

Financial Sector Foreign Aid and Financial Intermediation

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Abstract

The effectiveness of foreign aid is typically measured by the effect of aid on economic growth. Prior literature provides ambiguous results on this effect partly due to the aggregation of aid to different sectors and the small amount of foreign aid relative to the economy in most countries. Because growth in financial intermediation and financial markets has been shown to play a key role in spurring economic growth, in this paper we focus on aid to the financial sector and seek to identify the causal effects of foreign aid to the financial sector on financial intermediation. Using fixed effects OLS and system GMM methods for a panel of countries from 1995 to 2013, we find that foreign aid to the financial sector primarily reduces claims on the government sector and has no effect on claims to the private sector, liquid liabilities of the banking sector and interest rate spread between borrowing and lending rates. This effect persists even after controlling for country institutional characteristics, such as trade openness and rule of law. Thus foreign aid reduces the need for public sector borrowing but does not appear to have any benefits for financial intermediation in the private sector. We verify that the relationship is not spurious by using overall foreign aid and aid to the health sector for falsification tests.

JEL classification: G21; G28; O16; O40; O43; P20

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1. Introduction

The effectiveness of foreign aid remains a controversial question for providers and recipients of aid and for researchers and policy makers. Prior literature examining the role of foreign aid on economic growth has found contradictory results (Radelet, 2006). Some find that foreign aid is associated with more short-term and long-term growth (Burnside and Dollar, 2000; Clemens et al, 2004; Dalgaard et al, 2004; Arndt et al, 2009; Minoiu and Reddy, 2010), while others find no relation between aid and future economic development (Easterly, 2003; Rajan and Subramanian, 2008), or negative effects of aid on growth (Easterly, 1999). Explanations offered for these conflicting findings range from the level of aid analysis, micro versus macro, to model specification and endogeneity issues.

Some studies take a different approach to measuring aid effectiveness by looking at smaller objectives of sectoral aid, such as a reduction of poverty (Mosley et al, 2004), change in government size (Boone, 1996), or decrease in infant mortality rate (Mishra and Newhouse, 2009). Taking this approach may be less ambiguous and more accurate in measuring outcomes of different types of foreign aid, and can help to create more effective and efficient policies. In this study, we take a similar approach by examining foreign aid to the financial sector, and its effect on the development of financial intermediation in the recipient country.

In contrast to studies on narrow aid targets such as poverty reduction and the infant mortality rate, development of financial intermediation in a recipient country has a more direct effect on economic growth. The aid-growth literature finds that local financial development can spur general aid-growth relations and improve general aid efficiency (Nkusu and Sayek, 2004), while liberalization of recipient country's financial systems improves the effectiveness of overall foreign aid (Ang, 2010). More importantly, a huge literature shows that the level of development and

structure of the financial sector has a direct role in promoting long-term income growth. Early studies by Goldsmith (1969), McKinnon (1973), and Shaw (1973) offer evidence on the role financial intermediaries have on economic growth without establishing a causal link. Later studies by King and Levine (1993a), Levine and Zervos (1998), Rousseau and Wachtel (1998), Levine, Loayza, and Beck (2000), Beck, Demirguc-Kunt, and Levine (2000), Levine (2003), Calderon and Liu (2003), and Hassan, Sanchez and Yu (2011) establish a causal link, and show that the intensity and exogenous components of financial intermediary development are positively associated with economic growth for developed as well as low- and middle-income countries.

Beck, Levine and Loayza (2000) delve deeper into the relation between financial development and economic growth, and examine which measures of financial intermediation (credit to the private sector or liquid liabilities) affect which factor of economic development: economic growth, total factor productivity growth, physical capital accumulation, and private savings rates. In particular, they contrast two views on how financial intermediation can affect growth. The traditional view is that capital accumulation is the key factor underlying economic growth, thus better financial intermediation influences growth primarily by raising rates of domestic savings and attracting foreign capital. The second view is that financial systems affect growth through the effective allocation of savings and not necessarily by altering the rate of savings, which in turn impacts productivity growth and technological change. The authors emphasize the choice of financial intermediation measures, and use credit to the private sector relative to GDP as the primary measure, along with two additional measures – the liquid liabilities of the financial system relative to GDP and credits by deposit money banks to the private sector as a share of GDP. Beck et al. (2000) find a robust and positive link between financial intermediary development and both real per capita GDP growth and total factor productivity growth. However, the authors find

ambiguous results on the effect of financial intermediation on physical capital growth and savings, concluding that the results are consistent with the second view on financial development and growth: financial intermediaries affect economic development primarily by influencing total factor productivity growth.

Given the established link between financial intermediation and economic growth, we focus on the relation between foreign aid to the financial sector and the level of financial intermediation in the recipient country. As Beck et al. (2000) show, different measures of financial intermediation capture different roles that financial intermediation plays in an economy, so we employ different measures of financial intermediation development to capture these roles. The first three measures we use are: 1) liquid liabilities, 2) claims of the public sector, which represents government sector credit and excludes private sector, and 3) claims of the private sector, all relative to GDP. The liquid liabilities measure captures the effects of capital accumulation supporting the view that financial intermediaries influence growth primarily by raising domestic savings rates and attracting foreign capital. Public credit and claims on the private sector relative to GDP capture the effects of allocation of savings and effectiveness of intermediaries in doing so, supporting the second view that financial intermediaries impact productivity growth and technological change through efficient allocation of savings. Public sector claims would capture the effectiveness of capital allocation for public sector use. Claims on the private sector includes credits issued by deposit money banks and other financial intermediaries, the monetary authority, and government agencies, to the private sector. This measure captures effectiveness of capital allocation in private sector. Following Agapova and McNulty (2016), we add a fourth measure – the interest rate spread between the borrowing and lending bank interest rate, measured as the difference between representative average market rates in private-sector transactions between loans to businesses and

demand, time, and savings deposit interest rates. Their research suggests that the spread is a market measure of banking system efficiency.

A study that is related to our work is a paper by Cull (2001), which examines the effectiveness of financial sector reforms in foreign countries that were financed by Financial Sector Adjustment Loans provided by the World Bank between 1985 and 1996. He finds diminishing marginal returns to World Bank financial sector lending operations as a country's financial sector becomes increasingly developed. In comparison, we examine all foreign aid to the financial sector, not only from the World Bank, regardless of whether they are tied to a specific reform. We also cover a larger sample of countries and a longer period of time.

Foreign aid to the financial sector of a recipient country comes from the comprehensive AidData Core Research Release 3.1 database of all foreign aid that includes official development assistance, other official flows, Equity Investments, and Export Credits where available. Financial sector aid is identified based on the three digit AidData code category 240 – Banking and Financial Services, where it is categorized into grant, loan or other flows. Project level flows are aggregated into annual aid flows for each country.

We use advanced econometric techniques to control for three drawbacks of cross-country regressions utilized in prior similar studies. First, some prior studies do not exploit the time-series dimension of the data, as many of them use cross-sectional data aggregated over a period of time. Second, prior studies' estimates may be biased because of the omission of country-specific effects. Third, cross-country regressions do not control for the endogeneity of the regressors. We demonstrate our results using fixed effects panel estimators, which, by focusing on within country changes over time, can address potential selection bias as well as country level omitted variable bias. Then, in addition to using fixed effects panel estimation techniques, we estimate the relation

between foreign aid to the financial sector and the development of financial intermediation using the system generalized method of moments (GMM) approach that addresses causality among other issues. As a further robustness check of our estimates, we also conduct falsification tests using overall financial aid and aid to the health sector and show that those do not impact financial development.

We find that foreign aid to the financial sector reduces public sector credit as a share of GDP. Public sector credit is the aggregate of Claims on Central Bank, Net Claims on Central Government and Claims on Other Sectors, and excludes claims to the private sector. It is a measure of financial sector credit to the government sector. The negative effect of foreign aid on government sector credit may not necessarily signal adverse effects for the economy as it may reduce the crowding out effect on private investment. We find preliminary evidence that control mechanisms in place for some aid projects can also impact the effects of aid: 1) the proportion of loans within the aid package, as opposed to grants, and 2) the proportion of tied aid, i.e. contingent aid, have positive associations with public credit as a share of GDP. We also find that aid has no effect on claims to the private sector, which is a measure of effective allocation of capital in the private sector, liquid liabilities of the banking sector, which is a measure of available savings and capital to economy, and the interest rate spread, which is a measure of banking sector efficiency. The impact of foreign aid to the financial sector on financial intermediation can be interpreted as both: 1) helpful in the case of reduction of inefficient use of credit to the public sector, and 2) neutral in the case of effectiveness of capital allocation through financial intermediation in private sector (claims on the private sector), on amount of savings and capital accumulation (liquid liabilities) and efficiency of banking sector (bank interest rate spread). Our results are in line with general foreign aid studies, which find that foreign aid may have a positive, neutral or negative effect on recipient country

outcomes. For example, Burnside and Dollar (2000), Clemens et al (2004), Dalgaard et al (2004), Arndt et al (2009), Minoiu and Reddy (2010) find positive effects of total foreign aid on economic growth, Easterly (1999) finds negative effects of total foreign aid on economic growth, while Easterly (2003) and Rajan and Subramanian (2008) find no relation between aid and future economic development. Somewhat consistent with studies on targeted sectoral foreign aid, such as Mosley et al (2004) and Mishra and Newhouse (2009), we find that foreign aid targeting the financial sector may be effective in use of financial intermediation in the public sector, but neutral in the private sector. Our study also contributes to the literature that examines factors affecting financial sector development in a country. Prior literature, such as Levine, Loayza, and Beck (2000), McNulty, Harper and Pennathur (2007), Harper and McNulty (2008), and Agapova and McNulty (2016), did not examine whether foreign aid can affect the development of financial intermediation.

The rest of the paper is organized as follows. Section 2 describes the data and variables. Section 3 describes the methodology and empirical analysis, while section 4 concludes.

2. Data and Variables

The project level data on foreign aid to the financial sector come from AidData Core Research Release 3.1 database as reported on April 2016 (AidData.org). The dataset covers 96 donors and includes official development assistance (ODA), other official flows (OOF), Equity Investments, and Export Credits. We use data from 1995-2013 as that is the period with greatest availability of data. Financial sector data include 16,746 projects using the three digit AidData code category

240 – Banking and Financial Services.¹ Aid flows are categorized into grants, loan or other flows. We aggregate the project level flows into annual aid flows for each country.

We use the IMF's International Financial Statistics (IFS) to obtain banking system characteristics – lending rates, deposit rates, demand deposits, time and savings deposits, domestic assets, such as claims on the central bank, net claims on the central government, and claims on other sectors, including claims on the private sector, exchange rates, and gross domestic product (GDP). Data on inflation, population, and trade volume come from the World Bank's World Development Indicators (WDI) Database; rule of law comes from the World Bank's Worldwide Governance Indicators database. Information on sovereign debt default is compiled from several sources: Gennaioli et al (2010), Kochanova and Caceres (2012), Liu et al. (2017), and Witte et al (2018).

We identify 141 countries (119 developing and 22 transition economies) from the IFS database for the period of 1995 – 2013.² After merging the IFS sample with the aid data, we obtain 1,896 country-year observations, with 1,602 for developing and 294 for transition economies over 1995-2013. Table 1 reports the distribution of financial aid by the economy type.³ Developing countries averaged 6.23 projects per year with \$17.11 million (\$92.65 million) per project (country).

¹ The three digit code has seven subcategories based on five digit code classification (sample average as percentage of total financial sector aid in real US dollars is in parentheses): 24000 – Banking and financial services, combinations of activities (37.1%); 24005 – Banking and financial services, purpose unspecified or does not fit under any other applicable codes (5.8%); 24010 – Financial policy and administrative management (11.5%); 24020 – Monetary institutions (32.8%); 24030 – Formal sector financial intermediaries (11.2%); 24040 – Informal/semi-formal financial intermediaries (1.2%); and 24081 – Education/training in banking and financial services (0.4%).

² Similar to prior studies that use the database, we omit observations prior to 1995 due to sporadic coverage of the countries.

³ Very few developed countries received financial sector foreign aid over the period, so we omit developed countries from our analysis.

Transition economies had on average 7.06 projects per year with \$57.41 million (\$124.23 million) per project (country). Appendix Table A1 lists the 85 countries in our final sample.

<Table 1 should be here>

Figure 1 illustrates the time trend of total foreign aid and aid to the financial sector in billions of 2011 US\$, while Figure 2 presents that information as a percentage of GDP. We observe a positive trend for total foreign aid measured in real terms and as percentage of GDP albeit with significant volatility. Aid peaks are seen in 2002 and 2010. Financial sector aid in real terms and as percentage of GDP is relatively flat over the period with no trend. Though, it also experiences a couple of peaks, measured in real terms, in 2000 and 2010. Those periods correspond to the internet bubble and real estate bubbles respectively.

<Figure 1 should be here>

<Figure 2 should be here>

2.1. Measures of Financial Intermediation Development

A variety of measures of financial intermediation are found in the literature. Some prior studies focus only on one preferred measure of financial intermediation development, such as private claims/GDP (Beck, Demirguc-Kunt, and Levine, 2000; and Gennaioli, Martin and Rossi, 2014). Others employ a broader definition of financial intermediation development using balance sheet measures – bank system size through bank total assets per capita, Liquid Liabilities/GDP, Domestic Credit/GDP, Claims on the Private Sector/GDP (King and Levine, 1993a, 1993b; Levine and Zervos, 1998; Levine, 1997, 2003; McNulty, Harper, and Pennathur, 2007; Harper and McNulty, 2008). Agapova and McNulty (2016) suggest a new measure for financial intermediation

to capture the efficiency of the banking system – the spread between bank borrowing and lending rates.

To capture different roles that financial intermediation can play in an economy (Beck, Levine and Loayza, 2000), we employ four different measures of financial intermediation development: Liquid Liabilities/GDP (*LiqLiab/GDP*), Public Sector Credit/GDP (*PublicCredit/GDP*), Claims on the Private Sector/GDP (*ClaimPrivate/GDP*), and the spread between bank borrowing and lending interest rates (*Spread*). The liquid liabilities measure is a size measure that captures the effects of capital accumulation, consistent with the traditional view that financial intermediaries influence economic growth primarily by raising rates of domestic savings and attracting foreign capital (King and Levine, 1993a; King and Levine, 1994; Fry, 1995; Bandiera et al., 2000; and Easterly and Levine, 1999). However prior studies (Diamond, 1984; Boyd and Prescott, 1986; Williamson, 1987; Greenwood and Jovanovic, 1990; King and Levine, 1993b, Beck, Levine and Loayza, 2000), have shown that beyond an expansion of savings, it is the conversion of savings into investment via the financial sector that results in economic growth. Claims on the private and public sector relative to GDP capture the effects of allocation of savings for investment purposes and the effectiveness of intermediaries in doing so, consistent with the second view that financial intermediaries impact productivity growth and technological change through efficient allocation of savings. Credit to the public sector captures the allocation of capital for public sector use. Claims on the private sector includes credits issued by deposit money banks and other financial intermediaries, the monetary authority, and government agencies, to the private sector, and measure the effectiveness of capital allocation in the private sector. Finally we use bank interest rate spread as a market measure of banking system efficiency or lower costs of financial transactions.

We use the IMF's International Financial Statistics to obtain directly or calculate the measures.⁴ Liquid Liabilities/GDP is constructed as a sum of Transferable Deposits included in Broad Money (Line 24), Other Deposits Included in Broad Money (line 25) and Deposits Excluded From Broad Money (line 26b), all in national currency, divided by the average exchange rate of national currency to the US dollar and divided by GDP. Domestic Credit/GDP is calculated as a sum of Claims on Central Bank (line 20), Net Claims on Central Government (Line 22an) and Claims on Other Sectors (line 22s), excluding claims on the private sector, all in national currency, divided by the average exchange rate of the national currency to the US dollar and divided by GDP.⁵ Claims on the Private Sector/GDP is calculated as Claims on Private Sector (line 22d) in national currency divided by the average exchange rate of national currency to the US dollar and divided by GDP.⁶ Interest rate spread between lending and borrowing rates (*Spread*) is the difference between a bank's lending (line 60p) and borrowing (line 60l) rate.⁷

2.2. Explanatory and Control Variables

Our main explanatory variable is the amount of foreign aid to the financial sector as percentage of GDP in real 2011 US dollars. This variable is aggregated from individual project level data on aid. We use the project level data to construct a variable which measures what percentage of

⁴ In April 2009, IFS discontinued the earlier report format and started providing data in standardized report forms (SRFs) for a majority of the countries that comply with the standard requirements, as well as the old presentation. We use SRFs as the primary data source, but in case of missing observation in the SRFs, we supplement the data from the old presentation format (some countries have overlapping periods of both presentation formats).

⁵ Claims on Other Sectors is disaggregated into Claims on Other Financial Corporations (line 22g), Claims on State and Local Government (line 22b), Claims on Public Nonfinancial Corporations (line 22c), and Claims on Private Sector (line 22d) (International Financial Statistics Yearbook, 2015)

⁶ All types of economies have the most missing observations for these three bank measures relative to other characteristics and variables, but developed economies suffer the most from this problem. This is another reason for developed countries' omission from the sample.

⁷ Lending rate is the rate that usually meets the short- and medium-term financing needs of the private sector. Borrowing rate is the deposit rate usually offered to resident customers for demand, time, or savings deposits. Annual interest rate data are arithmetic averages of monthly interest rates reported by the countries (source: IMF's International Financial Statistics' yearbook 2015).

individual projects in each country and year were grants (*Percent Grants*), loans (*Percent Loans*), and tied aid (*Percent Tied*) as controls in some models.

Following the prior literature on financial intermediation development (e.g., Levine et al., 2000, McNulty, Harper and Pennathur, 2007, Harper and McNulty, 2008, and Agapova and McNulty, 2016), we control for accounting, legal, and enforcement systems in the country. Since our estimation methods involve country fixed effects, institutional factors that do not change over time are captured by the country fixed effect. We include country characteristics that change over time as controls. *Population Growth* is the change in a country's population from year t-1 to year t. *Real GDP growth* is change in country's real GDP from year t-1 to year t. Per capita income is measured by the natural log of GDP per person in 2011 PPP US dollars (*Ln Real Per capita PPP GDP*). *Inflation* is the percentage change in CPI index from year t-1 to year t. Sovereign debt default (*SovDebtDef*) is a dummy that equals one if a country experienced sovereign debt default in year t and zero otherwise. We also control for the type of foreign aid flow with three variables: *Percent Grants*, *Percent Loan* and *Percent Tied*, are the percentage of projects which were classified as grants, loans and tied aid respectively. In some models, we also control for institutional characteristics of a country such as trade openness of an economy, measured by the sum of exports and imports relative to GDP (*Trade as Percent of GDP*), and *Rule of law*, measured by the aggregate indicator, in units of a standard normal distribution, i.e., ranging from approximately -2.5 to 2.5 (see Kaufmann et al., 2010 for methodology description of the variable).

Table 2 provides descriptive statistics of the sample's dependent, explanatory and control variables. Table 3 reports selected sample characteristics by country income – low, low middle,

upper middle and high within developing and transition economies.⁸ Financial intermediation variables have the following means: interest rate spread is 11.16%, liquid liabilities are 69.8 cents per dollar of GDP, public sector credit is 58.2 cents per dollar of GDP, and claims on the private sector is 79.8 cents per dollar of GDP.

Financial aid variables have the following means: financial sector aid as percentage of PPP GDP is 0.065%, financial sector aid per capita is \$4.791, percentage of grants is 73%, percentage of loans is 7.6%, and tied aid is 16% of the aid.

Country economy variables have the following means: population growth is 1.55%, real GDP growth is 4.85%, $\ln(\text{realGDPperCapita})$ is 8.466 (which translates to US \$ 4,750.5), inflation is 10.639%, the percent of countries which defaulted on sovereign debt is 7%, and the amount of foreign trade/GDP is 73.95%. Rule of law average is -0.432, indicating weaker institutional characteristics among sample countries.

<Table 2 should be here>

Table 3 reports select characteristics by income level for developing and transition countries, with real GDP per capita increasing in each income group. We grouped countries into four relatively equal sized groups by income. The lowest income group includes countries whose real per capita income was less than PPPUS\$ 2000, the next group was countries with income between 2000 and 4000, followed by income between 4000 – 8000 and income greater than 8000. Note that even among the relative rich countries, the average income is under PPP\$14,000. Financial aid as a percent of GDP is relatively small and does not change uniformly across country income groups. The highest aid is received by the second income group with 0.082%, followed by the last

⁸ We construct the country groupings to yield roughly equal sized groups, with low income ranging between (US\$ real per capita GDP) 1-2,000 for low income, 2,000-4,000 for low middle and 4,000-8,000 for upper middle.

group with 0.081%, then third income group with 0.072%, finishing with lowest income countries receiving only 0.06%. This is in direct contrast to aid to the health sector which uniformly decreases as income increases and is substantially larger than aid to the financial sector. For instance the poorest countries receive 0.42% in health aid – 8 times more than the financial aid received. The standard deviation of the aid is in the same order as the aid values. However, the financial aid per capita increases uniformly from the low income group to high income group. The number of agreements is similar across all income groups, ranging from 5.7 to 7.5, though the size of the agreements is substantially larger for high income group with \$61.27 million per agreement, followed by upper middle group – \$8.79 million, low middle group – \$4.969 million, and low income group – \$1.829 million. High income group countries tend to receive a smaller proportion of grants type aid (57.7%) in comparison to the other income groups: 74.5% – upper middle group, 74.1% – low middle group, and 86.3% – low income, which is an expected result as low income countries are more in need of non-contingent aid. The distribution of percent of loans in financial aid has the opposite order to grants' distribution across income level groups, with the highest loans percentage in high income group (10.2%) and lowest in the low income group (3.7%). As expected, Rule of law has the lowest value in the low income group and the highest in the high income group.

<Table 3 should be here>

Table 4 reports correlation coefficients of the dependent and independent variables used in the study. Even though we use four different proxies for financial intermediation development to capture different roles financial intermediation may have in an economy, the proxies are highly correlated with each other, with the exception of the lending and borrowing rate spread. Liquid Liabilities, which is an indicator of size, has a correlation of 0.92 with public sector credit, 0.75 with claims on the private sector, and 0.29 with spread, and significant at the 1% level. Public

credit has a correlation of 0.81 with claims on the private sector, and 0.29 with spread, and significant at the 1% level. Claims on the private sector are uncorrelated with the spread.

Financial sector aid per dollar of GDP is uncorrelated with three proxies of financial intermediation development: Liquid Liabilities, Public Credit and Claims on the Private Sector, and the correlation with spread is at 0.11 with a significance level of less than 5% . The remaining variables have low correlation with each other and, therefore, do not create multi-collinearity problem in our multivariate analysis.

<Table 4 should be here>

3. Model and Estimation

3.1 Effect of Foreign Financial Sector Aid on Financial Intermediation Development

Our goal is to study the effects of foreign aid to the financial sector on financial intermediation in the recipient country. The formal model is described in equation (1) below, and is estimated using OLS fixed effects panel estimation techniques. The system GMM approach, described later and applied to model in equations (2) and (3), addresses serial correlation and causality issues. The analysis is applied to panel data at the country level.

$$FI_{ct} = \alpha + \beta (FA)_{ct-1} + \theta X_{ct-1} + \delta_t + \gamma_c + \varepsilon_{ct} \quad (1)$$

where the dependent variable FI_{ct} , a measure of financial intermediation in country c at time t , is one of the following: three balance sheet based measures: *Liquid Liabilities/GDP*, *Public Credit/GDP*, and *Claims on the Private Sector/GDP*, and bank interest rate spread (*Spread*). Each proxy of the dependent variable measures different roles of financial intermediation in an economy. *Liquid Liabilities* capture the volume of financial intermediation in capital accumulation through increases in savings and foreign capital inflow in the economy. *Public Credit* and *Claims*

on the Private Sector both measure the effectiveness of financial intermediation in capital allocation through finding positive net present value (NPV) projects. There is one significant difference between the two measures; the former one measures public sector credit effectiveness, while the latter measures private sector credit effectiveness. Bank interest rate spread measures efficiency of the banking sector in attracting savings and providing loans to private businesses, with lower spread indicating higher efficiency. Given these different roles that the measures proxy for, we expect that the effect of foreign aid may be different in each case. The main explanatory variable is lagged foreign aid to the financial sector as a percentage of GDP in real PPP adjusted 2011 US dollars, FA_{t-1} .

The parameter β gives the change in size of financial intermediation, measured with *Liquid Liabilities/GDP*, *Domestic Credit/GDP*, and *Claims on the Private Sector/GDP*, measured in percentages, due to a one unit increase in the previous period's financial aid, measured as percentage of GDP. If FI is measured with spread, the parameter β gives the unit change in spread, measured in percentage, due to a one unit increase in the previous period's financial aid, measured as percentage of GDP.⁹ If financial aid has a positive effect on the size of financial intermediation (*Liquid Liabilities/GDP*, *Public Credit/GDP*, and *Claims on the Private Sector/GDP*), the sign of the parameter β is expected to be positive. An increase in *Liquid Liabilities* would indicate that foreign aid to the sector helps to increase savings and attract foreign capital. However, as Beck, Levine and Loayza (2000) find, financial intermediation spurs economy growth through the effective allocation of savings, and not necessarily by altering the rate of savings, which in turn impacts productivity growth and technological change. Therefore, the use of financial sector

⁹ The results in the paper are similar if we use financial aid per capita (in logs) as the explanatory variable. The result is untabulated.

foreign aid and its effect on *Liquid Liabilities* may be muted in comparison to the other two balance sheet based proxies: *Public Credit* and *Claims on the Private Sector*. However, the result between *Public Credit* and *Claims on the Private Sector* may also be different, even if both proxies measure effective allocation of savings. *Public Credit* captures claims on central bank, net claims on central government and other sectors, excluding private sector claims – mainly the financing of public sector projects. Since much of the foreign aid flows to official government entities, the effect on public claims is likely to be direct. *Claims on the Private Sector* contains only claims on private sector. Financial intermediaries providing credit to the private sector are more likely to identify profitable investments, monitor managers, facilitate risk management, and mobilize savings than those that provide credit to the public sector, as there may be government guaranty on those projects' investments, i.e., private sector credit is more likely to be for positive NPV projects. Foreign aid is likely to impact private financial claims only indirectly by improving the quality of financial institutions or through education. When financial intermediation is measured with *Spread*, if financial aid has a positive effect on efficiency of financial intermediation, the sign of the parameter β is expected to be negative as the bank interest rate spread should be decreasing with more aid.

Other explanatory variables included in vector X that contains lagged country and year specific characteristics, are *Population Growth*, *Real GDP growth*, *Ln(realGDPperCapita)*, *Inflation*, and *SovDebtDef*. Some model specifications include *Percent Grants*, *Percent Loans*, and *Percent Tied* variables. The full model includes all of the above variables plus *Trade* and *Rule of law*. All control variables are lagged one period to address potential endogeneity issue in controls. Year fixed effects, represented by δ_t , control for annual global trends, and country specific unobserved characteristics are accommodated through a country fixed effect γ_c . ε_{ct} is the error term.

In a fixed effects panel regression, country level effects, which do not change over time, are included in the country-specific effect, and our estimates are based on changes within the country only. Fixed effect models allow for correlation between unobserved characteristics of the country with the aid variable that we are interested in. Thus sample selection problems where certain country characteristics might lead to a country receiving more aid are accounted for in a fixed effect panel regression. We also include time trends for the region of the country using the UN's classification of countries into 5 regions: the Americas, Asia, Europe, Africa and Oceania. The regression model in (1) with the inclusion of country and year fixed effects can be used to justify a causal interpretation of the effects of foreign aid on financial intermediation (Wooldridge, 2010).

Table 5 reports the results of the panel data models with fixed effects. All model specifications control for country and year fixed effects, while some also control for region specific time trends. We start with a simple model of regressing FI variables on two lags of financial aid as percentage of GDP. Panel A of Table 5 reports the results. Results in columns (1) through (4) include year and country fixed effects only, while columns (5) through (8) include both year and country fixed effects, and a region specific time trend. The coefficient on the first lag of the aid variable is insignificant in all model specifications, while the coefficient on the second lag is negative and significant at 5-percent level on *Spread*, which suggests that an increase of 1 standard deviation in financial aid two periods before year t reduces the interest rate spread by 34 basis points at year t , which is an indication of improvement in financial intermediation efficiency.

As a next step, we add time varying country level control variables to the two lags of the financial aid as percentage of GDP. The controls include: *Population Growth*, *Real GDP growth*, *Ln(realGDPperCapita)*, *Inflation*, *SovDebtDef*. We expect a positive sign for all but *SovDebtDef* variables in models using *Liquid Liabilities/GDP*, *Public Credit/GDP*, and *Claims on the Private*

Sector/GDP as a measure of FI, and an opposite outcome if FI is measured with *Spread*. Gennaioli et al. (2010) show theoretically and empirically that public default reduces private credit, so we expect a negative sign for *SovDebtDef* for models measuring FI with *Liquid Liabilities/GDP*, *Public Credit/GDP*, and *Claims on the Private Sector/GDP*, and a positive sign for a model with *Spread* dependent variable. Panel B of Table 5 reports the results. With or without controlling for region specific time trends, results are consistent and as follows. The results of the simple model reported in Panel A change: the coefficient on the second lag is still negative and significant at 5-percent level on *Spread* variable in model without regional trend control (column (3)), but becomes insignificant in the model with regional trends added (column (7)), while the β coefficients are negative and significant at less than 5 and 10 percent level for both lags of financial aid in the models with *Public Credit/GDP*, and *Claims on the Private Sector/GDP* as the dependent variable, respectively. The economic significance of the aid on public credit and claims to private sector is substantial: one standard deviation increase in the two lags (one lag) of aid is associated with 9.3% (7.87%) decrease in public credit as percentage of GDP, and with a 4.72% (4.22%) decrease in claims to private sector as percentage of GDP. These results suggest that financial aid may have a negative effect on the effectiveness of financial intermediation, in its more narrow definition as public and private credit, one and two years after financial aid commitment, but may be efficient in reducing bank interest rate spread. The volume or size of the financial sector as measured by the ratio of liquid liabilities is unaffected by foreign aid.

<Table 5 should be here>

We expand the model in Panel B with additional controls that include financial aid characteristics: *Percent Grants*, *Percent Loans*, and *Percent Tied* variables, and institutional characteristics of a country: openness of an economy (*Trade as Percent of GDP*) and *Rule of Law*.

More aid provided as loans and tied aid should increase effectiveness of aid in improving financial intermediation, while percent of grants would have an opposite effect. Openness of an economy and rule of law are expected to improve financial intermediation, i.e., have a positive coefficient in the models with *Liquid Liabilities/GDP*, *Domestic Credit/GDP*, and *Claims on the Private Sector/GDP* as dependent variables, and negative coefficient in the model with *Spread* as a dependent variable. Panel C of Table 5 reports the results. All models in this panel control for both year and country fixed effects and region specific time trends. Columns (1) through (4) report the models with controls excluding trade openness and rule of law, while columns (5) through (8) include all control variables. The results obtained in Panel B of Table 5 hold, but show less significance – the β coefficients are negative and significant at less than 10 percent level in the models with *Public Credit/GDP*, with both first and second lag of aid, and *Claims on the Private Sector/GDP*, with only second lags of aid, as a dependent variables. The size of the coefficient is comparable to the ones obtained in Panel B of Table 5. The result in the model with *Spread* is statistically insignificant. In addition to the main result on the size of financial aid, the percent of loans and percent of tied aid seem to matter for financial intermediation efficiency – the percent of loans is positively and significantly associated with bank interest rate spread – less efficiency, while percent of tied aid has a negative association with the spread, and positively associated with *Public Credit/GDP* – more effectiveness. Additionally, trade openness has a positive effect on *Public Credit/GDP* and *Liquid Liabilities/GDP*, and rule of law has a negative coefficient, i.e., a positive effect on financial intermediation efficiency as the interest rate spread decreases with rule of law.

After controlling for region specific heterogeneity, we still face the following concerns. First, the residual may contain time-varying and region specific factors that affect financial

intermediation development. If these time varying, region specific factors are correlated with financial sector aid, then the estimated coefficient of on financial aid, β would be biased. For example, if amount of financial sector aid increases with a decline in the quality of the financial system, then β would be biased towards zero and underestimate the beneficial effect of financial sector aid. Second, in fixed effect panel data models with a lagged dependent variable and predetermined variables, the within estimators of the lagged dependent and predetermined variables are inconsistent. This inconsistency is due to the presence of the lagged error term in the residual. Finally, the presence of measurement error in financial sector aid would bias the OLS coefficient towards zero.

To address these possible biases in the presence of fixed effects, we estimate a system of moment equations using the Generalized Method of Moments (GMMs). We estimate a system of Equation (2) and Equation (3) using a system GMM specification (Blundell and Bond, 2000; Bond, 2002).

$$FI_{ct} = \alpha + \beta FA_{ct-1} + \varphi FI_{ct-1} + \theta X_{ct-1} + \delta_t + \gamma_c + \varepsilon_{ct} \quad (2)$$

$$\Delta FI_{ct} = \alpha + \beta(\Delta FA_{ct-1}) + \varphi(\Delta FI_{ct-1}) + \theta \Delta X_{ct-1} + \Delta \delta_t + \Delta \gamma_c + \Delta \varepsilon_{ct} \quad (3)$$

Lagged changes of the endogenous variables, financial intermediation and financial aid, as well as year fixed effects are used as instruments in estimating Equation (2). Lagged levels of endogenous variables, as well as year fixed effects are used as instruments in the first differenced Equation (3). X_{ct-1} are assumed to be exogenous. System GMM obtains the estimated coefficients by solving the appropriately weighted set of the moment conditions based on Equations (2) and (3). The system GMM specification is estimated using the `xtabond2` command in Stata (Roodman, 2005).

Table 6 reports the results of two-step system GMM estimates with Windmeijer corrected robust standard errors. Panel A of Table 6 estimates the same models with country specific control variables as the model reported in Panel B of Table 5. The significance of β for first lag of financial aid as percent of GDP disappears in the models with *Claims on the Private Sector/GDP* as dependent variable, but it remains negative and significant at the 10% level in the model with *Public Credit/GDP* as dependent variable (column (5)). Even though the result is statistically only marginally significant, the economic effect is larger in the GMM estimation than in the OLS with fixed effect estimation: one standard deviation increase in financial aid as percent of GDP corresponds to 14.54%% decrease in *Public Credit/GDP* with one lag of aid. A possible explanation that puts a positive spin on this result is that foreign aid reduces the ineffective allocation of credit to public sector through a reduction of negative NPV projects' financing, and can be interpreted as an intended positive outcome of financial sector foreign aid. It is also possible that foreign aid is being used to finance public sector projects thus reducing the need for borrowing. Sovereign debt default is positively associated with *Claims on the Private Sector/GDP* – a result inconsistent with Gennaioli et al.'s (2010) findings.

Panel B of Table 6 reports results of the expanded models that add financial aid characteristics, columns (1) through (4), and economy openness (*Trade as percent of GDP*) and *Rule of Law*, columns (5) through (8), which include all control variables. This model specification is the same as in Panel C of Table 5 that reports OLS with fixed effect estimation. The results based on the expanded model with financial aid characteristics (columns (1)-(4)) are similar to results in the shorter model of Panel A, Table 6 – only *Public Credit/GDP* is negatively associated with financial aid as percent of GDP in first and second lag, with a higher magnitude of the effect. Additionally, tied aid has a positive association with *Public Credit/GDP*. This result indicates that the structure

of financial aid may matter, with more contingent aid having positive effect on financial intermediation in the public sector of the recipient country. The addition of country institutional characteristics of trade openness and rule of law to the model reduces the negative association of financial aid with *Public Credit/GDP* as the second aid lag coefficient becomes insignificant, while the first lag is still economically and statistically significant at 1% level, columns (5)-(8). *Percent of Tied* aid still has a positive association with *Public Credit/GDP* in this model.

<Table 6 should be here>

To illustrate that the relationship between financial aid and financial development is not spurious, we examine effect of total aid and aid to the health sector on the financial intermediation development. Table 7 reports GMM results based on the model specification reported in Table 6 Panel B, with main explanatory variables being total aid as percent of GDP, columns (1) through (4), and aid to the health sector as percent of GDP, columns (5) through (8), instead of aid to the financial sector as percent of GDP. As expected, the results show that total aid and health aid have no effect on any financial intermediation development proxy even though the amount of aid is substantially larger.

<Table 7 should be here>

3.2. Further Robustness Checks

In the main results reported in Table 6 we used 1 lag of the endogenous variables in order to avoid over identification (as measured by the Hansen statistic) As robustness checks, we run three more GMM model specifications on the base model reported in Table 6 Panel B: 1) with up to two lags of instruments, 2) with up to 3 lags of instruments, and 3) specifying the growth rate of GDP as endogenous with up to two lags of instruments. Table 8 reports the results. The main result

holds: financial aid as percent of GDP has a negative association with *Public Credit/GDP* in all of the model specifications. We chose the specification in the main results based on the goodness of fit measures described in the tables.

To allow for possible delays in disbursement and implementation of the aid, we also run the models with three lags of aid as percent of GDP, the results hold and the third lag term is generally insignificant (untabulated).

<Table 8 should be here>

4. Conclusion

This is the first study that looks at foreign aid specifically targeted to the financial sector. In comparison to prior studies on foreign financial aid, which assess effectiveness of overall aid on economic growth, this approach, which focuses on aid to a specific sector, allows us to capture the direct effect of aid on its recipient's improvement in that sector. Prior studies examining effect of foreign aid on economic growth have inconclusive results, with some studies finding aid being positively associated with the growth (Burnside and Dollar, 2000; Clemens et al, 2004; Dalgaard et al, 2004; Arndt et al, 2009; Minoiu and Reddy, 2010), some finding a negative relation (Easterly, 1999), and some recording no relation (Easterly, 2003; Rajan and Subramanian, 2008). Such a result may be due to the scope of the aid examined and the indirect links between aid and economic growth. There are a few other studies that examine aid targeting specific sectors, specifically aid to reduce poverty (Mosley et al, 2004), change government size (Boone, 1996), or decrease infant mortality rate (Mishra and Newhouse, 2009). These studies show that this targeted approach is more accurate in measuring outcomes of different types of foreign aid, and can help to create more effective and efficient policies.

Examination of foreign aid to the financial sector is particularly important because financial intermediation has been shown to have a direct and positive link to economic development of a country (King and Levine, 1993a, Levine and Zervos, 1998, Rousseau and Wachtel, 1998, Levine et al., 2000, Beck et al., 2000, Levine, 2003, Calderon and Liu, 2003, and Hassan et al., 2011). We seek to answer the question of the effectiveness of foreign aid to the financial sector using fixed effects panel estimation techniques and address causality issues by using the generalized method of moments (GMM) approach.

It should be noted at the outset that foreign aid to the financial sector is different from aid to other sectors. While aid in the health sector flows mainly to lower income countries, aid to the financial sector is concentrated in the middle income group of countries. Our most consistent finding is that foreign aid to the financial sector reduces public sector claims. The negative relation between financial sector foreign aid and public sector credit financing may be interpreted as an intended outcome. Aid can reduce ineffective allocation of credit to public sector through reduction of negative NPV projects' financing, and can be interpreted as a good outcome of financial sector foreign aid. We can also speculate that the negative effect of foreign aid on the public credit measure of financial intermediation may result from bailouts of non-performing credits to the public sector, which are not present in claims to the private sector. This possible use of aid is not necessarily a bad outcome, as such help to the public sector through foreign aid could have deterred further negative economic outcomes. Finally, foreign aid may be a substitute for public sector borrowing and may thus reduce the crowding out effect on private credit flows, although we do not directly observe this effect. We find that claims to the private sector, which is a measure of money available to banks that can be channeled to an economy through the banking

system, and interest rate spread, which is a more direct measure of banking sector efficiency, are unaffected by aid.

Our results are in line with foreign aid studies which find that foreign aid has a negative or neutral effect on a recipient country's outcomes. In line with target sectoral foreign aid, such as Mosley et al. (2004) and Mishra and Newhouse (2009), we find that foreign aid targeting the financial sector may be effective in some measures, but neutral in other measures of financial intermediation development. Our results also suggest these effects may be modified through the use of loans or contingent contracts. These findings may have important policy applications in terms of how targeted, specifically foreign financial aid to financial sector, is provided and distributed.

Some of the shortcomings of our study stem from the limitations imposed by the data. The dataset that we use, describes the aid commitments for each year. There may be some discrepancies between the timing of commitment and disbursements. Although we try to account for these by using two (three) years of lagged aid data, discrepancies may remain.

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Figure 1. Trends in Real Aid.

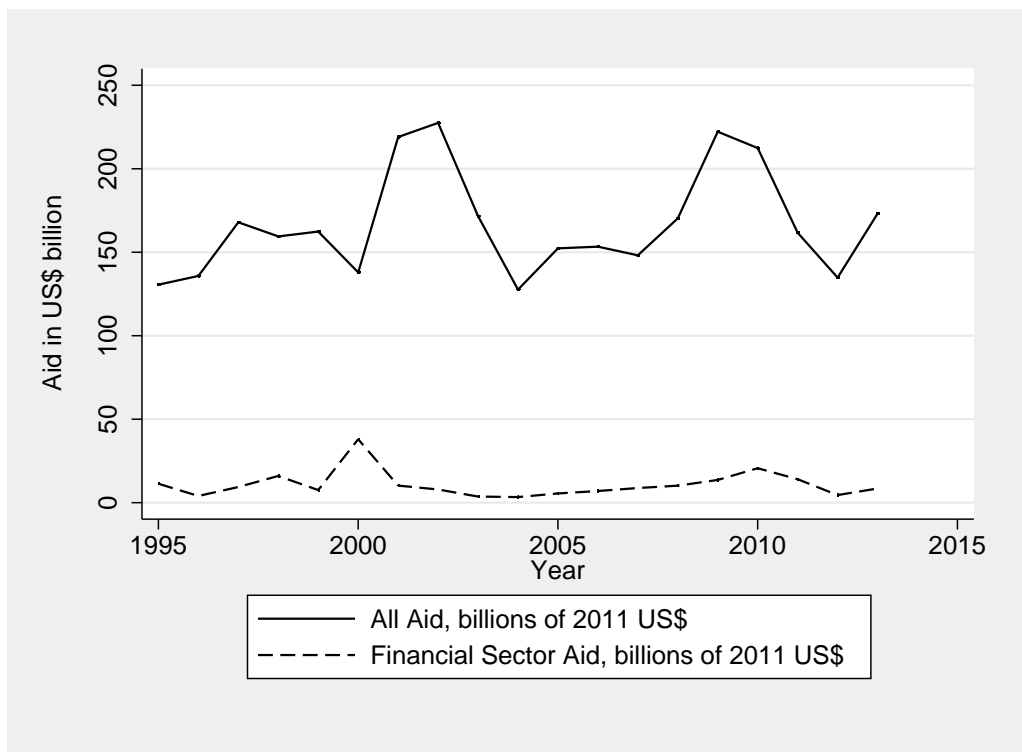


Figure 2. Aid by sector as a percent of GDP.

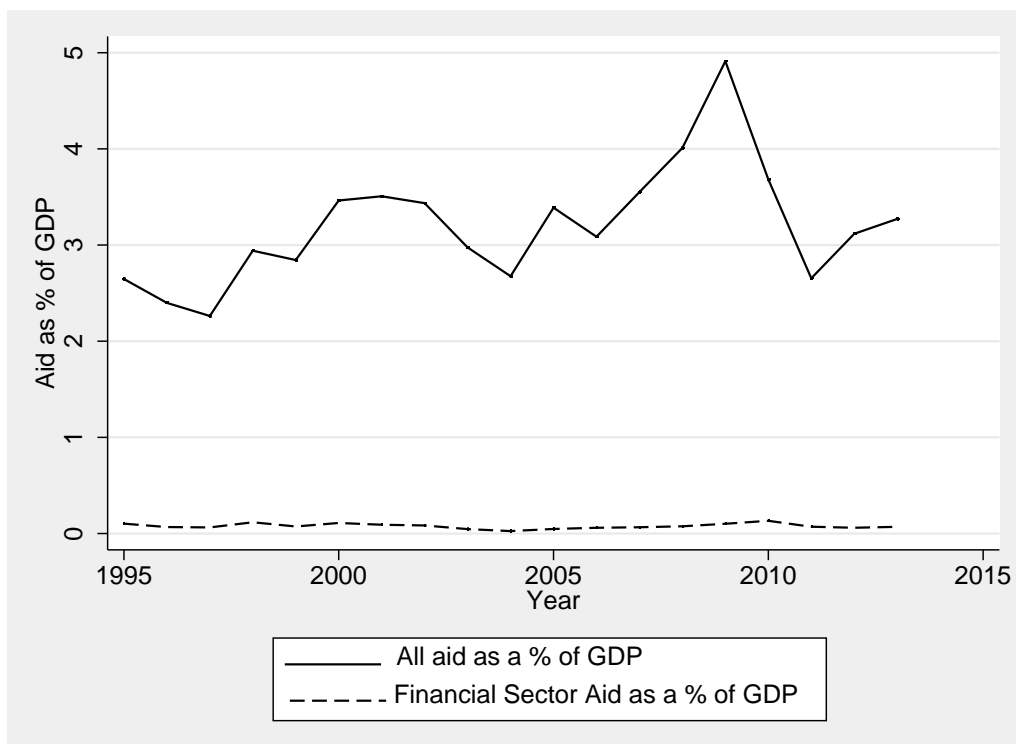


Table 1. Distribution of financial aid by type of economy

The table reports descriptive statistics of committed number of contracts/projects, their average size and total annual amount by type of an economy: developed, developing and transition, per country over 1995-2013.

	N	Mean	Median	Std.Dev.	Min	Max
<u>Developing</u>						
Number of commitments/projects per year	1602	6.23	4	6.27	1	48
Average commitment in 2011 US\$ million per project	1602	17.11	1.05	207.45	0	8057.6
Annual Financial Aid in 2011 US\$ million per country	1602	92.65	4.54	845.15	0	32230.3
<u>Transition</u>						
Number of commitments/projects per year	294	7.06	5	6.07	1	38
Average commitment in 2011 US\$ million per project	294	57.41	3.45	716.53	0.003	12207.1
Annual Financial Aid in 2011 US\$ million per country	294	124.23	18.75	770.95	0.004	12207.1

Table 2. Descriptive statistics of the sample variables.

The table reports descriptive statistics of the dependent and explanatory variables used in the analysis. Dependent variables are bank interest rate spread (*Spread*) and three traditional balance sheet based measures: *Liquid Liabilities/GDP*, *Domestic Credit/GDP*, and *Claims on the Private Sector/GDP*, in percentage. The explanatory variables are foreign aid amount to financial sector as percent of GDP in real 2011 US dollars, financial sector aid per capita, indicator variable for grants in total financial intermediation (*Grant*), and indicator variable for loans in total financial intermediation aid (*Loan*), population growth rate, growth rate of real GDP, logarithm of GDP per person in 2011 US dollars, *Inflation*, and Sovereign debt default (*SovDebtDef*) dummy, amount of foreign trade measures as a sum of imports and exports as percentage of GDP (*Trade*), in percentage, and *Rule of law*, measured by the aggregate indicator, in units of a standard normal distribution, i.e., ranging from approximately -2.5 to 2.5.

	Obs	Mean	Std. Dev.	Min	Max
Spread, %	717	11.16	13.296	-2.808	175.71
Liquid Liabilities/GDP, %	580	69.8	161.2	2.6	1572.0
Public Claims/GDP, %	615	58.2	174.3	1.0	1764.0
Claims on the Private Sector/GDP, %	929	79.8	107.5	2.5	987.8
Financial Aid Percent of real PPP GDP, %	929	0.065	0.171	0	3.677
Financial sector aid per capita	929	4.791	20.267	0	509.65
Health Aid as Percent of real PPP GDP, %	929	0.164	0.357	0	6.079
Total Aid as Percent of real PPP GDP, %	929	2.705	3.547	0.007	30.010
Population growth rate, %	928	1.548	1.125	-1.911	4.018
Growth rate of Real GDP, %	915	4.846	6.122	-18.459	143.82
Ln Real PPP GDP per capita	929	8.466	0.929	6.195	10.061
Inflation, %	929	10.639	42.148	-35.837	1058.37
Sovereign Default indicator	929	0.07	0.255	0	1
Grants indicator	929	0.73	0.294	0	1
Loan Indicator	929	0.076	0.157	0	1
Percent Tied aid, %	929	16.036	22.361	0.000	100
Trade/GDP, %	926	73.949	31.992	16.439	210.37
Rule of law	929	-0.432	0.59	-1.79	1.367

Table 3 Descriptive statistics by country income group

The table reports descriptive statistics of select variables used in the analysis by country income. The variables are the foreign aid amount to financial sector per capita in real 2011 US dollars, financial intermediation aid per capita, number of agreements for foreign aid to financial sector, average real aid per agreements in millions of US dollars, grants in total financial intermediation indicator (*Percent of Grants*), loans in total financial intermediation aid indicator (*Percent of Loans*), amount of foreign trade measures as a sum of imports and exports as percentage of GDP (*Trade*), and *Rule of law*, measured by the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

		PPP\$ 0-2000	PPP\$ 2000-4000	PPP\$ 4000-8000	> PPP\$ 8000
Real PPP GDP per capita, \$	Mean	1258.7	2806.5	5857.3	14109.7
	SD	410.6	559.5	1224.7	8025.3
Total Real Aid in \$million	Mean	1117.563	1644.178	1848.105	2130.543
	SD	1215.804	2290.502	2646.575	4813.432
Financial Sector Real Aid in \$million	Mean	10.759	40.264	77.098	211.923
	SD	23.626	121.037	305.492	1449.125
Financial Aid Percent of real PPP GDPx100	Mean	0.06	0.082	0.072	0.081
	SD	0.114	0.28	0.156	0.238
Health Sector Aid in \$million	Mean	72.907	83.004	62.437	33.793
	SD	89.434	132.299	105.256	104.365
Health Aid Percent of real PPP GDPx100	Mean	0.421	0.264	0.124	0.021
	SD	0.472	0.441	0.388	0.06
Number of agreements	Mean	5.729	6.83	7.511	6.04
	SD	5.302	6.15	7.132	6.42
Average real aid per agreement millions of \$	Mean	1.829	4.969	8.785	61.268
	SD	3.486	13.185	37.943	604.452
Percent Grants	Mean	0.863	0.741	0.745	0.577
	SD	0.232	0.296	0.285	0.376
Percent Loan	Mean	0.037	0.065	0.072	0.102
	SD	0.124	0.138	0.133	0.232
Trade/GDP	Mean	63.824	76.584	84.132	82.835
	SD	31.698	30.177	32.876	37.813
Rule of law	Mean	-0.895	-0.675	-0.47	-0.101
	SD	0.506	0.503	0.51	0.673

Table 4 Correlation Coefficients.

The table reports correlation coefficients. Dependent variables are bank interest rate spread (*Spread*) and three traditional balance sheet based measures: *Liquid Liabilities/GDP*, *Public sector Claims/GDP*, and *Claims on the Private Sector/GDP*. The explanatory variables are the foreign aid amount to financial sector as percent of GDP in real 2011 US dollars, financial intermediation aid per capita, grants in total financial intermediation indicator (*Grant*), loans in total financial intermediation aid indicator (*Loan*), logarithm of GDP per person in 2011 US dollars, *Inflation*, and Sovereign debt default (*SovDebtDef*) dummy, amount of foreign trade measures as a sum of imports and exports as percentage of GDP (*Trade*), and *Rule of law*, measured by the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. *, **, *** Significance at the 5, 1, and 0.1 percent level, respectively.

	Liquid Liab	Public	Private	Spread	Aid/GDP	PopulGr	RealGDPGr	RealGDP/cap	Inflation	SovDef	Tied,%	Grant	Loan	Trade
Liquid Liab	1													
Public	0.92***	1												
Private	0.75***	0.81***	1											
Spread	0.29***	0.29***	0.07	1										
Aid/GDP	0.00	0.00	0.04	0.11*	1									
PopulGr	0.03	0.05	-0.05	0.11*	-0.06	1								
RealGDPGr	-0.14**	-0.12**	-0.14**	-0.07	-0.12*	0.15***	1							
RealGDP/cap	0.08	0.04	0.20***	-0.14**	-0.03	-0.57***	-0.18***	1						
Inflation	0.01	0.07	0.00	0.05	0.02	0.04	-0.04	-0.03	1					
SovDef	-0.01	-0.02	-0.04	0.09	0.07	0.11*	0.00	-0.15***	0.07	1				
Tied,%	-0.02	-0.05	0.02	-0.17***	-0.10*	-0.10*	-0.11*	0.19***	0.12**	-0.08	1			
Grant	-0.06	-0.06	-0.01	-0.21***	-0.31***	0.22***	-0.01	-0.28***	0.03	0.11*	0.27***	1		
Loan	-0.07	-0.06	-0.06	0.13**	0.16***	-0.03	0.00	0.13**	0.03	-0.07	-0.11*	-0.50***	1	
Trade	-0.12**	-0.17***	0.06	-0.24***	0.02	-0.20***	0.13**	0.16***	0.00	-0.01	0.07	0.06	-0.06	1
RuleOfLaw	0.06	0.00	0.23***	-0.15**	0.12**	-0.22***	-0.10*	0.46***	-0.27***	-0.19***	-0.06	-0.17***	0.08	0.12*

Table 5 OLS Fixed effects with and without controls.

The table reports estimates from the panel regression of model (1). Dependent variables are bank interest rate spread (*Spread*) and three traditional balance sheet based measures: *Liquid Liabilities/GDP*, *Domestic Credit/GDP*, and *Claims on the Private Sector/GDP*. The explanatory variables are lagged logarithm of the foreign aid amount to financial sector per capita in real 2011 US dollars, $\text{Ln}(\text{FA})_{t-1}$, financial intermediation aid per capita, percentage of grants in total financial intermediation (*Grant*), and percentage of loans in total financial intermediation aid (*Loan*), logarithm of Real PPP GDP, logarithm of GDP per person in 2011 US dollars, percentage of GDP in agriculture (*Agriculture*), *Inflation*, and Sovereign debt default (*SovDebtDef*) dummy, amount of foreign trade measures as a sum of imports and exports as percentage of GDP (*Trade*), and *Rule of law*, measured by the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. All control variables are lagged by one period. Each regression also includes a vector of year fixed effect and region specific time trend. Standard error estimates are below coefficients, and robust standard error estimates allow for non-independence of observations within each country. *, **, *** Significance at the 10, 5, and 1 percent level, respectively.

Panel A: Without Controls	Public Credit/GDP (1)	Private Claims/GDP (2)	Spread (3)	Liquid Liabilities/GDP (4)	Public Credit/GDP (5)	Private Claims/GDP (6)	Spread (7)	Liquid Liabilities/GDP (8)
Lag1 Aid as percent of GDP	-11.949 (14.848)	-13.367 (11.414)	-0.384 (0.821)	-1.954 (11.944)	-12.080 (19.518)	-15.831 (11.439)	-0.666 (0.882)	-1.681 (12.180)
Lag2 Aid as percent of GDP	-17.971 (13.732)	2.369 (15.490)	-1.367** (0.576)	-21.591 (19.344)	-19.591 (15.010)	0.510 (15.730)	-2.085** (0.861)	-20.019 (19.021)
Constant	279.876*** 0.022	139.109*** 0.008	16.381*** 0.065	250.530*** 0.018	272.749*** (0.903)	127.299*** 0.196	16.733*** 4.314	264.639*** 0.569
Country Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Region Specific Time Trend	NO	NO	NO	NO	YES	YES	YES	YES
N	868	1274	1030	818	868	1274	1030	818
r2	0.335	0.145	0.025	0.510	0.338	0.156	0.049	0.515

Table 5 cont'd

Panel B: With Controls	Public Credit/GDP (1)	Private Claims/GDP (2)	Spread (3)	Liquid Liabilities/GDP (4)	Public Credit/GDP (5)	Private Claims/GDP (6)	Spread (7)	Liquid Liabilities/GDP (8)
Lag1 Aid as percent of GDP	-46.107*** (15.421)	-22.263* (12.942)	-2.400 (2.384)	-24.641 (30.327)	-46.437** (23.238)	-24.664* (14.243)	-1.620 (2.380)	-25.218 (30.587)
Lag2 Aid as percent of GDP	-51.999*** (18.040)	-26.718** (13.051)	-2.246** (1.070)	-47.365 (31.130)	-54.271** (22.120)	-27.638* (13.974)	-1.474 (1.132)	-47.629 (31.856)
Population growth rate	2.911 (22.580)	-1.775 (13.478)	-0.161 (1.293)	-7.369 (23.287)	-9.199 (20.414)	-4.776 (12.436)	0.063 (1.539)	-9.613 (24.699)
Growth rate of Real GDP	-5.742*** (2.162)	-0.618 (0.618)	-0.392 (0.281)	-6.776** (3.135)	-6.085*** (2.111)	-0.487 (0.600)	-0.339 (0.295)	-6.618** (3.070)
Ln Real Per capita PPP GDP	74.349 (100.553)	-14.812 (64.496)	-20.564* (11.627)	-59.296 (98.440)	157.854 (123.250)	-1.071 (67.338)	-25.625* (14.882)	-38.653 (96.380)
Inflation	1.133* (0.616)	0.028 (0.051)	0.052 (0.064)	0.337 (1.581)	1.196* (0.645)	0.042 (0.046)	0.048 (0.063)	0.476 (1.655)
Sovereign Default	4.536 (34.767)	-12.668 (16.510)	2.362 (3.167)	31.240 (49.838)	14.925 (32.753)	-8.186 (16.805)	2.484 (3.084)	33.264 (55.823)
Constant	-298.262 (849.895)	279.798 (519.225)	188.611* (95.857)	795.971 (802.895)	-976.685 (1026.033)	164.021 (545.171)	230.092* (121.776)	627.111 (802.249)
Country Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Region Specific Time Trend	NO	NO	NO	NO	YES	YES	YES	YES
N	658	1014	808	618	658	1014	808	618
r2	0.348	0.163	0.176	0.498	0.356	0.172	0.209	0.499

Table 5 cont'd

Panel C: With Additional Controls	Public Credit/GDP (1)	Private Claims/GDP (2)	Spread (3)	Liquid Liabilities/GDP (4)	Public Credit/GDP (5)	Private Claims/GDP (6)	Spread (7)	Liquid Liabilities/GDP (8)
Lag1 Aid as percent of GDP	-47.799* (26.249)	-22.098 (13.644)	-1.563 (2.164)	-28.951 (31.308)	-48.217* (25.150)	-21.933 (13.546)	-0.884 (2.057)	-25.252 (30.179)
Lag2 Aid as percent of GDP	-51.176** (22.568)	-27.604* (14.268)	-1.936 (1.366)	-45.015 (31.356)	-53.559** (24.909)	-26.100* (13.945)	-1.554 (1.162)	-40.748 (29.256)
Population growth rate	-10.796 (21.488)	-6.141 (12.240)	0.027 (1.414)	-10.854 (24.860)	-7.854 (21.029)	-5.677 (11.901)	-0.636 (1.286)	-11.345 (25.685)
Growth rate of Real GDP	-5.955*** (2.179)	-0.420 (0.588)	-0.346 (0.285)	-6.516** (3.007)	-6.353*** (1.986)	-0.468 (0.604)	-0.404 (0.298)	-7.361** (3.085)
Ln Real Per capita PPP GDP	148.993 (119.884)	-1.337 (67.433)	-24.560* (14.613)	-50.350 (96.240)	140.764 (107.894)	-7.349 (66.628)	-18.057 (11.906)	-29.226 (103.712)
Inflation	1.204* (0.642)	0.050 (0.049)	0.048 (0.062)	0.482 (1.658)	1.047* (0.605)	0.043 (0.047)	0.044 (0.061)	-0.188 (1.683)
Sovereign Default	15.765 (32.223)	-9.751 (16.864)	2.579 (3.093)	35.679 (55.499)	14.313 (30.236)	-8.994 (16.252)	2.169 (2.747)	32.713 (52.510)
Percent Grants	-32.358 (30.561)	10.492 (14.736)	2.312 (2.713)	-31.489 (39.327)	-28.443 (28.626)	9.131 (15.059)	2.717 (2.692)	-30.321 (39.696)
Percent Loans	-36.592 (40.449)	18.269 (22.818)	2.970* (1.723)	-20.824 (66.166)	-29.606 (39.815)	15.606 (22.730)	3.722** (1.794)	-22.477 (64.475)
Percent Tied	0.469** (0.229)	0.280 (0.193)	-0.049*** (0.017)	0.321 (0.246)	0.503** (0.228)	0.294 (0.202)	-0.046*** (0.016)	0.397 (0.253)
Trade as Percent of GDP					1.578** (0.757)	0.340 (0.602)	0.019 (0.062)	1.506** (0.624)
Rule of Law					-41.718 (49.615)	-1.930 (25.360)	-9.677** (4.439)	-38.497 (48.674)
Constant	-887.991 (1000.468)	156.590 (545.957)	220.422* (119.500)	739.203 (799.636)	-951.458 (911.413)	185.745 (554.402)	162.320 (97.819)	471.667 (848.614)
Country Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Region Specific Time Trend	YES	YES	YES	YES	YES	YES	YES	YES
N	658	1014	808	618	652	1008	802	616
r2	0.360	0.177	0.218	0.501	0.372	0.175	0.247	0.510

Table 6 Two-step system GMM estimates with corrected robust standard errors.

The table reports estimates from the panel regression of model (1) using system GMM with one lag and specifying aid variable as endogenous. Dependent variables are bank interest rate spread (*Spread*) and three traditional balance sheet based measures: *Liquid Liabilities/GDP*, *Domestic Credit/GDP*, and *Claims on the Private Sector/GDP*, in percentage. The explanatory variables are the foreign aid amount to financial sector as percentage of GDP in real 2011 US dollars, grants in total financial intermediation indicator (*Grant*), loans in total financial intermediation aid indicator (*Loan*), logarithm of GDP per person in 2011 US dollars, *Inflation*, and Sovereign debt default (*SovDebtDef*) dummy, amount of foreign trade measures as a sum of imports and exports as percentage of GDP (*Trade*), and *Rule of law*, measured by the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. All control variables are lagged by one period. Each regression also includes a vector of year and country fixed effects. Standard error estimates are below coefficients, and robust standard error estimates allow for non-independence of observations within each country. *, **, *** Significance at the 10, 5, and 1 percent level, respectively. Panel B: Lagged dependent variables included but not shown.

Panel A: Base Model	Public Credit/GDP (1)	Private Claims/GDP (2)	Spread (3)	Liquid Liabilities/GDP (4)	Public Credit/GDP (5)	Private Claims/GDP (6)	Spread (7)	Liquid Liabilities/GDP (8)
Lag1 Aid as percent of GDP	-84.435** (33.462)	-36.809** (16.642)	-6.066 (3.922)	-24.036 (40.037)	-84.956* (48.466)	-25.478 (17.153)	-3.778 (3.427)	1.692 (48.869)
Lag2 Aid as percent of GDP	-44.210*** (13.945)	-20.431 (14.149)	-1.959 (3.794)	-44.421 (27.729)	-29.862 (30.840)	-12.069 (15.171)	-6.430 (5.015)	-16.085 (18.943)
Population growth rate	62.951 (39.773)	15.495 (24.187)	2.402 (3.018)	-3.353 (13.862)	9.049 (26.813)	-5.595 (22.316)	-0.746 (1.233)	1.743 (24.900)
Growth rate of Real GDP	-11.485 (7.269)	1.122 (3.314)	-2.108* (1.280)	-11.095 (7.156)	-2.663 (2.089)	0.278 (0.493)	-0.205 (0.194)	-1.597 (1.856)
Ln Real Per capita PPP GDP	60.103 (45.698)	17.723 (27.153)	-2.050 (2.079)	55.411** (22.012)	26.928 (31.124)	21.095 (19.259)	-2.236 (1.937)	34.982 (22.827)
Inflation	0.086 (0.408)	0.795 (0.934)	-0.046 (0.066)	0.134 (2.859)	-0.415 (0.497)	-0.010 (0.131)	-0.030 (0.082)	0.408 (1.939)
Sovereign Default	109.895 (71.818)	-91.359 (58.923)	8.912 (12.960)	5.474 (110.424)	185.584** (85.037)	-41.728 (46.055)	9.120 (11.308)	37.295 (60.244)
Lag Public Credit as % of GDP	0.522*** (0.140)				0.467*** (0.092)			
Lag Private Claims as % of GDP		0.174** (0.068)				0.238*** (0.073)		
Lag1 Spread			0.616*** (0.106)				0.703*** (0.098)	
Lag Liquid Liabilities as % of GDP				0.395*** (0.059)				0.419*** (0.065)
Country Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Region Specific Time Trend	NO	NO	NO	NO	YES	YES	YES	YES

N	633	1014	803	588	633	1014	803	588
ar1p	0.024	0.013	0.077	0.003	0.061	0.035	0.089	0.021
ar2p	0.126	0.916	0.277	0.370	0.251	0.871	0.288	0.399
hansenp	0.897	0.195	0.727	0.998	1.000	0.971	0.988	1.000

Table 6 cont'd

Panel B: With Additional Controls	Public Credit/GDP (1)	Private Claims/GDP (2)	Spread (3)	Liquid Liabilities/GDP (4)	Public Credit/GDP (5)	Private Claims/GDP (6)	Spread (7)	Liquid Liabilities/GDP (8)
Lag1 Aid as percent of GDP	-148.28*** (44.190)	-20.356 (22.245)	2.263 (5.451)	-58.871 (64.665)	-123.67*** (27.927)	-13.778 (24.734)	-4.230 (7.609)	-32.313 (58.938)
Lag2 Aid as percent of GDP	-70.424*** (21.281)	-9.508 (23.575)	-6.750 (4.264)	-42.156 (38.629)	-56.308 (39.823)	-4.762 (24.116)	-7.472 (7.925)	-22.837 (40.872)
Population growth rate	-13.981 (51.884)	13.147 (32.642)	-4.327 (4.060)	-17.764 (33.767)	-5.560 (62.318)	12.944 (38.302)	-0.814 (4.611)	-14.724 (24.904)
Growth rate of Real GDP	-15.143 (9.828)	1.621 (2.889)	-0.986 (0.792)	-7.226 (8.469)	-13.736* (8.009)	2.616 (3.076)	-1.375* (0.834)	-4.052 (7.028)
Ln Real Per capita PPP GDP	7.970 (38.748)	29.155 (40.198)	-1.763 (4.112)	37.278 (35.574)	15.837 (52.279)	-0.150 (33.826)	-1.415 (5.800)	41.527 (44.796)
Inflation	-0.212 (0.564)	0.703 (1.319)	-0.006 (0.092)	0.054 (1.919)	-0.538 (0.762)	0.567 (1.570)	-0.037 (0.089)	0.128 (1.864)
Sovereign Default	-16.531 (97.769)	-29.639 (99.748)	3.132 (11.641)	23.920 (166.143)	-2.425 (92.785)	-20.049 (68.920)	2.576 (11.950)	-23.592 (140.339)
Percent Tied	2.583*** (0.937)	0.718 (0.962)	-0.133 (0.121)	0.540 (0.703)	3.368*** (1.064)	0.518 (0.948)	-0.151 (0.128)	0.085 (0.722)
Percent Grants	-20.317 (104.733)	72.819 (61.403)	16.250* (8.380)	-43.578 (64.550)	-35.607 (147.585)	94.266 (62.075)	10.185 (10.783)	-53.000 (51.457)
Percent Loans	194.949 (145.619)	210.800 (133.110)	7.376 (12.131)	-17.820 (85.774)	202.226 (197.962)	178.768 (162.832)	3.141 (11.833)	-45.302 (66.234)
Trade as Percent of GDP					0.665 (1.767)	-0.069 (0.993)	0.223* (0.114)	-0.454 (0.726)
Rule of Law					-29.296 (70.770)	35.372 (59.904)	-2.910 (6.070)	17.384 (53.257)
Lagged Dependent Variables	YES	YES	YES	YES	YES	YES	YES	YES
Country Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Region Specific Time Trend	YES	YES	YES	YES	YES	YES	YES	YES
N	633	1014	803	588	628	1008	797	587
ar1p	0.055	0.021	0.040	0.012	0.046	0.018	0.031	0.016
ar2p	0.230	0.823	0.295	0.520	0.272	0.867	0.517	0.442
hansenp	0.997	0.489	0.976	0.997	0.966	0.593	0.970	0.999

Table 7 Two-step system GMM estimates with corrected robust standard errors – falsification tests.

The table reports estimates from the panel regression of model (1), where explanatory variables are total aid as a percent of GDP – columns (1) through (4), and aid to the health sector – columns (5) through (8). The rest of the model specifications are as in Table 6 Panel B.

Panel B: With Additional Controls	Public Credit/GDP	Private Claims/GDP	Spread	Liquid Liabilities/GDP	Public Credit/GDP	Private Claims/GDP	Spread	Liquid Liabilities/GDP
	Total Aid				Health Aid			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag1 Aid as percent of GDP	0.480 (5.951)	-2.453 (2.896)	-0.418 (0.297)	1.617 (49.003)	-8.104 (136.161)	-5.56 (16.662)	-6.728 (6.005)	-41.246 (52.718)
Lag2 Aid as percent of GDP	-0.672 (3.875)	-1.555 (2.005)	-0.254 (0.259)	0.741 (29.152)	-25.079 (102.391)	-9.506 (16.945)	-5.317 (5.676)	1.935 (28.738)
Population growth rate	-61.194 (40.100)	-62.525 (43.841)	-4.214 (3.251)	-49.085 (369.414)	-57.55 (158.347)	-6.259 (29.437)	-5.73 (6.486)	5.514 (45.642)
Growth rate of Real GDP	-17.730** (8.875)	1.201 (2.171)	-0.539 (0.405)	-5.968 (110.286)	-20.803 (19.862)	-1.176 (2.561)	-0.727 (1.176)	-6.727 (6.564)
Ln Real Per capita PPP GDP	-66.418 (65.498)	-57.737 (39.828)	-2.332 (7.863)	38.842 (615.547)	-124.069 (128.401)	-39.709 (35.480)	-4.467 (6.957)	27.794 (58.917)
Inflation	-1.024 (0.823)	0.321 (1.070)	-0.013 (0.147)	1.794 (34.487)	-0.74 (2.218)	0.451 (1.493)	-0.059 (0.097)	0.704 (2.146)
Sovereign Default	84.345 (122.691)	120.549 (81.368)	9.518 (9.943)	-9.180 (744.567)	192.399 (419.382)	1.815 (91.653)	14.108 (20.472)	-46.798 (133.895)
Percent Tied	2.966*** (1.078)	0.127 (0.965)	-0.121 (0.113)	1.155 (22.624)	2.972** (1.298)	0.267 (0.704)	-0.215 (0.154)	1.02 (1.179)
Percent Grants	-93.271 (167.070)	100.710 (92.122)	9.966 (9.761)	-19.004 (1132.274)	-163.326 (188.478)	35.182 (120.371)	17.595 (12.388)	-93.56 (75.174)
Percent Loans	-39.494 (213.233)	208.641 (140.569)	-2.771 (11.795)	3.139 (2180.304)	163.494 (244.362)	131.065 (169.326)	-5.272 (15.660)	-7.567 (128.405)
Trade as Percent of GDP	2.237* (1.334)	-0.638 (1.209)	0.105 (0.175)	0.348 (7.555)	1.544 (4.164)	-0.878 (1.030)	0.041 (0.155)	-0.349 (1.336)
Rule of Law	30.633 (80.053)	42.394 (54.503)	-5.448 (9.223)	-34.272 (701.133)	134.832 (140.718)	26.687 (51.860)	-5.312 (8.584)	86.823 (135.519)
Lagged Dependent Variables	YES	YES	YES	YES	YES	YES	YES	YES
Country Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Region Specific Time Trend	YES	YES	YES	YES	YES	YES	YES	YES
N	633	1014	803	588	628	1008	797	587
ar1p	0.055	0.021	0.040	0.012	0.046	0.018	0.031	0.016
ar2p	0.230	0.823	0.295	0.520	0.272	0.867	0.517	0.442

hansenp	0.997	0.489	0.976	0.997	0.966	0.593	0.970	0.999
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Table 8 Further Robustness checks: GMM Base model same as Table 6 Panel B.

The table reports estimates from the panel regression of model (1) using system GMM with up to three lags and specifying aid variable, and in one model specification, growth rate of GDP as endogenous. Dependent variables are bank interest rate spread (*Spread*) and three traditional balance sheet based measures: *Liquid Liabilities/GDP*, *Domestic Credit/GDP*, and *Claims on the Private Sector/GDP*, in percentage. The explanatory variables are the foreign aid amount to financial sector as percentage of GDP in real 2011 US dollars, grants in total financial intermediation indicator (*Grant*), loans in total financial intermediation aid indicator (*Loan*), logarithm of GDP per person in 2011 US dollars, *Inflation*, and Sovereign debt default (*SovDebtDef*) dummy, amount of foreign trade measures as a sum of imports and exports as percentage of GDP (*Trade*), and *Rule of law*, measured by the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. All control variables are lagged by one period. Each regression also includes a vector of year and country fixed effects. Standard error estimates are below coefficients, and robust standard error estimates allow for non-independence of observations within each country. *, **, *** Significance at the 10, 5, and 1 percent level, respectively.

	Public Credit/GDP (1)	Private Claims/GDP (2)	Spread (3)	Liquid Liabilities/GDP (4)
<u>With up to 2 lags as instruments</u>				
Lag1 Aid as percent of GDP	-111.472*** (39.637)	-18.748 (17.876)	0.051 (5.891)	-28.466 (50.132)
Lag2 Aid as percent of GDP	-46.773** (20.719)	-18.606 (18.879)	-4.795 (4.590)	-13.277 (25.939)
N	628	1008	797	587
ar1p	0.067	0.016	0.009	0.028
ar2p	0.255	0.896	0.476	0.433
hansenp	1.000	0.967	1.000	1.000
<u>With up to 3 lags of instruments</u>				
Lag1 Aid as percent of GDP	-107.815*** (30.798)	-24.095 (17.673)	2.147 (64290.837)	20.852 (90.597)
Lag2 Aid as percent of GDP	-34.864** (17.169)	-17.612 (14.437)	-4.483 (28320.885)	-20.038 (63.684)
N	628	1008	797	587
ar1p	0.074	0.019	0.997	0.059
ar2p	0.233	0.808	1.000	0.358
hansenp	1.000	1.000	0.329	1.000
<u>Growth rate of GDP endogenous and up to 2 lags of instruments</u>				
Lag1 Aid as percent of GDP	-176.385** (75.233)	-2.400 (24.620)	0.527 (5.095)	-49.739 (70.054)
Lag2 Aid as percent of GDP	-38.350 (53.137)	-10.273 (28.583)	-5.930 (11.416)	-21.999 (26.588)
N	628	1008	797	587
ar1p	0.056	0.027	0.057	0.029
ar2p	0.139	0.933	0.291	0.491
hansenp	1.000	0.962	1.000	1.000

Appendix

Table A1 Countries in the sample

The table reports in-sample countries with total aid, and aid to financial sector in millions of real US dollars and as percentage of total aid.

Country	Total Aid	Financial Aid		Country	Total Aid	Financial Aid	
		\$, mln	%			\$, mln	%
Albania	1,694.63	79.04	4.66	Malawi	12,040.00	95.35	0.79
Bangladesh	57,662.05	1,279.47	2.22	Malaysia	1,849.77	8.77	0.47
Barbados	92.30	0.05	0.06	Mali	18,550.85	180.37	0.97
Belarus	3,018.51	118.08	3.91	Mauritania	1,107.76	23.61	2.13
Benin	9,884.37	64.44	0.65	Mauritius	703.00	177.37	25.23
Bolivia	29,239.68	602.18	2.06	Mexico	152,000.00	7,486.79	4.93
Botswana	452.14	2.03	0.45	Mongolia	7,141.70	219.59	3.07
Brazil	205,000.00	11,093.50	5.41	Morocco	49,436.55	1,780.76	3.60
Bulgaria	10,112.67	423.96	4.19	Mozambique	37,226.01	239.61	0.64
Burkina Faso	14,050.18	92.22	0.66	Nepal	14,658.39	207.67	1.42
Burundi	5,186.45	25.29	0.49	Nicaragua	16,517.75	510.13	3.09
Cambodia	13,431.20	333.59	2.48	Niger	5,628.01	55.62	0.99
Cameroon	18,402.30	56.47	0.31	Nigeria	15,964.44	837.26	5.24
Chad	2,363.51	4.79	0.20	Pakistan	82,810.96	4,891.88	5.91
Chile	7,805.13	513.75	6.58	Panama	6,308.39	409.62	6.49
China	130,000.00	1,502.35	1.16	Papua New Guinea	5,943.06	79.30	1.33
Colombia	67,869.42	5,722.89	8.43	Paraguay	3,963.39	151.49	3.82
Costa Rica	5,485.34	1,071.47	19.53	Peru	48,877.99	6,288.37	12.87
Czech Republic	5,354.26	1,141.25	21.31	Philippines	52,013.15	2,867.74	5.51
Dominican Republic	10,357.69	458.13	4.42	Poland	21,641.07	1,860.01	8.59
Egypt, Arab Rep.	60,717.24	4,366.71	7.19	Russian Federation	68,944.12	7,137.46	10.35
Estonia	1,177.13	279.18	23.72	Samoa	124.34	7.13	5.73
Fiji	909.61	5.00	0.55	Senegal	16,066.40	133.44	0.83
Gambia, The	618.68	26.23	4.24	Sierra Leone	3,823.98	24.00	0.63
Georgia	12,812.97	490.38	3.83	South Africa	31,194.45	1,863.06	5.97
Guatemala	10,738.23	650.11	6.05	Sri Lanka	24,900.49	726.37	2.92
Guinea-Bissau	967.18	0.80	0.08	Suriname	88.32	0.01	0.01
Guyana	139.80	0.08	0.06	Thailand	35,706.16	1,731.28	4.85
Honduras	10,867.11	289.07	2.66	Togo	3,636.34	39.93	1.10
Hungary	5,345.49	558.98	10.46	Tonga	459.74	1.24	0.27
India	158,000.00	7,449.77	4.72	Trinidad & Tobago	4,199.08	72.28	1.72
Indonesia	15,535.11	1,153.18	7.42	Tunisia	24,157.75	1,336.21	5.53
Iran, Islamic Rep.	687.35	0.06	0.01	Turkey	159,000.00	40,171.27	25.26
Jamaica	1,299.56	4.12	0.32	Uganda	29,872.64	364.36	1.22
Jordan	10,565.94	366.46	3.47	Ukraine	32,682.46	1,649.99	5.05
Kazakhstan	17,395.47	1,483.68	8.53	Uruguay	12,114.59	1,309.13	10.81
Kenya	33,865.80	663.62	1.96	Vanuatu	934.85	8.05	0.86
Kyrgyz Republic	6,546.83	257.13	3.93	Venezuela, RB	4,741.07	103.39	2.18
Lao PDR	5,163.92	95.13	1.84	Vietnam	22,142.39	276.79	1.25
Latvia	1,548.95	109.39	7.06	Yemen, Rep.	9,827.12	154.38	1.57
Lithuania	1,949.41	125.30	6.43	Zambia	23,409.13	191.75	0.82
Macedonia, FYR	6,938.26	327.83	4.72	Zimbabwe	3,629.99	48.07	1.32
Madagascar	14,551.13	151.43	1.04				
Mean	24,021.65	1,519.52	4.6	Max	205,000.00	40,171.27	25.26
Std. Deviation	39,173.64	4,706.98	5.5	Min	88.32	0.01	0.01