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THE IMPACTS OF DONOR FINANCIAL CRISES ON THE MAGNITUDE OF BILATERAL AND MULTILATERAL FOREIGN AID

RAECHELLE MASCARENHAS

Willamette University, U.S.A.

The global financial crises that started in 2007 had a significant impact on countries across the world, including countries that contribute to foreign aid. Using a panel of 24 donor countries over the time period 1977-2018, this paper analyzes the impact of systemic banking crises on foreign aid flows through direct bilateral transfers to developing countries and channeled through multilateral institutions. The study finds that multilateral aid experiences statistically significant declines after donor financial crises and these declines are more severe and prolonged than for bilateral aid, which often serves as a tool to pursue the donors' strategic interests. The share of tied bilateral aid, which often benefits businesses and special interest groups in the donor country, increases in the years following a systemic banking crisis.

Keywords: Financial Crisis, Foreign Aid, Bilateral, Multilateral, Tying Aid
JEL Classification: F35, H87, O19

1. INTRODUCTION

The financial crisis that started in the United States in 2007 spread quickly across the globe affecting both developed and developing countries. Laeven and Valencia (2012) have documented the severe effects on real GDP and employment caused by systemic banking crises and these downturns in donor countries can affect the generosity of contributions to foreign aid. Total net Official Development Assistance (ODA)[1] disbursements amounted to $204 billion in 2022 and the aid transfers to some developing countries can constitute a fairly sizable share of the recipient government's expenditure on social services. Foreign aid has been associated with modest increases in

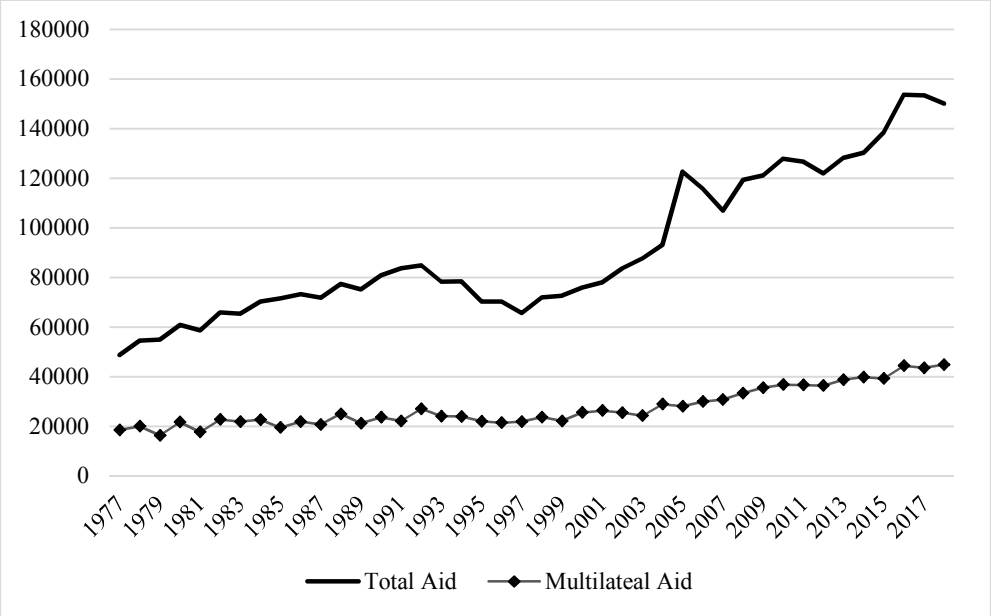
[1] The definition of ODA is available at http://www.oecd.org/dac/stats/officialdevelopmentassistance definitionandcoverage.htm

economic growth and investment in recipient developing countries (Clemens et al., 2012). Gamso et al. (2021) document negative aid shocks result in increased emigration of relatively unskilled individuals from aid-recipient countries. Studies have also shown the role of foreign aid to different sectors (such as education, health and governance) in reducing transnational terrorism (Azam and Thelen, 2008; Young and Findley, 2011). Nielsen et al. (2011) and SzabÓ (2022) illustrate how negative aid shocks significantly increase the probability of the onset of violent armed conflict in aid recipient states. Given the evidence in support of the wide-ranging role played by foreign aid in promoting economic development and state stability, financial crises in donor countries may affect the level of foreign aid flows with serious consequences for developing countries.

Despite the deep financial crisis that started in 2007 and the COVID pandemic that started in 2020, a Eurobarometer[2] survey on humanitarian aid conducted in December 2020 shows around nine in ten respondents, 91%, believe it is important for the European Union to fund humanitarian activities outside its borders. This share is currently at the highest level since 2010, when it dropped to 79% of EU survey respondents in favor of humanitarian aid. The historical trend in support of foreign aid has consistently been above 70% of the population in donor countries (Zimmerman, 2008). With seemingly strong support amongst donor country citizens to contribute to the humanitarian needs of poorer countries, we now examine the data on the levels of foreign aid over time. Figure 1 presents total ODA disbursements over the time period 1977-2018 in constant 2018 US dollars. Over the entire time period under consideration total ODA appears to have a positive trend, with some variation over time. Donors either give foreign aid through bilateral transfers to developing nations or to multilateral institutions. Bilateral aid by the donor country is used to directly fund activities undertaken by recipient developing countries or countries in transition, activities channeled through non-governmental organizations or donor costs linked to development such as administrative costs, debt reorganization and so on. Multilateral aid from donors is channeled to the central budgets of multilateral organizations like the United Nations Development Program, the World Bank, regional development banks and the European Commission, that in turn disburse funds to recipient developing countries and transition economies. Almost 30 percent of total net foreign aid disbursements were channeled through multilateral agencies in 2018, with the remainder given via direct bilateral transfers. The share of multilateral disbursements in total aid transfers has consistently been in the ranges from 18% to 38% range throughout the 1977-2018 time frame. Figure 1 displays the outlays for total ODA disbursements channeled through multilateral institutions over time. The remainder of ODA, on average 70% of total aid, is channeled directly from the donor to the recipient country

[2] The Eurobarometer survey on humanitarian aid is available online at https://europa.eu/eurobarometer/surveys/detail/2265

through bilateral transfers.



Source: OECD Development Assistance Committee Aid Statistics available online at http://www.oecd.org/dac/stats

Figure 1. Official Development Assistance 1977-2018
(Constant 2018 in Millions USD)

Bilateral foreign aid flows to the recipient country can be tied, partially untied or untied. The distinction rests on whether the sourcing of goods and services is either restricted or free from restrictions. Tied ODA limits the procurement of goods and services largely to the donor country. Untied ODA encompasses concessional loans and grants that are made freely available to the recipient country to purchase goods and services from all developing and OECD countries. Partially untied ODA implies goods and services must be purchased from a restricted number of countries that may include the donor country. Donor nations benefit the most from tied aid given the direct backflow of funds resulting from the purchase of goods and services from the donor country. Clay et al. (2009) find that the fraction of fully untied bilateral aid increased from 46% to 76% over the period 1999-2007. Despite this overall increase in the untying of foreign aid, there continues to be considerable variation amongst the donors and over time in the level of tying of bilateral foreign aid. Unlike bilateral aid, multilateral aid tends to have clearer rules about procurement of goods and services and tends to be significantly more untied (Jepma, 1991).

To discern the effects of donor financial crises on the magnitude of ODA disbursements, we argue that the source, bilateral versus multilateral, is a vital consideration. The current study analyzes the impact of economic upheavals and volatility in financial markets on foreign aid disbursements for twenty-four donor countries from 1977-2018, crucially including ten years of data since the 2007 financial crises that impacted a large number of donor countries.[3] We disaggregate net total ODA disbursements to look at the source of the transfer of funds: bilateral and multilateral aid. By looking at the conduit through which aid is channeled, we attempt to discern differing impacts of donor financial crises on foreign aid disbursements based on the channel through which aid flows to recipient countries. Additionally, we seek to determine if the concessionality of ODA, measured by the fraction of total aid that is tied to purchases of goods and services from the donor country, changes in the aftermath of a financial crises. The investigation reveals that multilateral aid experiences statistically significantly declines in the years following systemic banking crises in the donor country. Additionally, it takes more years for multilateral aid to catch up to the pre-crisis contribution levels as compared to bilateral aid. Donors also increase the level of tied aid in the years following the systemic banking crises.

The paper is organized as follows. Section 2 explores the literature on donor motivations for giving foreign aid either through direct bilateral transfers or through multilateral institutions. Additionally, in this section, we review the scholarship on the reasons for and implications of tying foreign aid. Section 3 discusses the research on the impacts of financial crises on donor contributions to foreign aid and highlights the contributions of the current study to this literature. Section 4 provides the sources of the data used in the empirical analysis and the methodology we employ. Section 5 presents the empirical evidence from the investigation via formal regression analysis. Section6 provides some concluding comments.

2. MOTIVATIONS FOR GIVING FOREIGN AID

An extensive literature exists that seeks to explain the motivations underlying donor contributions to foreign aid that benefits less developed countries. Development Assistance Committee (DAC) member nations bestow foreign aid on less developed countries for myriad reasons ranging from economic interests to political considerations to humanitarian ideals to pure altruism (Mckinlay and Little, 1977; Alesina and Dollar, 2000; Boschini and Olofsgard, 2007; Chong and Gradstein, 2008)

[3] In this study we analyze ODA contributions of 24 Development Assistance Committee countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States.

2.1. Donor Interest or Recipient Need

Alesina and Dollar's (2000) study revealed that in addition to the economic needs and policy performance of developing countries, the strategic and political considerations of the donor, especially colonial past and political alliances, were major determinants of foreign aid allocation. Younas (2008) found that OECD donor nations give substantially more bilateral foreign aid to developing countries that import capital goods from the donor country. OECD donors are found to have little humanitarian motivation underlying foreign aid giving to developing countries (Bueno De Mesquita and Smith, 2009). More recent literature finds that the bulk of bilateral foreign aid (i.e. funds that are transferred directly by the donor government to recipient developing countries) is linked to donor economic and strategic interests with little concern for the economic needs of recipient countries (Bandyopadhyay and Vermann, 2013).

While political and strategic considerations tend to influence bilateral transfers, aid flowing through multilateral institutions seems to be less plagued by such problems. One of the more comprehensive efforts at examining the determinants of aid allocation by multilateral institutions is by Neumayer (2003) who analyzes the lending behavior of two sets of multilateral agencies: the United Nations (UN) and the regional development banks. The study finds some evidence of the multilateral aid agencies persisting bilateral strategic interests in disbursing funds like giving more aid to less populous nations and countries that were former colonies. Some multilateral institutions, especially the UN agencies, do take account of other features of the recipient country like the quality of life, size of the population and political freedom. The regional development banks in general are found to focus mainly on the economic needs of the recipient as measured by per capita income. Irrespective of how the funds are used by the multilateral agencies, the donor country tends to lose some control over how the funds are disbursed to recipient countries. Additionally, Easterly and Pfutze (2008) showed that multilateral institutions are more likely to follow OECD best practices in aid delivery and are less likely to prioritize donor interests over recipient needs.

2.2. Why Give Aid Through Multilateral Institutions

By entrusting funds to multilateral institutions the donor nation, to a large extent, relinquishes control over the distribution of funds to developing countries. Attempts have been made to unearth the possible reasons for donors' channeling funds through multilateral agencies instead of direct bilateral aid transfers. Utilizing a principal-agent framework, Milner (2006) suggested that donor governments delegate aid delivery through multilateral agencies to signal to their publics that the foreign aid funds are being utilized for humanitarian purposes and not for furthering the donors' strategic interests. Using data from opinion polls and controlling for various economic and political variables, Milner (2006) showed that public opinion displays a negative relationship with multilateral aid giving. This result indicates that when publics are

doubtful of the humanitarian usefulness of aid (i.e. low public opinion of the effectiveness of aid) donor governments are likely to provide more multilateral aid to reassure their citizens.

Given the diverging objectives that underline contributing through different channels it is interesting to discern whether donors in the wake of a financial crises seek to further their strategic interests via bilateral aid or do decision makers in the donor country seek to reassure their constituents that aid funds are being utilized for humanitarian purposes through multilateral aid. Bilateral aid is often tied to purchases of goods and services from the donor country. Tied aid has been shown to increase the costs of goods and services to the recipient country by 15%-30% (Jepma, 1991). In a report on the untying of aid by DAC donor countries Clay et al. (2009) suggest that "there have been widely discussed concerns about tying reducing effectiveness: acting as a constraint on donor cooperation and the building of partnerships with developing countries, by inhibiting the ownership and responsibility of partner countries in aid supported development, as well as hampering broader efforts to promote their integration into the global economy". Clay et al. (2009) further imply that the main objective of tying foreign aid is to benefit suppliers in the donor country. Sourcing restrictions for foreign aid undermine the effectiveness of aid funding by skewing projects towards donor commercial interest and focusing on capital-intensive projects over smaller labor-intensive poverty alleviation solutions (Jepma, 1991; Morrissey, 1990). Tied aid has been shown to provide benefits to firms and particular groups in donor countries but not necessarily have large macroeconomic impacts such as improving employment (Brakman and van Marrewijk 1995). Do donors when facing severe economic impacts in the wake of financial crises seek to increase the amount of tied aid so as to funnel part of the aid money back to domestic firms and special interest groups in the donor country, thereby reducing the concessionality and possibly the effectiveness of foreign aid?

3. LITERATURE ON FINANCIAL CRISES AND FOREIGN AID

Despite this vast and rich literature exploring *donor interest* in giving foreign aid, the analysis of the effects of economic and financial crises on donor nations' contributions to foreign aid is fairly sparse. Mold et al. (2010) found little empirical evidence of a robust relationship between economic conditions in the OECD donor country and following decisions on foreign aid. However, Roodman (2008) graphically showed the declines in total development assistance that resulted from banking crises in Finland, Japan, Norway and Sweden. He calculated that "after the Nordic crisis of 1991, Norway's aid fell 10%, Sweden's 17%, and Finland's 62% from peak to trough after adjusting for inflation" (Roodman, 2008). Given the large number of donors affected by the 2007-2008 global financial crisis we could expect to see sizeable declines in foreign aid. Te Velde and Massa (2009) in a report on the immediate effects of the 2007-2008 financial crisis on ODA document declines in aid volume for some donors and changes

in aid allocations across recipients. They also suggest that donor interest might play a role in aid allocations, rather than recipient needs, in the aftermath of the financial crisis.

A few studies try to empirically estimate the impact of donor financial crises on generosity of donors by studying the levels of total foreign aid before and after a financial crisis in the donor country. Mendoza et al. (2009) explored the impact of economic downturns and financial crises on foreign aid disbursements by the United States over the period 1967-2007. The study found that ODA from the United States declined with increases in the inflation rate and unemployment. However, the declines in aid are not predicted to be very large: based on the estimates in their paper "if the US monthly unemployment rate were to increase to 8 percent at some point in 2009… then US ODA expressed as a share of GNI could go down by 0.02 percentage points" (Mendoza et al., 2009). Increased financial volatility, measured by the standard deviation of the rate of return on the S&P 500, is also associated with lower aid disbursements by the United States and predicted to be of larger magnitude than the effects of increased unemployment and higher inflation. Additionally, the study finds that financial and economic crises are not correlated with increased aid volatility for the US in the years following the turmoil. Frot (2009) investigated the impact of financial crises on donor countries contributions to total foreign aid over the period 1986-1996. By comparing the foreign aid contributions of countries that do and do not experience financial crises, Frot (2009) demonstrated that crisis countries suffered a five percent decline in aid budgets per year after the end of the crisis. Using vector autoregressions this study showed that shocks to GDP in donor countries could have significant and long lasting effects on the levels of total development assistance for several years after the financial crises end. A robust study by Das and Dutta (2013) evaluated the impact of donor financial crises on ODA disbursements, remittances along with other financial transfers and the consequent effect on the economic prosperity of the aid-receiving developing countries over the time period 2004-2010. The paper finds that the global financial crisis commencing in 2007 resulted in a decline in total ODA flowing to developing countries, along with declines in remittances and other financial flows, and this had a strong and negative impact on the developing countries economic growth.

The most comprehensive study of the effects of financial crises on ODA disbursements is by Dang et al. (2013) who studied the impact of banking crises on donor generosity for a panel of 24 donor countries from 1977-2010. Their inquiry found that banking crises in the donor country led to significant declines in net total foreign aid disbursements and that it takes several years for aid levels to recover to their pre-crisis levels. The study also looked at the effects of banking crises on multilateral and bilateral aid but other than determining that both of these aid flows diminish in the aftermath of the financial crises, the paper does not discern differing impacts on each conduit separately.

The current study fills a gap in the existing literature, which largely examines the impacts of donor economic and financial crises on total foreign aid, by seeking to determine if there are differing impacts of systemic banking crises in donor countries on

the levels of bilateral and multilateral foreign aid. This study extends the time period analyzed to 1977-2018 which includes ten years of data since the 2007-2008 financial crisis that impacted more donor countries than any previous financial crisis. Additionally, the paper examines the concessionality of foreign aid in the aftermath of the crisis by looking at the share of tied aid in total aid. To summarize, this study seeks to test the following four hypotheses:

H1: Bilateral ODA declines after systemic banking crises in donor countries.

H2: Multilateral ODA declines after systemic banking crises in donor countries.

H3: Bilateral ODA and Multilateral ODA decline by the same magnitude after systemic banking crises in donor countries.

H4: The share of Tied Aid in total bilateral aid increases after systemic banking crises in donor countries.

4. DATASET AND METHODOLOGY

Empirically testing our hypothesis requires data on foreign aid, financial crises in donor countries, indicators on the health of the donor economy and variables that the current literature suggests are important determinants of donors' contributions to foreign aid. The International Development Statistics Database of the Organization for Economic Cooperation and Development (OECD) makes available data on the foreign aid disbursements of Development Assistance Committee (DAC) donor countries[4]. This database provides information on volume, origin, and types of aid and resource flows from donor countries to developing countries (i.e. bilateral aid) and multilateral institutions. The present study utilizes transfers that encompass bilateral and multilateral aid flows from donors to developing nations and countries in transition, which are concessional in nature and aimed at poverty alleviation and fostering economic development. We utilize data on net ODA disbursements, in constant 2018 US dollars, that consist of concessional loans made to developing countries (excluding repayments on principal) and grants made by twenty-four DAC member countries. We disaggregate foreign aid flows by type of donor, bilateral or multilateral, to capture the channel through which aid is disbursed and enable us to test our hypotheses regarding the disparate effects of economic crises on foreign aid transfers by source. The OECD DAC also reports data on the tying status of bilateral aid commitments i.e. the amount of aid that is tied, partially tied or untied.[5] We utilize this data to construct the variable share

[4] The International Development Statistics (IDS) is available online at https://www.oecd.org/dac/financing-sustainable-development/development-finance-data/

[5] Data on the tying status of foreign aid is available in DAC Table 7b. The DAC only reports commitments (a firm obligation, expressed in writing and backed by the necessary funds, undertaken by an

of tied aid in total bilateral aid commitments. The dependent variable in the statistical models is the log of net bilateral or multilateral ODA disbursements or the share of tied aid in total bilateral aid.

Data on donor financial crises are obtained from a updated database constructed by Laeven and Valencia (2018) and available through the International Monetary Fund.[6] A banking crisis is labeled as systemic if there are "significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations)" and "significant banking policy intervention measures in response to significant losses" (Leaven and Valencia, 2012). During the time period 1977-2018, all but three of the 24 donor countries being studied experienced a systemic banking crisis. We construct a counter variable similar to Dang et al. (2013) that indicates the number of years since the banking crisis hit. This counter variable takes a value of 1 for the year after the start of the crises since foreign aid budgets usually do not change in the year that the crisis begins. If a donor country suffers a second financial crises the counter variable reverts to a value of 1 the year after the new crisis begins. Since the magnitude of the decline in foreign aid might diminish as we move further away from the crisis start year, we include the square of the counter variable in each of the statistical models.

We include control variables that the extensive literature suggests are important determinants of foreign aid. The size of the donor economy is an important determinant of donor generosity. Variables for the log of real GDP per capita (in constant USD) and the log of population of the donor countries are included in each of the statistical models. The scholarship on foreign aid indicates that a higher GDP per capita is associated with larger contributions to development assistance (Alesina and Dollar, 2000; Chong and Gradstein, 2008). There might be economies of scale with respect to the administrative costs associated with giving aid and a minimum threshold for giving aid to recipients, which are more easily met by larger donors (Alesina and Dollar, 2000; Chong and Gradstein, 2008). Therefore, country size, proxied by the total population of the donor country, is expected to be positively associated with contributions to foreign aid. Data on real GDP per capita and population are obtained from the World Development Indicators database maintained by the World Bank. Das and Dutta (2013) and Dang et al. (2013) suggested that there might be some possible dynamism in aid giving by donor countries, where current levels of giving to foreign aid by a donor may depend on past contributions. To account for dynamism in aid contributions we include the lagged value of the dependent variable (i.e. the lag of bilateral or multilateral aid) in each of the empirical models.

official donor to provide specified assistance to a recipient country or a multilateral organization) and not disbursement data for the tying status of aid. The data is also available starting 1979 and there are some missing observations resulting in an unbalanced panel.

[6] The financial crises database is accessible at https://www.imf.org/en/Publications/WP/Issues/2018/09/14/ Systemic-Banking-Crises-Revisited-46232

In addition to the counter variable based on the onset of the systemic banking crises, we also include other variables that might indicate the health of the donor economy such as the unemployment rate, government expenditure as a share of GDP and exports from the donor country. We expect that a higher unemployment rate, indicating economic turmoil in the donor country, to be associated with lower levels of net ODA disbursements, whether given through bilateral or multilateral channels. Data on the unemployment rate is obtained from the OECD Economic database.[7] Round and Odedokun (2004) propose that since aid allocations are part of the state budget, higher government expenditures should be associated with higher levels of foreign aid giving by donors. We obtain data on the central governments expenditure as a share of GDP from the World Development Indicators database. Boschini and Olafsgard (2007) find that greater openness to trade in the donor country is associated with more generous donations to foreign aid. We draw data on the merchandise exports as a share of GDP, as a measure of trade with the rest of the world, from the World Development Indicators database. We expect the share of exports in GDP to be positively associated with levels of foreign aid disbursements by the donor country.[8]

We also include year dummies for the entire time period in each of the statistical models. This enables us to capture any year specific fluctuations in foreign aid disbursements that affect all donors and are not dependent on economic shocks to the economy of a single donor. Additionally, by employing panel data empirical models we control for any country specific effects, perhaps institutional features that are unique to a particular donor country, which influence the level of foreign aid giving.

Our empirical model is some variation of the following four equations:

$$LogNetTotalODA_{it} = \alpha + \beta_1 YearsSinceCrisis_{it} + \beta_2 YearsSinceCrisisSquared_{it} + \gamma X_{it} + \mu Z_{it} + \lambda_t + \varphi_i + \varepsilon_{it},$$

or

$$LogNetBilateralODA_{it} = \alpha + \beta_1 YearsSinceCrisis_{it} + \beta_2 YearsSinceCrisisSquared_{it} + \gamma X_{it} + \mu Z_{it} + \lambda_t + \varphi_i + \varepsilon_{it},$$

or

$$LogNetMultilateralODA_{it} = \alpha + \beta_1 YearsSinceCrisis_{it} + \beta_2 YearsSinceCrisisSquared_{it} + \gamma X_{it} + \mu Z_{it} + \lambda_t + \varphi_i + \varepsilon_{it},$$

[7] The OECD economic database is accessible online at http://stats.oecd.org/

[8] Appendix 2 includes a description of the data sources for the variables used in the empirical analysis.

or

$$ShareTiedAid_{it} = \alpha + \beta_1 YearsSinceCrisis_{it} + \beta_2 YearsSinceCrisisSquared_{it} + \gamma X_{it} + \mu Z_{it} + \lambda_t + \varphi_i + \varepsilon_{it}.$$

The dependent variable is either the log of net total, bilateral or multilateral ODA or the share of tied aid for the donor country in each time period. The two independent variables of most interest are the counter variables that tally the years since the start of the systemic banking crisis and the square of this counter term. X_{it} is a vector of control variables including the log of donor GDP per capita, donor population, lag of multilateral or bilateral aid from the donor, that are often included in studies of foreign aid. Z_{it} is a vector of variables that reflect the economic performance of the donor country, such as the unemployment rate, share of government expenditure in GDP and export performance. λ_t represent the year dummies while φ_i represent the country specific fixed effects. The error term for all three models is given by ε_{it}. For each of the models listed above we employ one-step GMM regressions for panel data with country fixed effects and robust standard errors clustered by country, to correct for heteroscedasticity and within panel serial correlation.[9]

5. IMPACT OF PAST DONOR FINANCIAL CRISES ON BILATERAL AND MULTILATERAL AID

The paper first presents the results for net *total* ODA before disaggregating by the channel through which aid is disbursed. Table 1 presents the results associated with the one-step GMM statistical model for total ODA for the 1977-2010 time period that is identical to the time period covered in the Dang et al (2013) study. All model specifications include dummy variables for the year to capture any year-specific variations in aid giving that affect all donors.[10] In Table 1 columns (1) – (4) present the coefficients associated with GMM regression analysis for panel data with robust standard errors. The key explanatory variables are the counter variables for the systemic banking crisis, Years Since Crisis Start and Square of Years Since Crisis Start. The coefficient associated with the Years Since Crisis Start is negative indicating that total aid levels drop after the onset of the financial crisis and the coefficients are statistically significant. The Square of Years Since Crisis Start coefficient is positive showing that

[9] Das and Dutta (2013) and Dang et al. (2013) employ similar dynamic panel data models for their empirical specifications.

[10] While each of the statistical models includes year dummies we do not present these coefficients in the results section in the interest of space. The expanded regression table, including the coefficients for the year dummies, is available from the author upon request.

there is some tendency for aid levels to revert back to the pre-crisis trend line and once again the coefficients for this variable are statistically significant across the various model specifications. The control variables are largely in the expected direction. A higher donor GDP per capita is associated with higher contributions to total foreign aid and these coefficients are statistically significant. As expected a larger donor population is correlated with higher levels of bilateral foreign aid disbursements. The coefficient associated with lagged value of the log of net bilateral aid is positive and highly significant indicating that past contribution levels influences the amount of aid giving in the current period and this provides support for using dynamic panel data modeling. Contrary to what we expected the unemployment rate is positively associated with the donations to total aid and is statistically significant. Since aid is part of the government's budget, as spending by governments rises it also increases outlays for foreign aid. Consistent with this argument we find that the coefficient on government expenditure as a share of GDP is positive and significantly associated with contributions to total ODA. Trade openness, as proxied by the share of exports in GDP, appears to be positively correlated with total foreign aid, but this coefficient is not statistically significant. The findings for the truncated time period of 1977-2010 are consistent with the findings in earlier study by Dang et al. (2013) that covered the same time period. While Das and Dutta (2013) consider a shorter time period from 2004-2010 they reach similar conclusions regarding reductions in total ODA after donor financial crises.

Table 1. Impact of Systemic Financial Crises on Total ODA (1977-2010)

Variable	(1)	(2)	(3)	(4)
Years Since Crisis Start	-0.0187*	-0.0394***	-0.0268***	-0.0184*
	(0.0105)	(0.0148)	(.01125)	(0.0107)
Square Years Since Crisis Start	0.0011***	0.0018***	0.0013***	0.0011***
	(0.0003)	(0.0005)	(0.0003)	(0.0003)
Lag Log Net Total ODA	0.5576***	0.4959***	0.4624***	0.5482***
	(0.0699)	(0.0823)	(0.0758)	(0.0688)
Log GDP Per Capita	1.1524***	1.6882***	1.5752***	1.1147***
	(0.2185)	(0.3126)	(0.2679)	(0.2183)
Log Population	0.5016	0.7232	0.9093	0.5031
	(0.6392)	0.6045	(0.6957)	(0.6117)
Unemployment Rate		0.0222***		
		(0.0083)		
Govt. Exp./ GDP			0.0441***	
			(0.0118)	
Exports/GDP				0.0023
				(0.0018)
Wald Test p value	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Observations	600	564	600	600
Number of Donor Countries	24	24	24	24

Notes: Results are from a one-step GMM with robust standard errors in parentheses. The dependent variable is the logarithm of Net Total ODA in country i in time period t. * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level.

Several additional years have passed since the 2007 global financial crisis and in Table 2 we present the findings for the impact on financial crises in donor countries on total foreign aid for the expanded period 1977-2018. While the coefficient associated with the Years Since Crisis Start is negative indicating that total aid levels drop after the onset of the financial crisis, these coefficients are not statistically significant across the various model specifications. The Square of Years Since Crisis Start coefficient is positive showing that there is some tendency for aid levels to revert back to the pre-crisis trend line, with this coefficient being statistically significant across a few model specifications. These findings suggest that taking into account additional years of data since the global financial crisis that started in 2007, that impacted more donor countries than any earlier financial crises in the studied time period, presents a more nuanced picture that needs further analysis. The coefficient associated with the lagged total aid contributions are once again positive and highly statistically significant indicating inertia in the levels of aid given over time. The other control and explanatory variables are in the expected direction.

Table 2. Impact of Systemic Financial Crises on Total ODA (1977-2018)

Variable	(1)	(2)	(3)	(4)
Years Since Crisis Start	-0.0052	-0.0046	-0.0051	-0.0053
	(0.0039)	(0.0041)	(0.0036)	(0.0042)
Square Years Since Crisis Start	0.0003**	0.0003	0.0003*	0.0003*
	(0.0001)	(0.0002)	(0.0002)	(0.0002)
Lag Log Net Total ODA	0.6799***	0.6888***	0.6608***	0.6794***
	(0.0249)	(0.0446)	(0.0465)	(0.0252)
Log GDP Per Capita	0.8176***	0.7834***	0.8975***	0.8184***
	(0.0988)	(0.1983)	(0.1572)	(0.0998)
Log Population	0.1880	0.1837	0.2541	0.1807
	(0.1828)	(0.2499)	(0.2841)	(0.1860)
Unemployment Rate		-0.0033		
		(0.0046)		
Govt. Exp./ GDP			0.0117	
			(0.0086)	
Exports/GDP				0.0001
				(0.0008)
Wald Test p value	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Observations	888	852	888	888
Number of Donor Countries	24	24	24	24

Notes: Results are from a one-step GMM with robust standard errors in parentheses. The dependent variable is the logarithm of Net Total ODA in country i in time period t. * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level.

To understand whether the channel through which aid is given matters in the expanded time period 1977-2018 we disaggregated the aid data to focus separately on bilateral and multilateral aid flows. The results associated with the statistical models for net *bilateral* ODA disbursements are presented in Table 3. The coefficient associated with the Years Since Crisis Start is negative in only one model specification and positive in the others. Across all specifications the coefficient for Years Since Crisis Start is not statistically significant indicating that bilateral aid levels do not drop after the onset of the financial crisis in the donor country. The Square of Years Since Crisis Start coefficient while positive across most model specifications is not statistically significant. The inclusion of additional years of data since the 2007 financial crises appears to suggest that bilateral foreign aid does not decline in the years following the onset of the crisis. The control variables are largely in the expected direction and statistically significant. A higher donor GDP per capita is associated with higher contributions to bilateral foreign aid and a larger donor population is correlated with higher levels of bilateral foreign aid disbursements. The coefficient associated with lagged value of the log of net bilateral aid is positive and highly significant indicating that past contribution levels influences the amount of aid giving in the current period. The unemployment rate is negatively associated with the donations to bilateral aid and is statistically significant. Since aid is part of the government's budget, as spending by governments rises it also increases outlays for foreign aid. Consistent with this argument we find that the coefficient on government expenditure as a share of GDP is positive and significantly associated with contributions to bilateral ODA. Trade openness, as proxied by the share of exports in GDP, appears to be negatively correlated with bilateral foreign aid, but this coefficient is not statistically significant.

Table 4 presents the results associated with the statistical models for net *multilateral* ODA disbursements for the expanded 1977-2018 time period. The counter variable that captures the number of years since the start of the banking financial crisis is negative and highly statistically significant across several model specifications. Additionally, the coefficient for the square of the counter variable is positive and statistically significant. Both these coefficients suggest that after the onset of a systemic banking crisis multilateral foreign aid declines but eventually begins to revert back towards the pre-crisis trend line. Past contributions to multilateral aid appear to be a significant determinant of the current levels of multilateral aid. The variables associated with the health of the donor economy, such government expenditure as a share of GDP and exports as a share of GDP, are largely in the expected direction. Contrary to what we expect the unemployment rate is positively associated with contributions to multilateral aid.[11]

[11] If we drop real GDP per capita from the regression model, since real GDP per capita and the unemployment rate are highly correlated, then the coefficient associated with the unemployment rate is negative but loses statistical significance.

Table 3. Impact of Systemic Financial Crises on Bilateral ODA (1977-2018)

Variable	(1)	(2)	(3)	(4)
Years Since Crisis Start	-0.0003	0.0049	0.0004	0.0023
	(0.0052)	(0.0061)	(0.0051)	(0.0055)
Square Years Since Crisis Start	0.0002	-0.0000	0.0002	0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Lag Log Net Bilateral ODA	0.7018***	0.7024***	0.6858***	0.7036***
	(0.0223)	(0.0416)	(0.0239)	(0.0224)
Log GDP Per Capita	0.9106***	0.7182***	1.0016***	0.9408***
	(0.1272)	(0.2504)	(0.1367)	(0.1293)
Log Population	0.5519	0.5998*	0.6694***	0.6557**
		(0.3682)	(0.2535)	(0.2599)
Unemployment Rate		-0.0168***		
		(0.0054)		
Govt. Exp./ GDP			0.0143*	
			(0.0083)	
Exports/GDP				- 0.0015
				(0.0011)
Wald Test p value	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Observations	888	852	888	888
Number of Donor Countries	24	24	24	24

Notes: Results are from a one-step GMM with robust standard errors in parentheses. The dependent variable is the logarithm of Net Total ODA in country i in time period t. * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level.

Table 4. Impact of Systemic Financial Crises on Multilateral ODA (1977-2018)

Variable	(1)	(2)	(3)	(4)
Years Since Crisis Start	-0.0133**	-0.0176**	-0.0126*	-0.0177***
	(0.0059)	(0.0080)	(0.0077)	(0.0063)
Square Years Since Crisis Start	0.0004*	0.0006**	0.0003	0.0006**
	(0.0002)	(0.0003)	(0.0003)	(0.0002)
Lag Log Net Multilateral ODA	0.3891***	0.3724***	0.3745***	0.3794***
	(0.0336)	(0.0684)	(0.0621)	(0.0338)
Log GDP Per Capita	1.1678***	1.3786***	1.2089***	1.1376***
	(0.1442)	(0.2771)	(0.2365)	(0.1443)
Log Population	-0.8956***	-0.8509	-0.7571	-1.0019***
	(0.2743)	(0.5796)	(0.5854)	(0.2783)
Unemployment Rate		0.0129**		
		(0.0065)		
Govt. Exp./ GDP			0.0227**	
			(0.0114)	
Exports/GDP				0.0028*
				(0.0014)
Wald Test p value	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Observations	880	844	880	880
Number of Donor Countries	24	24	24	24

Notes: Results are from a one-step GMM with robust standard errors in parentheses. The dependent variable is the logarithm of Net Total ODA in country i in time period t. * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level.

Based on the regression results in Table 3 for the expanded time period 1977-2018 we do not find evidence to support *H1* regarding declines in bilateral ODA after financial crises in the donor countries. The regression results presented in Tables 4 provide evidence that multilateral aid levels experience statistically significant declines in the aftermath of systemic banking crises in the donor countries, which is consistent with hypothesis *H2*. To understand the magnitude of the declines in bilateral and multilateral ODA and the rapidness of the recovery to the pre-crisis trend line we plot the coefficients from column (1) of both Table 3 and Table 4 for the counter variable and its square in Figure 2. The statistical model suggests that bilateral aid continues to increase, albeit gradually, in the years after the donor financial crisis. However, for aid flowing through multilateral institutions the decline is more significant, bottoming out at 10.7% around 17 years after the start of the crisis, and taking much longer to recover. This illustrates that multilateral aid experiences a more significant and prolonged reduction in aid levels as compared to bilateral aid, which provides support to reject hypothesis *H3*. The estimates from the regression models provide strong support for the argument that donors who experience a systemic banking crisis, tend to cut their contributions more substantially to multilateral institutions than direct bilateral aid flows, possibly with a view to being able to pursue their strategic interests by focusing on bilateral aid.

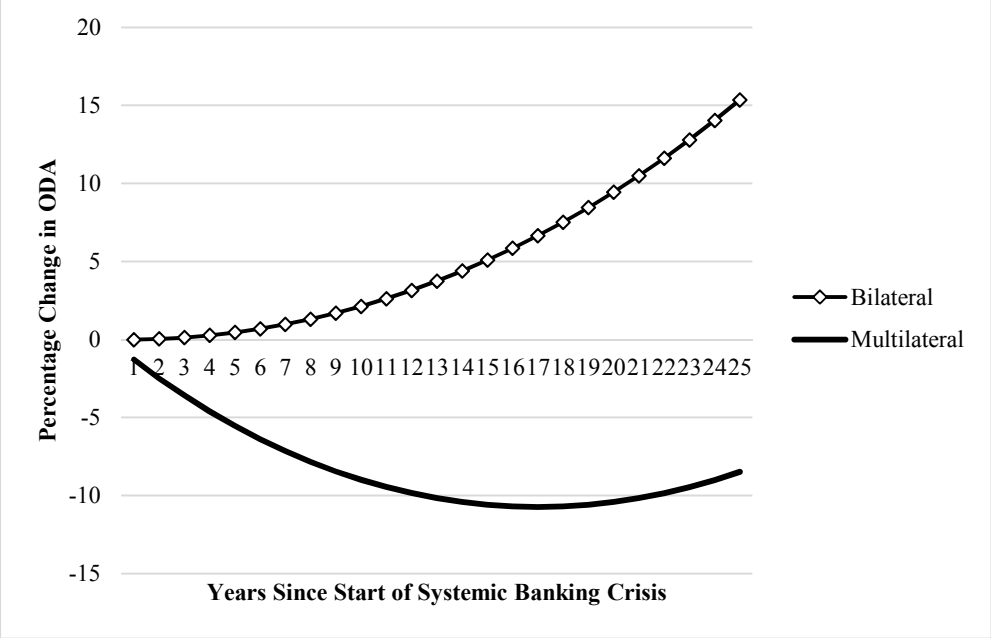


Figure 2. Change in Bilateral and Multilateral Aid after a Financial Crisis in the Donor Country

Table 5. Impact of Systemic Financial Crises on Share of Tied Aid in Total Bilateral ODA (1977-2018)

Variable	(1)	(2)	(3)	(4)
Years Since Crisis Start	0.0196**	0.0190**	0.0196**	0.0178*
	(0.0089)	(0.0091)	(0.009)	(0.0090)
Square Years Since Crisis Start	-0.0005*	-0.0005	-0.0005*	-0.0004
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Log GDP Per Capita	0.0564	0.0830	0.0582	0.0362
	(0.1650)	(0.1743)	(0.1719)	(0.1617)
Log Population	0.3852	0.5110	0.3881	0.3615
	(0.3409)	(0.3608)	(0.3488)	(0.3506)
Unemployment Rate		0.0036		
		(0.0099)		
Govt. Exp./GDP			0.0009	
			(0.0116)	
Exports/GDP				0.0013
				(0.0017)
Constant	-6.7258	-8.7087	-6.8111	-6.1649
	(5.8358)	(5.8163)	(6.1471)	(6.0588)
Observations	785	765	785	785
Number of Donor Countries	24	24	24	24
R-squared (overall)	0.1315	0.1216	0.1304	0.1385

Notes: Results are from a one-step GMM with robust standard errors in parentheses. The dependent variable is the logarithm of Net Total ODA in country i in time period t. * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level.

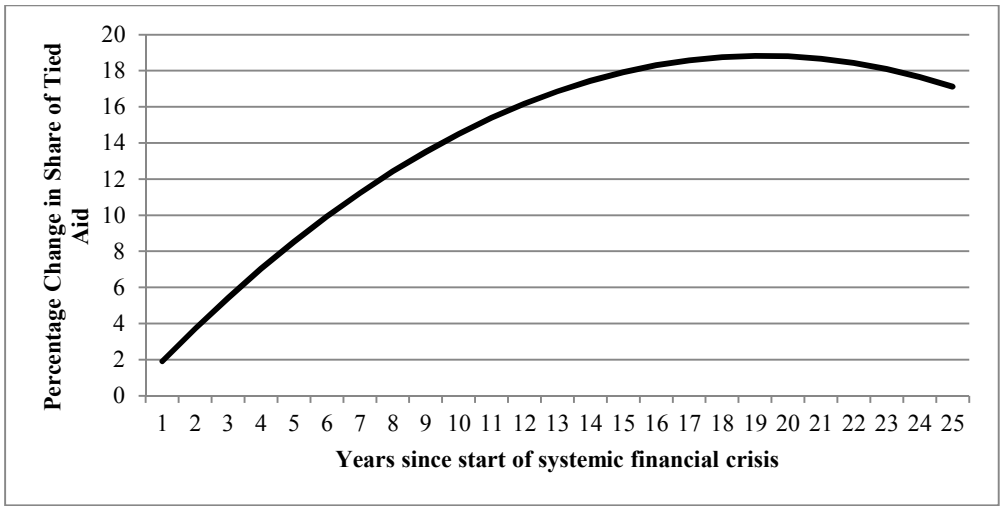


Figure 3. Change in Share of Tied Aid after a Systemic Banking Crisis

Next, we examine the impact of the systemic banking crises in the donor country on the tying status of bilateral foreign aid. Table 5 reports the results from the fixed effects model with the Share of Tied Aid as the dependent variable, with all models including clustered robust standard errors and year dummies. The coefficient on the Years Since Crisis Start is positive and statistically significant at the 5% level or higher in three model specifications, indicating an increase in the level of tied aid in the years following the crisis. Alternatively, the coefficient associated with the Square of Years Since Crisis Start is negative and weakly statistically significant, indicating that the share of tied aid while rising initially begins to decline as we move further away from the crisis. The level of donor income appears to be positively correlated with the share of tied aid indicating that richer donors tend to untie their aid, but these coefficients are not statistically significant. The log of population of the donor country is also positively correlated with the share of tied aid, but not statistically significant. The variables associated with the health of the economy (such as the unemployment rate, government expenditure and share of exports in GDP) are not statistically significant. Figure 3 shows the trajectory of the share of tied aid, on average, post the systemic banking crisis. Using the coefficients from column (1) in Table 5, in the years following the crisis the share of tied aid rises steadily and peaks at 18.48% nineteen years after the start of the crisis. This provides support for the argument that donors when faced with sharp declines in real GDP and employment after a financial crisis, tend to increase the level of tied aid to potentially provide support to domestic businesses and special interest groups in the donor country.

6. CONCLUSION

Financial crises in donor countries have severe effects on the economy of the donor country and can impact contributions to foreign aid. This study contributes to the literature on foreign aid and financial crises by analyzing the impacts of systemic banking crises on disaggregated aid (viz. bilateral and multilateral) and the tying status of bilateral aid. Using data on 24 donor countries from 1977-2018, we find strong evidence of declines multilateral aid following systemic banking crises in donor countries but no such corresponding decline in bilateral aid flows to developing countries. The empirical analysis reveals that multilateral aid suffers more severe and prolonged declines than bilateral aid. This provides support for the argument that donors prioritize bilateral aid over multilateral aid after financial crises, perhaps as a way to perpetuate strategic interests of the donors over the needs of the recipient countries. We find some evidence of donors increasing the tying status of aid in the years following a systemic banking crisis. Tied aid tends to benefit commercial businesses and special interest groups in the donor country and reduces the concessionality and thereby the effectiveness of foreign aid in the recipient country. Given that donor financial crises often directly impact the economies of developing countries, this reduction in the

concessionality of foreign aid by increasing the tying status of aid could exacerbate the effects on these already fragile economies.

APPENDIX

Table A1. Systemic Banking Crisis in Donor Countries

Country	Systemic Banking Crisis (Start and End Year)	Country	Systemic Banking Crisis (Start and End Year)
Australia	-	Austria	2008-2012
Belgium	2008-2012	Canada	-
Denmark	2008-2009	Finland	1991-1995
France	2008-2009	Germany	2008-2009
Greece	2008-2012	Iceland	2008-2012
Ireland	2008-2012	Italy	2008-2009
Japan	1997-2001	Korea	1997-1998
Luxembourg	2008-2012	Netherlands	2008-2009
New Zealand	-	Norway	1991-1993
Portugal	2008-2012	Spain	1977-1981, 2008-2012
Sweden	1991-1995, 2008-2009	Switzerland	2008-2009
United Kingdom	2007-2011	United States	1988-1988, 2007-2011

Source: Laeven and Valencia (2018)

Table A2. Data Sources

Variable	Source
Net ODA Disbursements	DAC Table 2A, OECD
Share of Tied ODA Commitments	DAC Table 7B, OECD
Banking Crises beginning and ending dates	Laeven and Valencia (2018)
GDP per capita (constant USD)	World Development Indicators, World Bank
Total Population	World Development Indicators, World Bank
Government Expenditure as share of GDP	World Development Indicators, World Bank
Unemployment Rate	OECD
Exports share of GDP	World Development Indicators, World Bank

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Mailing Address: Raechelle Mascarenhas, Department of Economics, Willamette University, 900 State Street, Salem, OR 97301, U.S.A. Email: rmascare@willamette.edu.

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