterfactual). All donor countries are suffering from the current global recession, driving their incomes down sharply. And there are several donors that are suffering banking crises or severe strains on their banking systems – clearly the United States, the United Kingdom, and Ireland, which together accounted for a third of DAC aid in 2008, and potentially also other significant donors such as Spain (Bjork 2009). Historical patterns suggest that aid from these countries could fall by a fifth to a quarter in the coming years, in relative terms, as they wrestle with the fiscal and other consequences of banking-sector stresses.

Because we have focused on donor aid-giving behavior, rather than on the effects of aid on recipient countries, this analysis has made no assumptions about the effectiveness of aid in spurring growth and poverty reduction. Whether aid works, and in what conditions, has been the subject of considerable debate within the economics profession and outside. In our view, the question of whether aid yields significantly positive returns during and immediately after a major global recession is likely to be quite different than the general question about aid effectiveness. Most developing countries are being hit hard by the global recession, with net private debt and equity inflows plummeting by three-quarters in just two years (World Bank 2009) This constitutes a major exogenous shock, one that is hitting even countries that have managed their economies well. There are strong reasons to believe that aid that has the effect of tiding government over during the crisis could improve welfare significantly, by dampening welfare-reducing fluctuations in consumption or investment. Aid for such purposes seems unlikely to damage long-run governance or tax effort. Or, to turn it around, a drop in aid as a result of the donor-country recessions and banking crises would likely exacerbate the suffering and welfare losses in poor countries.

Appendix Table 1:
Donor Countries with Banking Crises

Source	Laeven and Valencia [LV], (2008)	Caprio et al. [CKLN], (2005)
Donor	start dates	start-end dates
Australia	-	1989-92*
Austria	-	-
Belgium	-	-
Canada	-	1983-85*
Denmark	-	1987-92*
Finland	1991	1991-1994
France	-	1994-95*
Germany	-	1976-79*
Iceland		1985-86*, 1993*
Ireland	-	-
Italy	-	1990-95*
Japan	1997	1992-2006
Korea, Rep. of	1997	1997-2002
Luxembourg	-	-
Netherlands	-	-
New Zealand	-	1987-90*
Norway	1991	1990-93
Portugal	-	-
Spain	1977	1977-85
Sweden	1991	1991-94
Switzerland	-	-
Turkey	1982, 2000	1982-85, 1994*, 2000-2002
United Kingdom	2007	1974-76*, 1980-99*
United States	1988, 2007	1988-91*

*non-systemic crises

Appendix Table 2:
Data Sources

Data	Sources
Aid variables	
Net and gross aid disbursements	DAC databases; OECD (2009)
Net aid transfers	Roodman (2009)
Banking crisis variables	
Banking crises with beginning and end dates	Caprio, Klingebiel, Laeven and Noguera (2005)
Banking crisis with beginning dates	Laeven and Valencia (2008)
Other variables	
GDP per capita (constant 2007 USD)	World Development Indicators; World Bank (2009)
Total population	World Development Indicators; World Bank (2009)
Government expenditure as % of GDP	World Development Indicators; World Bank (2009)
Trade as % of GDP	World Development Indicators; World Bank (2009)
Budget deficit as % of GDP	World Economic Outlook, IMF (2009)
Unemployment rate	World Economic Outlook, IMF (2009)
Inflation rate	World Development Indicators; World Bank (2009)
Real exchange rate	World Development Indicators; World Bank (2009)
Inequality (Gini coefficients)	Luxembourg Income Study project, (2009); World Development Report, various years
Corruption index (0-6)	International Country Risk Guide (ICRG 2009)
Right-wing party	Database of Political Institutions (Beck, Clarke, Groff, Keefer and Walsh 2001; updated 2008)
Left-wing party	Database of Political Institutions (Beck, Clarke, Groff, Keefer and Walsh 2001; updated 2008)

Appendix Table 3:
Summary Statistics for LV sample

	Mean	Std. Dev.	Min.	Max.
Net disbursements (constant 2007 $mil)	3359	4041	8.04	29611
Net aid transfers (constant 2007 $mil)	2802	3398	-333.8	24286
Gross disbursements (constant 2007 $mil)	3830	4677	11.78	30475
GDP per capita (2007 $)	25253	10417	3943	67110
Population (millions)	38.4	57.2	0.258	302
Trade share of GDP (%)	72.1	43.8	16.1	326.6
Government spending (% of GDP)	26.2	11.8	10.1	63.0
Surplus/deficit (% of GDP)	-2.2	4.3	-16.8	18.5
Unemployment rate (% of labor force)	7.0	3.9	1.5	23.9
Inflation rate (%)	4.4	4.1	-3.8	24.7
Real exchange rate	105.2	13.0	54.9	145.9
Inequality (Gini coefficient)	29.0	5.5	19.7	43.9
Corruption (0 worst, 6 best, from ICRG)	4.9	1.1	2	6
Leftist ruling party (0-1 dummy)	0.38	0.48	0	1
Rightist ruling party (0-1 dummy)	0.47	0.50	0	1
No. years from start of systemic crisis	2.3	5.6	0	31
No. years from start of crisis (systemic or not)	6.1	8.2	0	34

Table 1
Aid and banking crises 1977-2007

Equation	1	2	3	4
Dependent variable	Net disb.	Gross disb.	Net transfers	Net disb.
Number of years from crisis start	-0.044**	-0.039**	-0.042*	
	(0.018)	(0.018)	(0.024)	
Number of years from crisis start squared	0.002***	0.002***	0.002**	
	(0.0005)	(0.0005)	(0.001)	
Dummy for first six years from crisis start				0.015
				(0.126)
Dummy for years 7-13 from crisis start				-0.300*
				(0.158)
Dummy for years 14 and higher from crisis start				-0.029
				(0.227)
Log per capita income	3.143***	3.200***	3.166***	3.200***
	(0.698)	(0.162)	(0.703)	(0.717)
Log population	-0.350	-0.612	0.629	-0.279
	(1.271)	(1.329)	(1.413)	(1.280)
R^2	.96	.96	.96	.96
No. of donors	24	24	24	24
No. of observations	692	676	686	692

Note *p< .1, **p<0.05, ***p<0.01. All regressions control for country and year effects, not shown for space reasons. Standard errors are adjusted for clustering at the country level. Banking crises dates are from L&V.

Table 2
Aid and banking crises, 1977-2007

Specification/sample change	No. of years from crisis start	No. of years squared	No. of years from 2nd crisis start	No. of years squared
1) Iceland dropped (very small donor)	-0.043**	0.002***		
	(0.018)	(0.0005)		
2) Finland dropped (largest aid decline)	-0.045**	0.002***		
	(0.019)	(0.0005)		
3) Korea dropped (new donor)	-0.051***	0.002***		
	(0.017)	(0.0005)		
4) Japan crisis start date changed to 1992	-0.045**	0.002***		
	(0.017)	(0.0005)		
5) USA crisis (1988-91) coded as non-systemic	-0.033*	0.002***		
	(0.018)	(0.0005)		
6) Spain dropped (earliest crisis)	-0.049*	0.002*		
	(0.026)	(0.001)		
7) Turkey dropped (multiple crises)	-0.040**	0.002***		
	(0.017)	(0.0004)		
8) 2nd crisis observations dropped (Turkey 2000-2007, USA 2007)	-0.040**	0.002***		
	(0.017)	(0.0004)		
9) Variables for 2nd crisis added	-0.040*	0.002***	-0.019	0.013*
	(0.017)	(0.0004)	(0.066)	(0.007)
10) multilateral contributions excluded	-0.051*	0.002***		
	(0.019)	(0.0007)		

Dependent variable is log of net ODA disbursements. Note *p< .1, **p<0.05, ***p<0.01. All regressions control for per capita income, population, and country and year effects. Standard errors are adjusted for clustering at the country level. Banking crises dates are from L&V. See text for further explanation.

Table 3
Aid and banking crises 1977-2007

Equation	1	2	3	4
Sample/specification change	Ongoing crisis obs. dropped	Ongoing crisis variables added	Non-systemic crises included	Countries with multiple crises dropped
Number of years from crisis start	-0.041**	-0.041**	-0.044**	-0.040*
	(0.019)	(0.017)	(0.018)	(0.020)
Number of years from crisis start squared	0.002***	0.002***	0.001*	0.001
	(0.0006)	(0.0004)	(0.0005)	(0.001)
No. of years from start of ongoing crisis		-0.005		
		(0.030)		
No. of years squared from start of ongoing crisis		0.001		
		(0.001)		
Log per capita income	3.203***	3.140***	2.810***	2.843***
	(0.745)	(0.706)	(0.652)	(0.672)
Log population	-0.354	-0.444	0.369	0.076
	(1.291)	(1.287)	(1.109)	(1.300)
R^2	.97	.97	.97	.95
No. of donors	24	24	24	20
No. of observations	650	692	692	598

Dependent variable is log of net ODA disbursements. Note *p< .1, **p<0.05, ***p<0.01. All regressions control for country and year effects, not shown for space reasons. Standard errors are adjusted for clustering at the country level. Banking crises dates are from L&V. Ongoing crises are identified using crisis-ending dates in CKLN. Non-systemic crises are coded by CKLN. Countries dropped in equation 4 are Turkey, the UK, US and Iceland.

Table 4
Aid and banking crises: economic variables

Equation	1	2	3	4	5	6	7
Number of years from crisis start	-0.038**	-0.048***	-0.080***	-0.047	-0.039***	-0.036**	-0.037**
	(0.017)	(0.017)	(0.015)	(0.036)	(0.014)	(0.016)	(0.018)
Number of years from crisis start squared	0.002***	0.002***	0.003***	0.002*	0.002***	0.002***	0.002***
	(0.0004)	(0.0004)	(0.0003)	(0.001)	(0.0003)	(0.0004)	(0.0005)
Log per capita income	3.215***	3.391***	4.193***		3.126***	2.878***	2.963***
	(0.697)	(0.660)	(0.630)		(0.716)	(0.686)	(0.752)
Log population	-0.267	0.061	-0.976	0.208	-0.179	-0.202	-0.615
	(1.338)	(1.480)	(1.588)	(2.965)	(1.194)	(1.260)	(1.288)
Lagged gov. exp. as a share of GDP	0.003						
	(0.003)						
Lagged budget surplus/deficit (% of GDP)		-0.023**					
		(0.009)					
Unemployment rate			0.044***	-0.012			
			(0.008)	(0.033)			
Inflation rate					-0.031**		
					(0.017)		
Real exchange rate (USA 2000 = 100)						0.008***	
						(0.001)	
Trade share of GDP							0.003
							(0.004)
R^2	.96	.97	.97	.95	.97	.97	.96
No. of donors	24	24	24	24	23	22	24
No. of observations	682	614	575	575	675	654	657

Dependent variable is log of net ODA disbursements. Note *p< .1, **p<0.05, ***p<0.01. All regressions control or country and year effects, not shown for space reasons. Standard errors are adjusted for clustering at the country level. Banking crises dates are from L&V. Turkey is missing inflation data (equation 5), and Turkey and Korea are missing real exchange rate data (equation 6).

Table 5
Aid and banking crises: political variables

Equation	1	2	3
Number of years from crisis start	-0.034*	-0.041**	-0.026*
	(0.018)	(0.018)	(0.015)
Number of years from crisis start squared	0.002***	0.002***	0.002***
	(0.0005)	(0.0005)	(0.0004)
Log per capita income	3.188***	3.002***	-0.201
	(0.760)	(0.563)	(1.085)
Log population	-0.812	0.101	-0.026*
	(1.300)	(1.498)	(0.015)
Inequality (Gini coefficient)	-0.031*		
	(0.018)		
Corruption index (ICRG, 0-6 scale)		0.125	
		(0.079)	
Right-wing party			0.086
			(0.108)
Left-wing party			0.031
			(0.110)
R^2	.96	.97	.97
No. of donors	23	24	23
No. of observations	654	594	629

Dependent variable is log of net ODA disbursements. Note *p< .1, **p<0.05, ***p<0.01. All regressions control or country and year effects, not shown for space reasons. Standard errors are adjusted for clustering at the country level. Banking crises dates are from L&V. Some countries are omitted from particular regressions because of missing data: Iceland from equation 1 (missing inequality data), and Switzerland from equation 3 (party ideology).

Figure 1a: Net Disbursed Aid for Crisis vs. Non-Crisis Countries

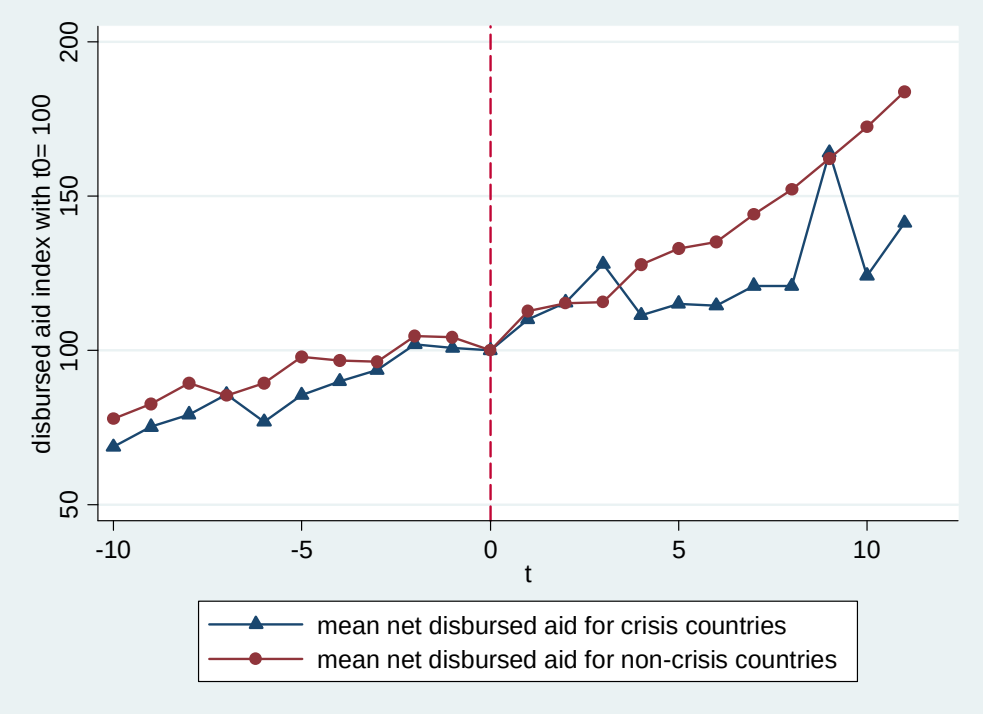
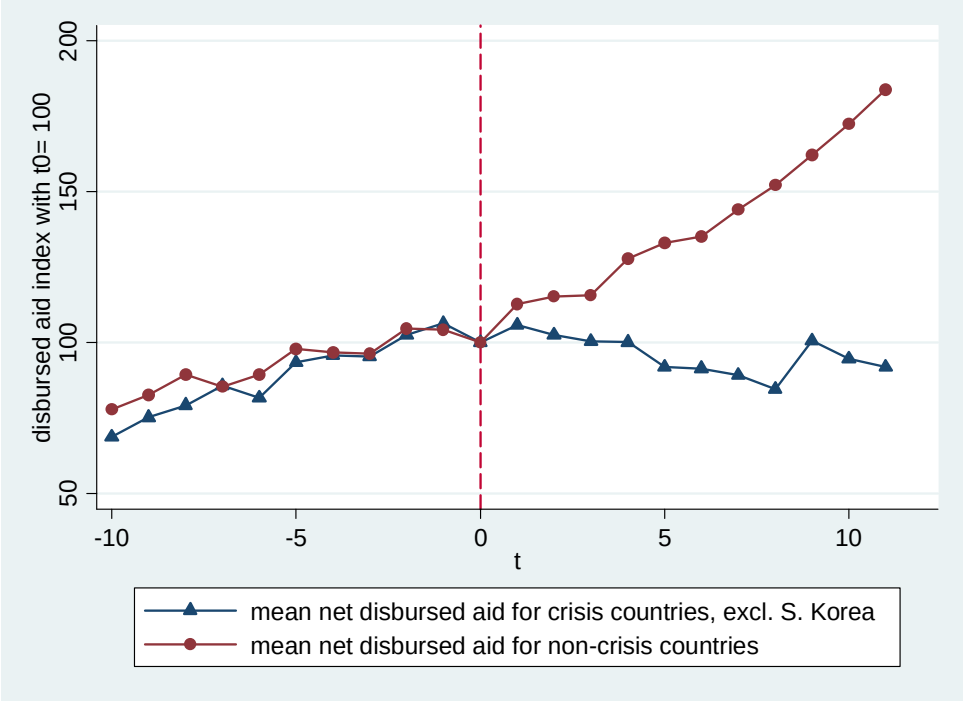


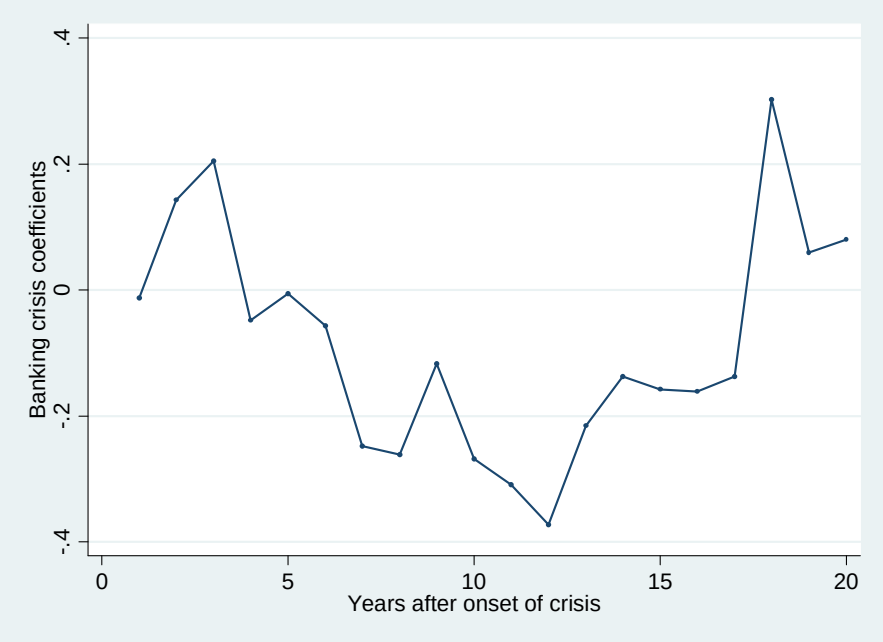
Figure 1b: Net Disbursed Aid for Crisis vs. Non-Crisis Countries (excluding Korea)



Source: Authors' calculations from OECD-DAC aid data, using LV definitions of crisis-onset dates

Note: Crisis countries are defined as those that suffered any systemic banking crisis during 1977-2007. For crisis countries, the figure shows the unweighted mean of the indices of real aid volumes (normalized to 100 in the last pre-crisis year) before and after the onset of the crisis, with year 1 of all crises synchronized to t=1. The non-crisis countries' trends are calculated by taking the mean indices for all non-crisis countries for each t=0, then averaging them.

Figure 2
Impact of Banking Crises on Net Disbursed Aid
Provided by Crisis-Affected Donors, 1977-2007



Source: Authors' calculations using LV data, as described in the text
Note: The figure shows the coefficient on the individual-year counter dummy for years after crisis, as estimated in regressions controlling for donor-country per-capita income and population, as well as country fixed effects and year dummies across all donors. Year t=1 corresponds to the first year of the crisis.

References

Alesina, A. and D. Dollar (2000). "Who Gives Foreign Aid to Whom and Why?" *Journal of Economic Growth* 5 1: 33-63.

Beck, T., G. Clarke, A. Groff, P. Keefer and P. Walsh (2001). "New Tools in Comparative Political Economy: The Database of Political Institutions." *World Bank Economic Review* 15(1): 165-176.

Bjork, C. (2009). "Spain girds for a banking crisis." *Wall Street Journal (June 26)* (June 26).

Boschini, A. and A. Olofsgard (2007). "Foreign Aid: An Instrument for Fighting Communism?" *Journal of Development Studies* 43 4: 622-48.

Caprio, G., D. Klingebiel, L. Laeven and G. Noguera (2005). Banking Crisis Database. *Systemic Financial Crises: Containment and Resolution*. Cambridge and New York, Cambridge University Press**:** 307-40.

Chong, A. and M. Gradstein (2008). "What Determines Foreign Aid? The Donors' Perspective." *Journal of Development Economics* 87 1: 1-13.

Cunningham, G. (2009). "Geldof understand cuts to aid budget." *Irish Independent*.

Demirguc-Kunt, A. and E. Detragiache (2005). "Cross-Country Empirical Studies of Systemic Bank Distress: A Survey." *National Institute Economic Review* 192: 68-83.

Devarajan, S. (2008). "Will the financial crisis reduce foreign aid?" *Africa Can . . . End Poverty (A blog by Shanta Devarajan, World Bank Chief Economist for Africa)*, October 22.

Dollar, D. and V. Levin (2006). "The Increasing Selectivity of Foreign Aid, 1984-2003." *World Development* 34 12: 2034-46.

Faini, R. (2006). Foreign Aid and Fiscal Policy. C.E.P.R. Discussion Papers, CEPR Discussion Papers, 5721.

Frot, E. (2009). "The Consequences of Financial Crises on Aid." Stockholm: Stockholm School of Economics.

International Monetary Fund (1998). "The Asian Crisis: Causes and Cures." *Finance and Development* 35(2).

--- (2009a). Ireland: 2009 Article IV Consultation--Staff Report; and Public Information Notice on Executive Board Discussion. *IMF Country Report No. 09/195*. Washington, DC, IMF.

--- (2009b). United States: Selected Issues. *IMF Country Report No. 09/229*. Washington, DC, IMF.

--- (2009c). World Economic Outlook Update (July 8).

Laeven, L. and F. Valencia (2008). Systemic Banking Crises: A New Database. IMF Working Paper WP/08/224.

Lancaster, C. (2006). *Foreign aid: Development, diplomacy, domestic politics*. Chicago, University of Chicago Press.

Mendoza, R., R. Jones and G. Vergara (2009). Will the global financial crisis lead to lower foreign aid? A first look at United States ODA. Fordham University, Department of Economics, Fordham Economics Discussion Paper Series.

Organisation for Economic Co-operation and Development (1996). Sweden. Development Co-operation Review

Paxton, P. and S. Knack (2008). Individual and Country-Level Factors Affecting Support for Foreign Aid. World Bank Policy Research Working Paper 4714.

Peel, Q. (2009). "'Fireside chat' swells into swan song for G8 excess." *Financial Times* (July 6).

Reinhart, C. M. and K. S. Rogoff (2008). Banking Crises: An Equal Opportunity Menace. National Bureau of Economic Research, Inc, NBER Working Papers, 14587.

Roodman, D. (2006 and 2009). "An Index of Donor Performance." Center for Global Development Working Paper Number 67. Data set updated 2009.

---. (2008, October 13). "History Says Financial Crisis Will Suppress Aid." *Views from the Center (Blog).*

Round, J. I. and M. Odedokun (2004). "Aid Effort and Its Determinants." *International Review of Economics and Finance* 13 3: 293-309.

Watts, J. (2003). "Cash-strapped Japan cuts international aid budget." *The Lancet* 361(9355): 406.

Wooldridge, J. M. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA, MIT Press.

World Bank (2009). Global Development Finance 2009: Charting a Global Recovery Washington, DC: World Bank.