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World Bank Lending and Financial Sector Development

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Abstract

Using a new database of World Bank loans to support financial sector development, we investigate whether countries that received such loans experienced more rapid growth on standard indicators of financial development than countries that did not. We account for self-selection with treatment effects regressions, and we also use propensity score matching techniques. Our results indicate that borrowing countries had significantly more rapid growth in M2/GDP than non-borrowers, and swifter reductions in interest rate spreads and cash holdings (as a share of M2). Borrowers also had higher private credit growth rates than non-borrowers in treatment effects regressions, but not in standard panel regressions with fixed country effects. On the whole, however, the results indicate significant advantages for borrowers over non-borrowers in terms of financial development.

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1. Introduction

Did the financial sectors of developing countries that received assistance from the World Bank perform better than those in countries that did not? And did the countries that received World Bank assistance enjoy more financial sector development than they otherwise would have? Based on financial sector data in the 1990s, the answer to the first question appears to be yes. Despite severe financial crises in multiple countries that received World Bank assistance to support financial sector reform (such as Argentina, Brazil, Mexico, and Russia), the growth rates for borrowing countries for multiple standard measures of financial sector development were greater than for countries that did not receive such support.

A skeptic could argue that such results are driven by selection – aside from a few crisis countries that received loans, borrowers tended to be countries that were most apt to improve their financial sectors on their own. To answer our second question, whether borrowing countries developed their financial sectors more quickly than they otherwise would have, we use both treatment effects regressions that explicitly account for self-selection and propensity score matching techniques. We also offer robustness checks that examine whether our findings are specific to a region(s) and whether improvements in financial indicators preceded or followed lending projects – if improvement preceded those projects, it would seem unlikely that they had a large causal impact in borrowing countries. However, these multiple estimation techniques provide evidence that reinforces our main findings. Borrowing countries tended to experience substantial post-loan improvement in their financial indicators, significantly more than the typical improvement in non-borrowing countries, even after accounting for self-selection.

This paper contributes to a broader literature on the effects of economic reform programs in developing countries. Much of that literature focuses on the impact of IMF and World Bank adjustment lending on broad macroeconomic aggregates, most notably real per capita growth.[1] Much has been made of selection problems in that literature, and

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[1] Easterly (2005) describes this literature as including Barro and Lee (2002), Conway (1994), Corbo and Goldstein (1987), Corbo and Fischer (1995), Devarajan, Dollar and Holmgren (2001), Dicks-Mireaux, Mecagni, and Schadler (2000), Goldstein and Montiel (1986), Haque and Khan (1998), Hutchison (2001), Kapur, Lewis and Webb (1997), Khan (1990), Killick, Gunatilaka, and Marr (1998), Knight and Santaella

thus a substantial share of the papers adopt Heckman-type methods to assess the effects of adjustment lending. A smaller subset uses control group matching techniques and/or before and after analysis. We employ all three types of analysis here.

There have also been recent attempts to assess the effects of developing country policy reform on trade using similar selection techniques (see for example, Lederman and Ozden, 2004 and Jinjarik, Salinas, and Tsikata, 2004). As in trade, where specific indicators exist to assess outcomes such as the ratios of imports and exports to GDP, outcomes in the financial sector can be assessed via standard indicators such as the ratio of M2 or private credit to GDP. However, in the trade literature it has been easier to pinpoint specific reform episodes tied to trade agreements and legislative actions.[2] In the financial sector, where reform efforts often were carried out under broader multi-sector adjustment projects, and thus are harder to identify, little empirical work has been done.[3] We therefore rely on a comprehensive database of financial sector reforms, including both financial sector adjustment loans and multi-sector adjustment loans with financial sector components, that was recently put together by the World Bank's Operations Evaluation Department (OED).

The remainder of the paper is organized as follows. Section 2 describes our data, including the indicators that we use to assess outcomes and the variables that summarize World Bank lending to support financial sector reform from 1992 to 2003. Section 3 describes the basic regression models and section 4 summarizes the base results. Section 5 presents results from two methods that address self-selection problems that could be affecting the base results. Section 6 offers additional robustness checks, including regional regressions and models that test whether improvements in financial indicators came before or after World Bank loans were received. Section 7 concludes with a brief summary of the results from the various methods.

(1997), Summers and Pritchett (1993), Przeworski and Vreeland (2000), Svensson (2003), and Van de Walle (2001).
[2] In addition to Lederman and Ozden (2004) and Jinjarik *et al.* (2004), see Santos-Paulino and Thirlwell (2004) and Wacziarg and Welch (2003).
[3] Cull (2000) uses before and after analysis, but only for countries that received financial adjustment loans.

2. Data

To assess outcomes in borrowing countries we rely on standard indicators such as M2/GDP and Private Credit/GDP that have been shown to be robustly associated with long-run economic growth (Levine, 2005; Beck, Loayza, and Levine, 2000; Levine, Loayza, and Beck, 2000).[4] We restrict our analysis to banking indicators because banks hold the vast majority of financial sector assets in developing countries.[5] An advantage of these indicators is that they are available for many countries throughout the decade. They do, however, carry some limitations. For example, in an effort to restructure and sell problem banks, many non-performing assets might be written down in value or eliminated from bank balance sheets, resulting in a reduction in the private credit ratio. If performed well, such restructuring efforts contribute to a healthier banking sector. However, because of the reduction in private credit, these actions would be viewed as subtracting from financial development in our models.

In addition, the private credit ratio does not provide information about which segments of society receive credit, nor the quality of the loans that are made because data on non-performing loans are not available on a standardized basis across countries. Because the M2/GDP ratio also does not provide information on depositors, improvements on it do not necessarily imply that all segments of society are availing themselves of formal banking services. We therefore incorporate additional indicators to round out our assessment of financial development. We rely on the spread between lending and deposit interest rates, the share of total banking sector assets held by the three largest banks as a measure of concentration, and the ratio of cash held outside of banks to M2 as a measure of (lack of) confidence in the formal banking sector. Again, these indicators were chosen largely because of data availability, and they too have limitations. For example, interest rates were controlled in a number of developing countries at some point during our sample period, and thus spreads are unlikely to be an accurate measure of efficiency in those instances. Measures of capital adequacy, portfolio quality, and

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[4] For descriptions of standard indicators of financial development and their use see Beck, Demirguc-Kunt and Levine (2000).

[5] One of our indicators, the ratio of private credit to GDP, can however include lending by non-bank financial institutions.

profitability, while desirable, are simply not available in a standard format across countries.

Caveats aside, it seems likely that our five indicators – M2/GDP, Private Credit/GDP, Cash/M2, interest spreads, and concentration – provide a reasonably complete picture of financial sector development since 1992. Note also that the indicators are differentially suited to capturing short versus long-term financial development. On the one extreme, movements in the ratio of cash/M2 can provide a summary of depositors' short-term reactions to policy changes. On the other end of the spectrum, the private credit ratio and the concentration ratio, while both admittedly subject to some short-term perturbations, tend to capture long-term financial development. M2/GDP and spreads are, arguably, somewhere in between the two extremes. Taken together, the five indicators are likely to provide a more complete picture of both long-term and short-term banking development.

While the financial outcome variables that we use are standard within the finance and growth literature, our data on World Bank projects to support financial reform are not. The World Bank's Operations Evaluation Department (OED) has recently compiled a comprehensive database of 556 projects from 1992 to 2003 in which an intention to reform the financial sector was expressed. These projects include loans for adjustment, technical assistance, or lines of credit (LOC).[6] We focus our analysis on adjustment loans because these tended to be larger (in dollar terms), with conditionality attached to specific financial reforms, but aimed at broad financial sector development. By contrast, LOC often focused on channeling funds through specific financial institution(s), while technical assistance loans tended to be much smaller than adjustment loans, and focused on more narrow issues. The Appendix lists the 68 countries that received at least one adjustment loan with conditions tied to financial reform. As noted, these are either pure financial sector adjustment loans or multi-sector adjustment loans with financial sector components. A control group of 38 countries identified as having received no such loans is also listed. Our goal was to include all developing countries that had reasonably

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[6] Lines of credit (LOC) are funds passed through an intermediary, for demand driven purposes, where the final end-user has to repay the loan, usually with interest.

complete financial indicator data in the analysis. Comparisons between the two groups form the basis of most of the statistical analysis that follows.[7]

3. Methodology

For our base results, we rely on simple fixed-effects panel regressions of the following form:

$$Y_{it} = \alpha_i + \beta_{wb}t + \beta_{no\text{-}wb}t + \beta_1 adj_{it} + \beta_2 ref_{it} + \beta_3 X_{it} + \varepsilon_{it} \qquad (1)$$

where i represents country, and t is time measured in years since 1991. The time variable takes values from one to twelve, and the estimated coefficient β_{wb} thus represents the average growth rate for indicator of financial development Y for countries that received adjustment loans to supports financial reform. We test whether $\beta_{wb} = \beta_{non\text{-}wb}$ to assess whether adjustment loans had a beneficial impact on financial sector development. To the extent that the growth rates for the control countries were the same as (or greater than) those for those that received World Bank assistance, the value of that assistance would be questioned. All regressions also include α_i, a country-specific fixed effect. Our results, therefore, should be interpreted as changes relative to the country-specific mean for the indicator in question. Later we offer additional, more direct methods for addressing potential selection problems.

X is a vector of macroeconomic and institutional controls that includes inflation, real growth, government budget surplus(-deficit)/GDP and the CPIA index, a broad measure of institutional development. CPIA is the Country Policy and Institutional Assessment done annually by the World Bank to assess the quality of a country's present policy and institutional framework. The index is based on twenty criteria, which are grouped in four clusters: economic management; structural policies; policies for social inclusion and equity; and public sector management and institutions. All of the macroeconomic and institutional controls are lagged one year in the panel regressions that follow to help mitigate problems arising from the controls and the dependent variable being simultaneously determined.

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[7] A number of the countries in the control group received non-lending services in the sense that the World Bank maintained a policy dialogue with them throughout the period. A number also had received some loans for financial sector reform prior to our period of study. These factors could make it harder to find statistically significant differences between the two groups in the regressions that follow.

Ref is a vector of variables summarizing ten reform areas covered under the adjustment loans (bank privatization, bank regulation and supervision, banking reform *not* focused on privatization, regulation or supervision, auditing and accounting reform, capital market development, reform of non-bank financial institutions, general financial sector reform, rural finance, microfinance, and access to finance for SMEs). Because we have a country-level panel of financial sector outcomes, we need to aggregate the project-level data into country-year reform packages. In the regressions that follow, we use the cumulative number of loans that had conditions in the policy areas in question as explanatory variables.[8] In some specifications, we also include *adj*, the cumulative number of adjustment loans. Easterly (2005) finds that repeated structural adjustment lending from either the World Bank or the IMF failed to produce improvement on multiple macroeconomic outcomes including growth. We assess whether similar results hold for the financial sector. As with the macroeconomic and institutional variables, all policy reform variables are lagged one year in the regressions.

4. Results

The base regressions indicate that the relative performance of borrowers and non-borrowers varies across indicators (Table 2). Borrowers had more rapid growth in M2/GDP and more rapid declines in Cash/M2 and interest spreads, all signs of better financial development. The difference, however, was only significant for Cash/M2 and spreads. This pattern holds when macro/institutional controls and the policy reform variables are included in the regressions. By contrast, the results for reduction in concentration favor borrowers without controls or policy variables (model 2.13) and non-borrowers when those variables are introduced (models 2.14, 2.15). Note however that the number of observations is cut drastically when the controls are introduced, which is due to the government deficits variable. There is no significant difference between declines in concentration for borrowers and non-borrowers when we exclude that variable from models 2.14 and 2.15. To preserve degrees of freedom, the deficits variable is excluded from many of the robustness checks that follow.

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[8] Similar qualitative results obtain when we use the current number of loans in a given year covering that policy area or simple dummies indicating that a policy area is currently covered, or dummies indicating that it was covered at some point during the sample period.

At first glance, the most alarming finding is that private credit grew significantly faster in non-borrowing than in borrowing countries. However, private credit growth was positive and significant for borrowers in all specifications, which might come as a surprise given the number of borrowers that suffered financial crises during the period (see Appendix for list of borrowers). In addition, the estimated growth rate jumps to 1.0 percentage points per year when the policy controls are included, likely because certain types of reform curtail credit growth over the short to medium term. For example, reforms aimed at improving bank regulation and supervision were associated with substantial reductions in the private credit ratio (7 percentage points per adjustment loan). This could be because those reforms forced banks to reduce the reported values of nonperforming assets, which would have improved the health of the banking sector.

Improvements were largest on those indicators that are (arguably) better suited to capturing short- and medium-term financial sector development (cash/M2, spreads, and M2/GDP). Therefore, it could be argued that sufficient time yet had not elapsed to see the full effects of reform on private credit and concentration for borrowers. That does not explain, however, why borrowers would perform *worse* than non-borrowers over this period. On private credit, we provide a series of tests below indicating that selection is likely driving the result in Table 2 – borrowers came to the World Bank, in part, because they were relatively less likely than non-borrowers to generate private credit growth on their own.

On concentration, non-borrowers do not consistently outperform borrowers across the multiple tests that follow, and so we are less concerned about borrower performance on that dimension. Moreover, very recent research (Demirguc-Kunt, Laeven, and Levine, 2005; Beck, Demirguc-Kunt and Maksimovic, 2005; and Beck, Demirguc-Kunt, and Levine, 2003) demonstrates that standard concentration measures are not robustly associated with sector outcomes such as spreads or access to credit and are positively associated with stability (i.e., a lower likelihood of systemic crisis). Therefore, reducing concentration should not be a high priority in World Bank operations. Indeed, the most important determinants of financial sector outcomes from those regressions were contestability (as measured by fewer restrictions on entry), ownership (with foreign offering benefits and state imposing costs), and general measures of institutional quality.

The base results summarize percentage point changes in financial indicators, thus model 2.3 indicates that M2/GDP increased by 1.9 percentage points per year for the typical borrower.[9] However, a 1.9 percentage point change is much more important for a country starting with M2/GDP equal to 5% than one starting with 50%. To measure percentage changes in our indicators, we take their logs and re-run our base specifications (Table 3). Results are qualitatively similar, except that the improvement in M2/GDP is significantly larger for borrowers than non-borrowers (5% versus 3%), and there is now no statistical difference between the two groups on concentration. One potentially troubling change is that private credit growth rates for borrowers are no longer significantly different from zero in the models with control variables. However, that is due to the inclusion of the deficits variable. When that variable is excluded, the number of observations is over 700 (with 93 countries), and the borrower growth rate is positive and significant (3% per year).

The private credit growth rate for non-borrowers still remains significantly larger than for borrowers when the deficits variable is dropped, but this could be because the non-borrower growth rates are 'too high.' Note that private credit growth rates are over twice as large as M2/GDP growth rates for non-borrowers. Over a short period, this might be possible, but over longer periods this is unlikely to be sustainable, and likely to be destabilizing. Multiple recent papers indicate that rapid growth in indicators of financial depth, particularly those related to credit, can be so destabilizing that they lead to crisis (Honohan, 2004; Loayza and Ranciere 2004; Kaminsky and Reinhart 1999; Demirgüç-Kunt and Detragiache 1998).[10] By contrast, the growth rates for borrowers (3% for private credit/GDP compared with 4-5% for M2/GDP) seem more reasonable.[11]

Finally, the control variables tend to be associated with the financial indicators as one would expect – lower CPIA scores, and higher inflation and deficits retard financial development (Table 2). Different controls are significant across indicators – CPIA scores are important for private credit, deficits for Cash/M2 and spreads, and inflation for all three – but the coefficients are generally plausible. Similarly, different policy reform

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[9] This is relative to their average value on that indicator because all models in table 2 include fixed country effects.

[10] Loayza and Ranciere (2004) demonstrate that a positive long-run relationship between financial depth and growth coexists with a mostly negative short-run relationship.

[11] The point estimates are from models that include control variables except for deficits.

variables are significant across indicators, and the same variable can be positively or negatively associated with financial development depending on the indicator. For example, adjustment loans focused on improving bank regulation and supervision were linked to higher M2/GDP, but lower private credit and higher spreads.

While one could conceivably come up with explanations for the patterns of the coefficients in Table 2, we prefer not to invest too much effort in that direction. Our policy variables are the best that have been put together to study the effects of reform on financial development, but they carry some limitations. First, not all loans that covered a policy area did so in the same way. Some may have devoted substantial resources to that area, others relatively few. Second, because our classifications are based in part on the objectives stated in the documents describing the loans, we run the risk that we measure ex ante indications of planned reform rather than actual ex post reforms. Therefore, we view the policy variables as a set of coarse controls, and we include them to examine whether our primary results on borrowers versus non-borrowers hold up. We chose to focus on the simplest decision – borrow or not – rather than painstakingly qualifying the nature of the reforms to produce variables that were unlikely to explain variation in country-level aggregate financial indicators.

5. Selection Effects

The sample of borrowers is unlikely to be random, and one could conceive of the selection bias working in either direction. That is, countries with the most potential for financial development might prefer to pursue reform on their own, rather than incurring World Bank debt and negotiating and adhering to conditionalities. By contrast, another set of countries might be so ill-prepared to achieve financial reform that, even if they were to approach the Bank for assistance, it would be highly unlikely that a mutually beneficial adjustment loan could be negotiated. Therefore, in the treatment effects regressions that follow, we include non-linearities in the selection equation to account for these two potential types of countries that are unlikely to seek World Bank assistance.

We borrow concepts from the literature on the political economy of IFI lending to test whether 'strong' and 'weak' potential reformers were less likely to receive World Bank adjustment loans to promote financial sector development. Vreeland (2004) argues

that reform-minded executives in developing countries use IMF support to help overcome opposition to potentially unpopular policies. The idea is that after the executive reaches an agreement with the IMF, failure to achieve reform is more costly because rejection of those policies is also seen as a rejection of the IMF, and all domestics politicians and interest groups might find it costly to reject the IMF.[12]

Vreeland hypothesizes that an executive's likelihood of using IMF agreements in this way depends on the checks and balances she faces. Those facing no veto players (*i.e.*, dictators) would have no need for IMF support. Those facing too many are unlikely to overcome opposition, despite IMF support. Thus the IMF would be unwilling to enter into agreements with them. In some intermediate range, IMF agreements should be more prevalent because they are more likely to achieve the desired objective of overcoming the opposition of veto players. We assume that World Bank adjustment loans could serve a similar purpose, and the parallel to potentially 'strong' and 'weak' reformers discussed above should be clear.

To operationalize these concepts, we use data on the number of checks and balances stipulated in country constitutions as reported in Beck *et al.* (2001). We include the number of checks and the squared number of checks in the selection equations that follow to test whether Vreeland's hypotheses are valid for our dataset. We further hypothesize that a country's borrowing needs might affect the likelihood of receiving World Bank adjustment loans non-linearly. It is common for developing countries to apply proceeds from new World Bank loans to repay old ones. For countries with a relatively large stock of World Bank debt, this sort of evergreening would be more likely. Beyond some point, however, debt accumulation might become problematic, making future agreements less likely. For countries with relatively little past borrowing, predictions are more difficult. This could reflect a preference for self-reliance, and thus we would expect little future borrowing. Or demand for loans could be cyclical, and thus lending would decline during up-cycles and increase during subsequent down-cycles. We try a variety of variables measuring countries' past and current indebtedness and overall fiscal health to test these hypotheses.

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[12] "The IMF may restrict access to loans, it may preclude debt rescheduling with creditors who require an IMF arrangement to be in good standing, and decreased investment may result if investors take cues from the IMF." Vreeland (2004), p. 2.

a. Treatment Effects Regressions

In many Heckman-type selection models, the dependent variable is observable only for those individuals (or households or countries) that received the treatment. In our case, indicators of financial development are observable for borrowers and non-borrowers alike. We therefore opt for treatment effects models in which:

$$Y_i = \alpha + \beta X_i + \delta Z_i + \varepsilon_i \quad (2)$$

where Y is an indicator of financial development and X is the vector of macroeconomic, institutional, and policy control variables. Z is the endogenous treatment variable indicating whether or not country i borrowed. As is typical in this literature, the decision to borrow is modeled as the outcome of an unobserved latent variable Z^*, which is a function of exogenous covariates W and a random component u:

$$Z_i^* = \gamma W_i + u_i \quad (3)$$

We observe:

$$Z_i = 1, \text{ if } Z_i^* > 0 \quad (4)$$
$$Z_i = 0, \text{ otherwise}$$

Because there is an element of self-selection in borrowing from the World Bank, and because the error term of the model that summarizes this choice (namely, 3) could be correlated with the error term in the regression of interest (namely, 2), we must search for a set of valid instruments. These instruments should be highly correlated with the endogenous regressor (the borrowing dummy), but contemporaneously uncorrelated with the error term in (2) (*i.e.*, truly exogenous).

It is, however, difficult to find exogenous variables that can capture the non-linearities in borrowing outcomes described above. In particular, it is highly likely that proxies for borrowing needs as reflected in measures of countries' fiscal health and indebtedness are themselves endogenous. The governmental checks variable is less susceptible to criticism on these grounds, but those checks tend not to vary over time, and thus are not well suited for use as instruments in panel regressions that incorporate country fixed effects.

We therefore use past information on fiscal health and indebtedness in our selection equation, which is by definition not *contemporaneously* correlated with the error term in the financial development regressions. Because the hypotheses above

centered around the effects of current or past indebtedness on future borrowing, it is logical to use past information to predict which countries borrowed during our sample period. However, once we opt for past data to predict whether countries borrowed for financial sector development, we cannot estimate a selection effect that varies by year for each country. Rather, we estimate the likelihood of receiving at least one adjustment loan since 1992 based on information from 1970-1989. For this reason, the subscript t does not appear in (2). Note also that the (time-invariant) checks variable is better suited to the cross-sectional regressions.

There is another practical reason for cross-sectional regressions. In panel regressions with country fixed effects that include a dummy variable for current borrower status, all countries that received no loans and all those that had a loan in place throughout the period are dropped from the active observation set. Thus we can draw inferences about the effects of adjustment loans only for those countries whose borrowing status had changed during the period. Given the large number of countries that never borrowed, it seems more sensible to focus first on comparisons between them and those that borrowed at some point in the period. Later, we will offer specifications that attempt to link the timing of loans with improvement in the financial indicators of borrowers.

Although the cross-sectional approach is the more promising one for handling the selection problems that we face, we note also that it could put us at a disadvantage in finding significant results because standard errors are likely to be larger in regressions with relatively few observations. Skeptics of the panel results above could however argue that because error terms from multiple observations from the same country are likely to be correlated with one another, we really have the same number of independent observations as we have countries in the dataset. Restricting ourselves to the cross-section of countries therefore could be viewed as an additional test of whether borrowing countries have out-performed non-borrowers in terms of financial development.

We calculate growth in indicator Y in year t as Y_t/Y_{t-1}. We then take the average of the yearly growth rates over the whole period for each country to derive one observation per indicator per country. Those country averages are used as dependent variables in the OLS and treatment effects regressions in Table 4. The OLS results are similar to those from the panel regressions in Table 3, indicating that those results were not solely the

product of multiple observations from each country.[13] In particular, M2/GDP grew and Cash/M2 declined significantly more rapidly among borrowers. There was no significant difference between borrowers and non-borrowers in terms of concentration (as in models 3.14 and 3.15 that included controls). Borrowers' interest spreads declined at an average rate similar to that in Table 3, but the result is not significant in the cross-sectional OLS regression, which could be because we have only fifty observations. Unlike for the panel regression in Table 3, borrowers had private credit growth rates on par with those for non-borrowers.

When we correct for self-selection via the treatment effects model, borrowers outperformed non-borrowers by a wider margin.[14] The results for M2 growth (models 4.2, 4.3) and private credit growth (models 4.5 and 4.6) are particularly striking. At the risk of reading too much into our models, this suggests that the typical bank borrower had relatively poor prospects for financial development. Once this is accounted for econometrically, the positive effects of World Bank involvement become much more pronounced. Similar results hold for reductions in sector concentration (models 4.14 and 4.15), although again we put less emphasis on that indicator of financial development.

Treatment effects regressions for Cash/M2 are more volatile than those for private credit, M2/GDP, and concentration. In model 4.8, which does not include control variables, the borrower dummy is insignificant. Multiple variables are significant in the selection equation, and a likelihood ratio test indicates that the selection and Cash/M2 equations are independent from one another. Thus there is no need to perform treatment effects regression, and the OLS results are valid. However, in model 4.9, which includes institutional and macroeconomic controls, the borrower dummy is positive and significant (indicating *less* confidence in the financial system). Although fewer variables are significant in the selection equation than in model 4.8, the likelihood ratio test indicates that the selection and Cash/M2 equation are not independent, and thus the treatment effects results would be preferred over the OLS. Because the cash/M2 results are highly sensitive to slight perturbations in either the selection equation or the equation

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[13] We use Table 3 for comparison because the growth rates in Table 4 are expressed in percentage terms (rather than percentage points, as in Table 2).
[14] All treatment effects models in Table 4 are estimated via maximum likelihood.

of primary interest, it is difficult to draw a strong conclusion for that variable based on Table 4.

In contrast, the selection equations for M2/GDP and concentration produce similar coefficients, many of which are significant, and the likelihood ratio test indicates that the treatment effects models is preferred to OLS. In the treatment models, the borrower coefficient is nearly identical whether or not controls are included.[15] This relatively stable pattern of results lends credibility to the conclusion that borrowing countries performed better than non-borrowers on those two dimensions. Significance levels in the selection equation for private credit are somewhat lower than for M2/GDP or concentration, but the coefficients are similar.

The coefficients in those selection equations provide support for the hypotheses discussed above. For example, the governmental checks and checks squared coefficients indicate that the probability of receiving an adjustment loan increases from one to three checks, but declines thereafter (Figure 1). As hypothesized, IFI loans are most likely for intermediate levels of checks. We tried multiple measures of past fiscal health including the current account balance, tax revenues as a percentage of GDP, and overall government budget balance. Because we have relatively few observations, we include only two such variables – total IMF borrowing and total external debt as a share of GDP, both measured from 1970 to 1989 – in our selection equations. The IMF borrowing variable is positive and significant in multiple selection equations, providing support for the evergreening hypothesis. The debt and debt squared coefficients indicate that countries with low levels of debt in the 1970s and 1980s were more likely to be borrowers in our dataset than those with moderate levels of debt (Figure 2), consistent with the hypothesis that debt levels might be cyclical. However, heavily indebted countries prior to 1990 were the most likely borrow in our sample, providing additional support for the evergreening hypothesis.[16] In sum, the selection equations provide plausible results in many of the treatment effects regressions. Those regressions only

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[15] The deficits variable is dropped from the controls set in the treatment effects models because the maximum likelihood estimates did not converge when it was included.

[16] Because we include only a linear and quadratic term for debt in the selection equation, we can not test whether the probability of borrowing eventually declines for extreme levels of indebtedness.

reinforce our conclusions about the positive association between borrowing and financial development.

b. Propensity Score Matching

Another option for facilitating fairer comparisons between borrowers and non-borrowers is propensity score matching. The intuition underlying this method is that certain country types (e.g., the most institutionally sound) are more apt to respond favorably to the treatment than others. To the extent that the control group is more (or less) heavily weighted toward types that are less likely to respond favorably, comparisons with the treatment group can be misleading. The propensity matching technique, therefore, matches treatment and control observations based on relevant observable characteristics. In this way, apples are compared with apples, and oranges with oranges. However, it can be difficult to judge a good match when treatment and control group observations can be compared on multiple observable dimensions. Propensity score matching can reduce that dimensionality by summarizing the impact of observables in a single equation. A standard probability model (logit or probit) is used to estimate the conditional probability of receiving the treatment (in our case adjustment loans) given a set of covariates. Because the equation is used only to reduce the dimensionality of the conditioning, it has no behavioral assumptions attached to it. Thus, unlike in the treatment effects regressions, we need not worry about the exogeneity of the covariates. Contemporaneous variables can be used, and higher order transformations of those variables are also typical.

Applications of these techniques commonly involve matching a relatively small set of treatment observations to a subset of a relatively large pool of non-treatment observations. In our case, however, we have only a limited set of non-treatment observations since there are only 38 non-borrowers in our sample (see Appendix).[17] Dehejia and Wahba (2002) demonstrate that in situations where there are very few comparable control observations, it is acceptable (even preferable) to match with

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[17] In principle, it would be possible to increase the number of observations by going back to the panel dataset. However, the nearest matching control group observations would almost certainly be from borrowing countries in years when no adjustment loan was in place. As in a fixed effects regression with a dummy variable for current borrowing status, this would provide information about only those countries that changed their borrowing status throughout the period. Because we are most interested in comparisons with those countries than never borrowed, applying propensity matching to the panel dataset was not appropriate.

replacement. That is, each treatment observation is matched with the control observation with the nearest propensity score, regardless of whether that control observation is also the nearest match for another treatment observation.

Table 5, Panel B offers results from a propensity score equation that we use to match each borrower with the most similar non-borrower. The dependent variable is a dummy equal to one if a country borrowed since 1992. Covariates include CPIA (and its square), the M2/GDP level (and its square), total debt service as a percentage of GNI, growth in fixed capital formation, and IMF borrowing (in constant dollars). For each country, all of those variables are averaged over 1991 to 2002. Although we need not make any behavioral assumptions about the covariates, the CPIA coefficients do hint at the non-linearities found for the treatment effects regressions – that is, borrowing seems most likely for countries in the intermediate range.

We experimented with a variety of covariate groups that produced overall fits similar to the equation presented and similarly close matches. The bottom of Panel B summarizes the estimated probability of borrowing conditional on the covariates. The estimated probability for borrowers is much higher than for the un-matched non-borrower sample. By contrast, the estimated propensities for the matched non-borrower sample are almost identical to those for the borrower sample. The matching process also brings the treatment and control samples closer on most of the macroeconomic variables that we have used in regressions (Panel A).

Having defined a control group of observations, the next step is to compare its outcomes with those for the treatment group (borrowers). Simple averages on the right side of Panel A, Table 5 indicate that the matched non-borrowers sample had slower growth in M2/GDP (2% versus 4% per year), less reduction in Cash/M2 (+1% versus –2% per year) and concentration (–2% versus –3%), and more rapid increase in spreads (+5% versus +1%) than borrowers. Matched non-borrowers did, however, have more rapid private credit growth (4% versus 3%). The pattern is similar to that found in the base results. However, none of those differences is statistically significant, likely because we have so few observations.

OLS regressions in Panel B, Table 5 offer comparisons between borrowers and matched non-borrowers after including macroeconomic and institutional control

variables. Because the matched and borrowers samples differ somewhat along these dimensions, these controls could be important (Panel A, left side). Indeed, their inclusion produces significant differences in favor of borrowers with respect to growth in M2/GDP (model 5.2) and reductions in Cash/M2 (5.6), although these results are also very similar to those when the un-matched sample is used. Using the matched sample, borrowers enjoyed more reduction in interest spreads than non-borrowers, though the coefficient just misses significance (model 5.8). The coefficient for borrowers in the private credit regression is positive (though insignificant) for the matched sample (model 5.4). For the unmatched sample, it was negative and insignificant. On the whole, matching produces results that favor borrowers a bit more strongly than in the base results. Like the treatment effects regressions, this correction reinforces our original findings.

6. Additional Robustness Checks

This section offers a series of robustness checks to test whether (1) improvement in financial indicators occurred before or after (or both) receiving World Bank loans and (2) our main findings pertain to all regions. If the findings hold for multiple regions and if improvements occurred after the loan programs were adopted, it is more likely that World Bank projects contributed to financial sector development.

a. *Pre- and Post-Adjustment Rates of Financial Development*

To this point, the analysis has focused on comparisons between borrowers and non-borrowers. However, because growth rates for borrowers are averaged over the entire period, it is possible that improvements in their financial indicators occurred prior to receiving loans. If World Bank assistance lagged rather then led improvement in financial indicators, it would be harder to ascribe a causal interpretation to our results. That is, it would seem more likely that the differences we see between borrowers and non-borrowers are attributable to characteristics of the countries themselves, rather than the financial reform programs they undertook in conjunction with the World Bank. Phrased another way, and perhaps a bit crassly, World Bank adjustment loans might have been just one of the trappings of successful financial sector reform during this period.

To test that proposition, Table 6 offers regressions that allow borrowers' growth rates to adjust after receiving their first adjustment loan for financial reform. More

specifically, the 'pre-adjustment growth rate' is the estimated coefficient for the time (t) variable in equation (1) for countries that borrowed. The 'post-adjustment change in growth rate' is the coefficient for a time variable equal to the number of years since a country received its first loan. The coefficient on the post-adjustment dummy is, therefore, the change in the growth rate relative to its pre-adjustment level. For example, in model 6.9, the post-adjustment coefficient indicates that Cash/M2 declined by an additional 4.6% per year, over and above the 1.9% average annual decline enjoyed throughout the period.[18]

The results for Cash/M2 are typical of those for the other indicators. This 'before and after' analysis thus reveals that the pace of improvement became more rapid after the inception of a World Bank adjustment program. Interest spreads were actually climbing at a rate of 8% per year in the typical borrowing country prior to receiving an adjustment loan.[19] Afterwards, they declined by 5% per year (8% pre-adjustment growth – 13% post-adjustment change). Pre-adjustment growth rates for M2/GDP and private credit/GDP were not significantly different from zero; post-adjustment gains were about 6% per year for both indicators. The only exception to the pattern is concentration, which was declining at the same rate for borrowing countries before and after receiving adjustment loans. However, taken together the results in Table 6 indicate a strong link between the timing of adjustment loans and improvements in financial indicators.

This is not to suggest that all adjustment loans for financial reform were successful. For macroeconomic structural adjustment loans, Easterly (2005) points out that the repetition of loans to a given country is itself a sign that such lending was not effective, "One might expect that it would take more than one loan to accomplish 'adjustment,' but it is hard to see why it would take such a large number."[20] In our sample as well, countries received as a many as six adjustment loans with financial sector reform components from 1991 to 2002. We therefore include the cumulative number of adjustment loans for financial reform as a regressor in panel B of Table 6. Whereas Easterly found no robust positive links between repetition of loans and macroeconomic

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[18] Thus, the average post-adjustment decline in cash/M2 was –6.5% (-1.9% + -4.6%).
[19] Again, this is a percent change rather than a percentage point change because we are using the logs of the financial indicators as dependent variables in Table 6.
[20] p. 6.

outcomes, we actually find a negative relation between the number of adjustment loans and multiple financial development indicators (M2/GDP, private credit/GDP, and Cash/M2). However, the inclusion of the cumulative loans variable does not change the pre- and post-adjustment growth rates described above. Taking into account that multiple loans to a single country were a sign of past reform failures, the typical borrowing country saw significant improvement in its rate of financial development after receiving its first adjustment loan with components aimed at financial sector reform.

b. *Regional Effects, Latin America*

One might still be concerned that the relatively positive outcomes for countries that borrowed from the World Bank is driven by a specific subset of countries. For example, the results could be driven by the transition economies whose financial sectors were starting from a low base, and whose reform experiences were likely atypical. We lack enough data from each region to run separate regional regressions. We do, however, have enough data to re-estimate our models on countries from the Latin-America and Carribean (LAC) region. We also can also run models on developing countries outside of Latin America. Splitting the sample in this way serves two purposes. First, the models for Latin America illustrate whether the general results hold *within* a single region whose countries have similar cultural origins that are difficult to control for in simple regression models. If so, this suggests that the implied benefits of World Bank assistance are not driven by cultural factors (*i.e.*, that some countries and cultures are more likely to have both substantial involvement with the World Bank and relatively flourishing financial sectors). Second, we can compare the results from LAC with those from the rest of the developing world. If the implied advantages of receiving World Bank assistance are similar in the two samples, it suggests that no single region is driving the results, which further validates the positive effects of being in the treatment category.

For all indicators except concentration, Latin American countries that received World Bank assistance performed better than those that did not (Table 7). For each of those indicators, there is at least one specification where the estimated growth rate for borrowing countries is significantly larger than for non-borrowers. In two models for Cash/M2 (7.8, 7.9) and one for interest spreads (7.10), the growth rates for borrowers and

non-borrowers are statistically indistinguishable, but the coefficient is significant for borrowing countries and insignificant for non-borrowers. These cases, too, indicate that borrowers out-performed non-borrowers.

In developing countries outside Latin America, the trend was toward better developed banking sectors. Except for interest spreads, growth rates are significantly different from zero in the direction consistent with a stronger banking sector for both countries that received World Bank adjustment loans and those that did not. In Latin America, non-borrower performance was less consistent across indicators. However, as in Latin America, World Bank borrowers' improvements on the indicators tended to be larger than those for non-borrowers. For M2/GDP, Cash/M2, and banking concentration, estimated changes are significantly larger than for non-borrowers in at least one specification. Interest spreads actually widened for non-borrowers, while showing no change for borrowers, another indication that the relative performance of borrowers was better.

The exception to this pattern is for private credit/GDP, which grew more slowly among borrowers than non-borrowers. Private credit growth among borrowers was also slower than growth in M2/GDP. By contrast, in Latin American countries that received loans and in non-borrower countries (both within and outside Latin America), the private credit ratio grew more rapidly than the M2 ratio. Consistent with the observation that such rapid growth in private credit can be destabilizing, since 1990 Caprio and Klingebiel (2003) document systemic or borderline banking sector crises in ten of the twenty Latin American countries that enter our regressions, with estimated costs greater than eighteen percent of GDP in four cases.

To summarize, the results for LAC countries indicate that, within a single region, financial sector development in countries that borrowed from the World Bank was more pronounced than in those that did not. The results for non-LAC developing countries also indicate that borrowing countries did better, and the coefficients and significance levels are generally similar to those for LAC borrowers. This pattern strongly suggests that no single country or region is driving our main findings.

7. Conclusion

Using a unique new dataset on World Bank adjustment loans that supported financial sector reform from 1992 to 2003, we offer evidence that borrowing countries did better than non-borrowers on multiple measures of banking sector development including M2/GDP, interest spreads, and Cash/M2. These results are found in both panel regressions that incorporate fixed-country effects and in cross-sectional regressions that use average growth in financial indicators over the full period for each country as dependent variables. The cross-sectional regressions indicate that the panel results are not driven by multiple observations from the same country that can artificially drive down standard errors.

Results for private credit/GDP and banking sector concentration are less favorable for borrowers. For concentration, results strongly favor neither borrowers nor non-borrowers. Moreover, recent evidence indicates that concentration measures are not robustly linked to financial development and stability. For private credit, concerns are more valid, in part because borrowing countries appear to have performed worse than non-borrowers.

Because the sample of borrowing countries is non-random, we offer a series of models that try to account for potential selection effects. We use non-linear selection equations to capture concepts from the political economy literature on IFI relations with development countries. In a crude way, we can therefore account for countries that prefer not to borrow from those institutions because they are relatively self-sufficient, and those that the IFI's prefer not to deal with because reform is unlikely to be successful. When we address selection in this way using treatment effects regressions, borrowing countries had private credit growth rates significantly larger than non-borrowers. Propensity score matching techniques also indicate that private credit grew more quickly in borrowing countries, though the result is not significant. For M2/GDP and cash/M2, borrowers performed significantly better than non-borrowers on at least one of the tests (propensity matching or treatment effects). Borrowers appear to have done less well on interest spreads than the other indicators when we account for selection, but that could be attributable to lost observations.

Finally, we offer robustness checks indicating that our results are not driven by a single region, and that improvements in financial indicators did in fact occur after the inception of adjustment lending, even when we control for the adverse selection effects associated with repeated lending to the same country. Taken in their entirety, these results suggest that the World Bank adjustment loans studied here did have a positive effect on financial sector outcomes. At the least, it would be difficult to conclude that such involvement was a net detriment for borrowers.

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Figure 1

Predicted Probability of WB Adjustment Loan
(for Financial Sector Development)

Figure 2

Predicted Probability of WB Adjustment Loan
(for Financial Sector Development)
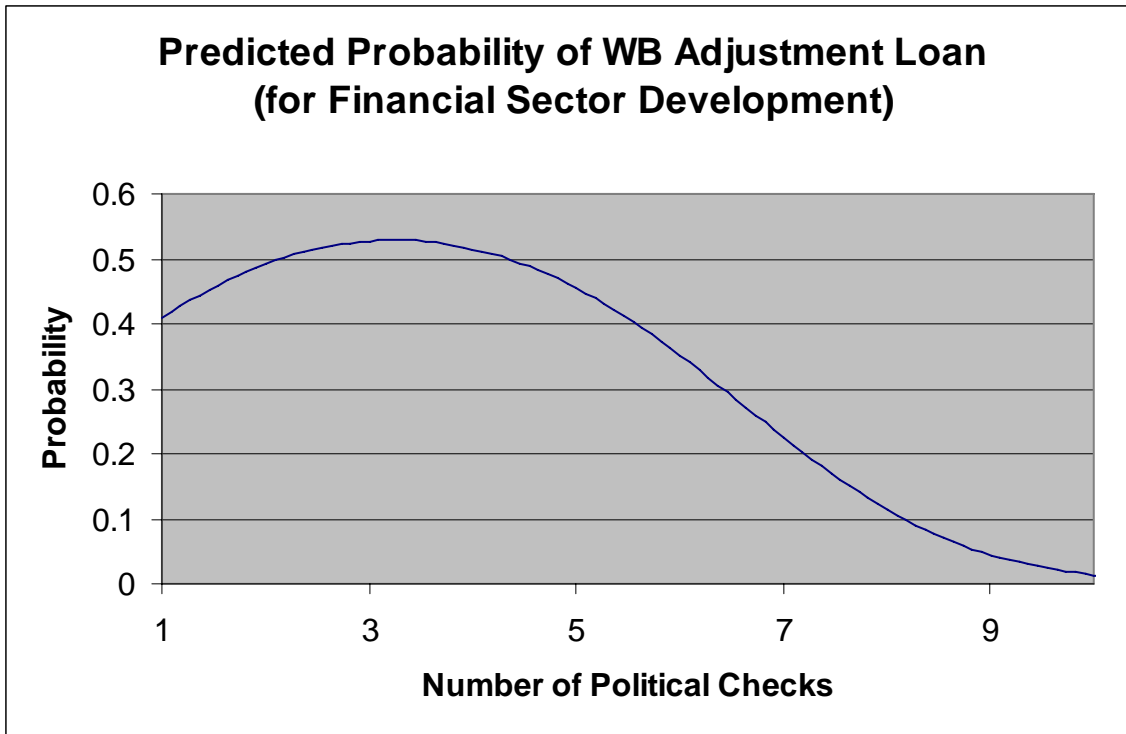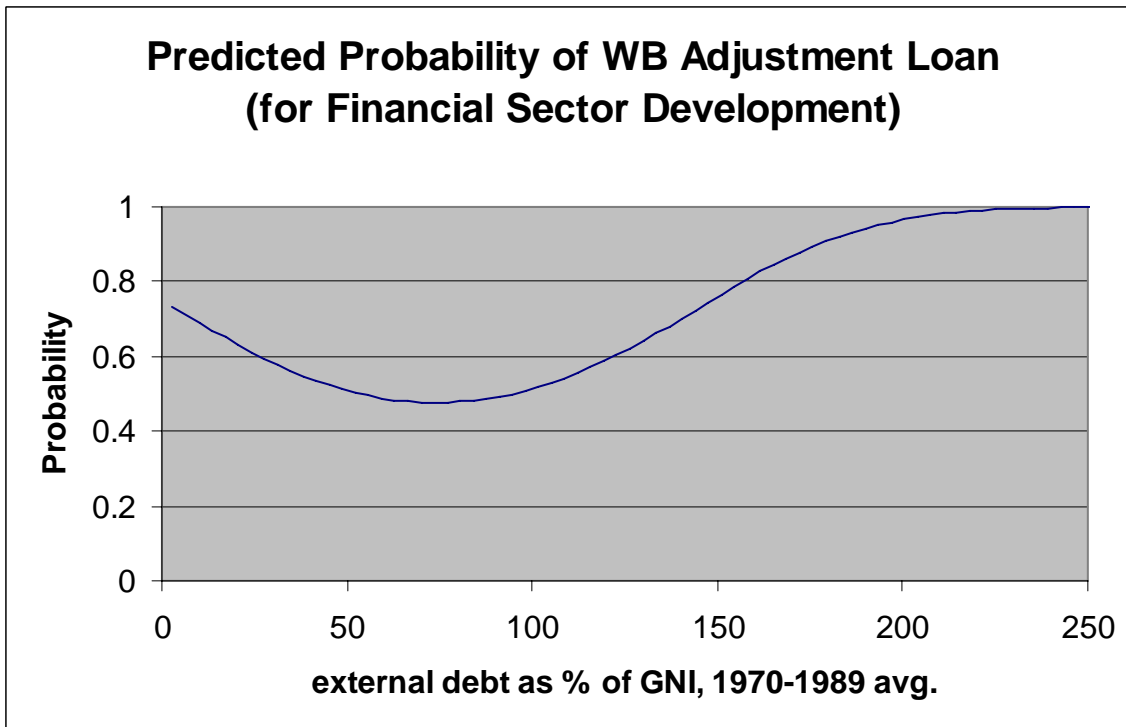
Table 1: Variable Descriptions and Summary Statistics

Variables	Description	Mean	Median	High	Low
Growth Rate	Equal to the year minus 1991. Estimated coefficient measures the yearly growth rate for the dependent variable in question.	6.68	7	12	1
Policy Variables					
Number of Adjustment Loans	Cumulative number of adjustment loans by the country in question at time t. In some models, the total also includes loans for technical assistance.	0.66	0	6	0
Bank Privatization (# loans)	Number of adjustment loans with an emphasis on bank privatization.	0.21	0	3	0
Regulation, Supervision (#)	Number of adjustment loans with an emphasis on bank regulation and supervision.	0.34	0	4	0
Other Banking (#)	Number of adjustment loans with an emphasis on banking reform other than privatization, regulation, and supervision.	0.43	0	4	0
Auditing, Accounting Reform (#)	Number of adjustment loans with an emphasis on accounting and auditing reform.	0.06	0	2	0
Capital Market Development (#)	Number of adjustment loans with an emphasis on capital and securities market development.	0.17	0	3	0
General Financial Sector Reform(#)	Number of adjustment loans with an emphasis on general financial sector development not covered under the other variables.	0.16	0	3	0
Rural Finance (#)	Number of adjustment loans with an emphasis on rural financial sector development	0.02	0	2	0
Microfinance (#)	Number of adjustment loans with an emphasis on development of microfinance.	0.004	0	1	0
Non-Bank Financial Sector Institutions (#)	Number of adjustment loans with an emphasis on development of non-bank financial institutions.	0.04	0	2	0
SME Finance (#)	Number of adjustment loans with an emphasis on financial services for small and medium-sized enterprises	0	0	0	0
Dependent Variables					
Private Credit/GDP	Claims on the private sector (IFS line 22d) divided by GDP (IFS line 99b).	25.1%	17.7%	158.5%	0.0%
M2/GDP	Money (IFS line 34) plus quasi-money (IFS line 35) divided by GDP (IFS line 99b).	33.2%	26.9%	148.2%	0.002%
Cash/M2	Currency outside deposit money banks (IFS line 14a) divided by M2 (IFS line 34 + line 35).	23.1%	19.4%	82.5%	0.0%
Interest Rate Spread	Lending rate (IFS line 60l) minus deposit rate (IFS line 60p), multiplied by 100.	11.4%	8.6%	163.5%	-6.9%
Concentration	Share of total banking sector assets held by the top 3 largest banks (based on asset information in Bankscope).	62.0%	59.5%	100.0%	14.9%

Macro/Institutional Controls					
CPIA Score	Proxy for institutional development. CPIA is the Country Policy and Institutional Assessment done annually by the World Bank to assess the quality of a country's present policy and institutional framework. The index is based on twenty criteria, which are grouped in four clusters: economic management; structural policies; policies for social inclusion and equity; and public sector management and institutions.	3.23	3.28	5.35	1.0
Surplus (-Deficit)/GDP	Overall budget balance, including grants, as a % of GDP (From World Development Indicators).	-2.72%	-2.11%	10.26%	-31.63%
GDP Growth	GDP growth (annual %). (From World Development Indicators).	3.00%	3.94%	106.3%	-50.2%
Inflation	Inflation, GDP deflator, annual %. (From World Development Indicators).	78.1%	9.41%	6041.6%	-25.2%
Selection Equation Variables					
Government Checks	CHECKS equals one if a country has a legislature or executive that is not competitively elected. It is blank if there is no chief executive. It is incremented by one for each of the following cases: if there is a chief executive, if the chief executive is competively elected, and if the opposition controls the legisture. In addition, in presidential systems CHECKS is incremented by one for each chamber of the legislature UNLESS the president's party has a majority in the lower house AND a closed list system is in effect (implying stronger presidential control of his/her party, and therefore of the legislature), and for each party coded as allied with the president's party and which has an ideological (left-right-center) orientation closer to that of the main opposition party than to that of the president's party. In parliamentary systems, CHECKS is incremented by one for every party in the government coalition as long as the parties are needed to maintain a majority, and for every party in the government coalition that has a position on economic issues (right-left-center) closer to the largest opposition party than to the party of the executive. In parliamentary systems, the prime minister's party is *not* counted as a check if there is a closed rule in place – the prime minister is presumed in this case to control the party fully. (From Beck *et al.*, 2003)	2.65	2.50	10.1	1
Debt	External debt as a % of GNI. Averaged, 1970-89. (From World Development Indicators)	56.2%	48.1%	222.2%	4.0%
IMF Credit	Use of IMF Credit in millions of constant $US. Averaged, 1970-89. (From World Development Indicators)	462.0	93.5	9370.0	0.0
Debt Service	Total debt service as a % of GNI. Averaged, 1990-1999. (From World Development Indicators)	5.3%	4.2%	0.3%	20.3%
Capital Formation	Gross fixed capital formation (as a % of GDP), 1990-1999. (From World Development Indicators)	22.3%	21.0%	6.9%	64.8%

Note: Figures calculated over all observations for which at least one dependent variable is non-missing.

Table 2: Base Results, Fixed Effects Panel Regression

	M2/GDP			Private Credit/GDP			Cash/M2			Interest Spread			Concentration		
	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13	2.14	2.15
Growth Rates															
Received WB Adjustment Loans	1.01***	1.73***	1.94***	.637***	0.37*	0.98***	-0.42***	-0.48***	-0.76***	-0.57***	-1.74***	-1.57**	-2.88***	-1.06***	-0.99*
	(.094)	(.184)	(.264)	(.110)	(.219)	(.299)	(.056)	(.094)	(.135)	(.163)	(.483)	(0.67)	(0.19)	(0.38)	(0.52)
No WB Adjustment Loans	.760***	1.65***	1.65***	1.02***	1.65***	1.66***	-0.25***	-0.37***	-0.37***	-.006	-0.18	-0.19	-2.33***	-2.16***	-2.15***
	(.127)	(.211)	(.207)	(.148)	(.261)	(.250)	(.071)	(.110)	(.107)	(.213)	(0.59)	(0.59)	(0.24)	(0.39)	(0.39)
Macro/Institutional Controls															
CPIA Score		-.578	-.892		2.34***	2.52**		-0.60	-0.51		3.50*	2.50		-2.94*	-2.51
		(.950)	(0.95)		(1.09)	(1.08)		(0.55)	(0.55)		(2.03)	(2.10)		(1.54)	(1.57)
Surplus (-Deficit)/GDP		-.193	-.120		.283*	.196		-.249***	-.275***		-1.49***	-1.76***		-.027	.012
		(.146)	(.151)		(.163)	(.164)		(.081)	(.083)		(0.32)	(0.34)		(.252)	(.270)
GDP Growth		-.175**	-.150*		.039	.094		-.032	-.024		.209	.275		-.154	-.198
		(.089)	(.088)		(.106)	(.103)		(.049)	(.049)		(.193)	(.197)		(.147)	(.149)
Inflation		-.003***	-.003**		-.003*	-.003*		.002***	.003***		.034***	.036***		-.011	-.016*
		(.001)	(.001)		(.002)	(.002)		(.001)	(.001)		(.011)	(.012)		(.009)	(.010)
M2/GDP											.098	.125		-.291***	-.322***
											(.122)	(.131)		(.097)	(.102)
Policy Variables															
Bank Privatization (# loans)			-3.09**			0.52			-0.55			9.38**			-3.40
			(1.52)			(1.81)			(0.88)			(4.24)			(2.68)
Regulation, Supervision (#)			3.74**			-7.20***			0.13			7.67*			-3.77
			(1.81)			(2.15)			(1.09)			(4.36)			(3.28)
Other Banking (#)			-2.94*			.444			2.18**			-7.90*			4.20
			(1.74)			(2.05)			(1.01)			(4.06)			(3.14)
Auditing, Accounting Reform (#)			1.41			3.11			-4.23**			-6.26			11.88**
			(3.63)			(3.59)			(1.68)			(8.42)			(5.01)
Capital Market Development (#)			1.01			3.12*			0.50			-2.09			-2.74
			(1.39)			(1.67)			(0.81)			(2.93)			(2.11)
General Financial Sector (#) Reform			-.742			-1.40			-0.58			-5.54			3.29
			(1.43)			(1.71)			(0.86)			(3.47)			(2.41)
Rural Finance (#)			8.50**			7.77*			0.69			-2.50			-2.77
			(3.49)			(4.17)			(1.89)			(9.01)			(5.13)
Microfinance (#)			1.56			-6.20			5.78***			.298			-3.81
			(3.95)			(4.72)			(2.59)			(10.21)			(7.77)
Non-Bank Financial Sector (#) Institutions			2.37			3.21			-4.54***			10.95*			0.96
			(2.79)			(3.34)			(1.88)			(6.25)			(3.86)
Constant	27.28***	27.77***	27.93***	20.19***	12.66***	14.14***	24.48***	25.35***	25.78***	13.68***	-1.41	-1.09	80.28***	90.48***	89.65***
	(.550)	(3.13)	(3.20)	(.643)	(3.70)	(3.63)	(0.33)	(1.84)	(1.84)	(0.96)	(7.72)	(8.14)	(1.12)	(5.79)	(5.99)
Observations	866	368	368	902	380	380	1119	452	452	538	242	242	706	293	293
Countries	90	69	69	94	71	71	98	77	77	60	47	47	83	59	59
R-squared (within)	0.16	0.38	0.42	0.09	0.23	0.28	0.06	0.17	0.23	0.02	0.21	0.25	0.34	0.33	0.37

All models include country fixed effects. Standard errors are within parentheses. *,**,*** indicates significant at 10, 5, and 1 percent, respectively. All policy and control variables are lagged one year. Loans devoted solely to microfinance are deleted from the database. There were no adjustment loans focused on SME finance, so that variable does not appear in the table. When loans for technical assistance are included in the database, the SME variable does enter the model. Shading indicates coefficients differ at the ten percent level of statistical significance or better.

Table 3: Fixed Effects Panel Regressions, Results Expressed in Percentage Terms

	Log(M2/GDP)			Log(Private Credit/GDP)			Log(Cash/M2)			Log(Interest Spread)			Log(Concentration)		
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10	3.11	3.12	3.13	3.14	3.15
Growth Rates															
Received WB Adjustment Loans	.036***	.043***	.052***	.029***	.001	.012	-.028***	-.023***	-.039***	-.005	-.064***	-.062**	-.051***	-.017**	-.016
	(.004)	(.004)	(.006)	(.005)	(.008)	(.011)	(.003)	(.005)	(.007)	(.007)	(.015)	(.021)	(.003)	(.007)	(.010)
No WB Adjustment Loans	.014***	.031***	.031***	.037***	.063***	.064***	-.017***	-.022***	-.022***	.015	.015	.014	-.036***	-029***	-.029***
	(.005)	(..005)	(.005)	(.007)	(.009)	(.009)	(.004)	(.005)	(.005)	(.010)	(.018)	(.019)	(.004)	(.008)	(.008)
Macro/Institutional Controls Included?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Policy Variables Included?	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Constant	3.13***	3.23***	3.20***	2.63***	2.35***	2.37***	3.03***	3.07***	3.09***	2.11***	1.44***	1.42***	4.35***	4.65***	4.62***
	(.021)	(.074)	(.074)	(..032)	(.132)	(.135)	(.018)	(.091)	(.094)	(0.04)	(0.24)	(0.26)	(0.02)	(0.11)	(0.12)
Observations	866	368	368	899	380	380	1119	452	452	532	239	239	706	293	293
Countries	90	69	69	94	71	71	98	77	77	60	47	47	83	59	59
R-squared (within)	0.13	0.38	0.44	0.06	0.23	0.27	0.09	0.15	0.19	0.01	0.18	0.19	0.32	0.29	0.33

All models include country fixed effects. Standard errors are within parentheses. *,**,*** indicates significant at 10, 5, and 1 percent, respectively. All policy and control variables are lagged one year. Loans devoted solely to microfinance are deleted from the database. There were no adjustment loans focused on SME finance, so that variable is not among the policy controls. Shading indicates coefficients differ at the ten percent level of statistical significance or better.

Table 4: Cross Sectional Regressions, OLS and Treatment Effects

	Avg. Growth M2/GDP			Avg. Growth Private Credit/GDP			Avg. Change Cash/M2			Avg. Change Interest Spread			Avg. Change Concentration		
	4.1 OLS	4.2 Treat1	4.3 Treat2	4.4 OLS	4.5 Treat1	4.6 Treat2	4.7 OLS	4.8 Treat1	4.9 Treat2	4.10 OLS	4.11 Treat1	4.12 Treat2	4.13 OLS	4.14 Treat1	4.15 Treat2
Received WB Adjustment Loans	.021** (.008)	.075*** (.014)	.073*** (.014)	-.001 (.026)	.144** (.020)	.138*** (.026)	-.028** (.012)	-.005 (.036)	.059*** (.017)	-.061 (.109)	-.159 (.244)	-.243 (.183)	.011 (.011)	-.081*** (.022)	-.078*** (.023)
CPIA Score	.013 (.009)		.009 (.010)	-.001 (.021)		-.008 (.018)	-.008 (.011)		-.010 (.011)	-.025 (.146)		-.165* (.091)	-.019* (.010)		-.022 (.014)
Inflation	.0001 (.0001)		.0001 (.0001)	.0002 (.0003)		-.00016 (.00012)	-.0004 (.0003)		.00001 (.00004)	.0002 (.0001)		.0002 (.0005)	-.00005 (.00004)		.00002 (.00008)
Real Growth	.003 (.003)		.003 (.002)	-.002 (.008)		.011*** (.004)	-.012*** (.003)		-.006** (.003)	.012 (.024)		.008 (.025)	.001 (.002)		-.003 (.004)
Surplus(-Deficit)/GDP	-.001 (.002)			-.001 (.003)			.001 (.002)			-.015 (.018)			.002 (.002)		
M2/GDP										.001 (.002)		.002 (.002)	.0001 (.0003)		.0002 (.0002)
Constant	.957*** (.035)	.987*** (.010)	.944*** (.031)	1.05*** (.079)	.953*** (.018)	.950*** (.055)	1.07*** (.045)	.984*** (.021)	1.00*** (.035)	1.06** (.515)	1.08*** (.141)	1.59*** (.283)	1.04*** (.035)	1.02*** (.015)	1.10*** (.038)
Selection Equation															
External Debt 1970-89 (% of GDP)		-.034* (.018)	-.030* (.017)		-.018 (.011)	-.005 (.005)		-035 (.022)	-.018 (.017)		-.019 (.035)	-.011 (.034)		-.032** (.014)	-.026* (.014)
External Debt Squared		.0003** (.0001)	.0003* (.0001)		.0001 (00008)	.00004** (.00002)		.0003* (.0002)	.0001 (.0002)		.0002 (.0003)	.0002 (.0003)		.0002** (.0001)	.0002* (.0001)
# Governmental Checks		.210 (.228)	.176 (.237)		.234 (.145)	.258 (.170)		.478 (.315)	.616* (.357)		.260 (.538)	.239 (.483)		.622* (.344)	.433 (.364)
Checks Squared		-.050 (.034)	-.046 (.034)		-.035* (.020)	-.034 (.024)		-.089** (.045)	-.097 (.061)		-.056 (.081)	-.047 (.069)		.096 (.060)	-.073 (.057)
IMF Borrowing 1970-89 (Constant $ millions)		.0015** (.0006)	.0014** (.0006)		.00084* (.00045)	.0006 (.0005)		.0017** (.0008)	.0015** (0007)		.0013 (.0010)			.0014* (.0007)	.0010 (.0007)
Constant		.608 (.541)	.532 (.537)		.137 (.294)	-.233 (.320)		.140 (.711)	-.412 (.546)		-.061 (1.05)	-.089 (.960)		.151 (.529)	.230 (.609)
Countries	74	72	72	76	76	76	78	74	74	50	47	46	67	62	60
R-squared	0.15			0.07			0.32			0.02			0.06		
Log likelihood		94.99	97.57		47.90	53.28		82.61	89.96		-36.76	-35.54		69.36	69.64
Wald Chi Square		29.24	33.28		50.67	45.38		0.02	32.13		0.43	5.71		13.74	27.97
Prob > Chi sq		0.000	0.000		0.000	0.000		0.8995	0.000		0.5138	0.35		0.002	0.000
LR test of independent eqns (i.e., that rho=0)		10.85	8.40		17.79	16.70		0.39	6.36		0.01	0.34		8.08	6.95
prob>Chi-Square		0.001	0.004		0.000	0.000		0.5308	0.0117		0.9191	0.5591		0.005	0.008

Standard errors are within parentheses. *,**,*** indicates significant at 10, 5, and 1 percent, respectively. All policy and control variables (CPIA, inflation, growth, deficits/GDP, M2/GDP) are averaged over 1991-2000. External debt and IMF borrowing are annual averages taken from 1970-1989. The number of governmental checks is taken from Beck *et al.* (2001).

Table 5: Propensity Score Matching Models

	Panel A.									
	Observables					Outcomes				
	CPIA	Surplus (-deficit) /GDP	Real Growth	Inflation	M2/GDP	Avg. growth in M2/GDP	Avg. growth on Private Credit/GDP	Avg. Change in Cash/M2	Avg. Change in Interest Spreads	Avg. Change in Concentration
World Bank Sample	3.43	-2.36	2.69	18.6	24.4	1.04	1.03	0.98	1.01	0.97
Non-World Bank	3.22	-1.30	3.93	8.3	30.4	1.03	1.03	0.99	1.03	0.98
Matched Non-WB	3.14	-1.65	2.45	7.2	25.4	1.02	1.04	1.01	1.05	0.98

Panel B.

Propensity Score Matching Equation:

$P(\text{WB Loan}) = e^{Bx}/(1+e^{Bx})$

$Bx = -27.67^{**} + 10.11^{*}\text{CPIA} - 1.28\text{CPIA}^2 - 0.143^{***}\text{M2/GDP} + .0011^{**}\text{M2}^2 + .197^{**}\text{DEBT SERVICE} + 9.90^{*}\text{GROWTH IN CAPITAL FORMATION} + 1.08\text{ IMF BORROWING}$

      (6.02)   (0.86)   (.055)   (.0005)   (.095)   (5.91)   (0.77)

88 observations, pseudo r-squared 0.17

	Estimated Probability of Receiving World Bank Loan Based on Observables				
	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile
World Bank Sample	0.46	0.58	0.72	0.87	0.91
Non-World Bank	0.21	0.29	0.49	0.68	0.75
Matched Non-WB	0.44	0.58	0.72	0.87	0.89

Panel C.

Financial Development Regressions	Growth in M2/GDP		Growth in Private Credit/GDP		Change in Cash/M2		Change in Interest Spreads		Change in Concentration	
Independent Variable	5.1 OLS Un-Matched Sample	5.2 OLS Matched Sample	5.3 OLS Un-Matched Sample	5.4 OLS Matched Sample	5.5 OLS Un-Matched Sample	5.6 OLS Matched Sample	5.7 OLS Un-Matched Sample	5.8 OLS Matched Sample	5.9 OLS Un-Matched Sample	5.10 OLS Matched Sample
Received WB Loan	.021** (.008)	.020*** (.007)	-.001 (.026)	.029 (.026)	-.028** (.012)	-.035*** (.011)	-.061 (.109)	-.124 (.075)	.011 (.011)	.012 (.011)
CPIA	.013 (.009)	.013* (.007)	-.001 (.021)	-.001 (.021)	-.008 (.011)	.009 (.012)	-.025 (.146)	-.213 (.180)	-.019* (.010)	-.031*** (.010)
Growth	.003 (.003)	.004* (.0025)	-.002 (.008)	-.0004 (.007)	-.012*** (.003)	-.012*** (.003)	.012 (.024)	-.014 (.016)	.001 (.002)	.0004 (.0017)
Inflation	.0001 (.0001)	.0001 (.0001)	.0002 (.0003)	.0003 (.0003)	-.0004 (.0003)	.00001 (.00006)	.00017 (.00014)	.0001 (.0002)	-.00005 (.00004)	-.00005 (.00004)
Surplus(-Deficit)/ GDP	-.001 (.002)	-.0004 (.0016)	-.001 (.003)	.005 (.006)	.001 (.002)	-.002 (.003)	-.015 (.018)	-.035* (.020)	.002 (.002)	.0035 (.0022)
M2/GDP							.001 (.002)	.005 (.003)	.0001 (.0003)	-.0001 (.0002)
Constant	0.957*** (.035)	0.957*** (.026)	1.05*** (.079)	1.03*** (.077)	1.07*** (.045)	1.01*** (.040)	1.06** (.515)	1.59*** (.553)	1.04*** (.035)	1.08*** (.030)
Observations	74	93	76	94	78	90	50	56	67	86
r-squared	0.15	0.21	0.07	0.10	0.32	0.40	0.02	0.22	0.06	0.15

Table 6: Fixed Effects Panel Regressions, Growth Rates Pre and Post Adjustment Lending

	Log(M2/GDP)			Log(Private Credit/GDP)			Log(Cash/M2)			Log(Interest Spread)			Log(Concentration)		
	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	6.10	6.11	6.12	6.13	6.14	6.15
Panel A.															
Growth Rates															
Pre-Adjustment Growth Rate	.022**	-.007	-.003	.013	-.020	-.015	-.022***	-.017*	-.019*	.023	.085***	.084***	-.050***	-.037**	-.041**
	(.010)	(.009)	(.009)	(.014)	(.014)	(.014)	(.008)	(.010)	(.010)	(.020)	(.025)	(.052)	(.010)	(.019)	(.019)
Post-Adjustment Change in Growth Rate	.020	.054***	.059***	.023	.047***	.058***	-.008	-.032**	-.046***	-.038	-.132***	-.129***	-.001	-.001	.010
	(.013)	(.012)	(.012)	(.018)	(.018)	(.019)	(.010)	(.013)	(.014)	(.026)	(.031)	(.034)	(.012)	(.020)	(.021)
Macro/Institutional Controls Included?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Policy Variables Included?	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Constant	3.02***	3.27***	3.20***	2.55***	2.64***	2.59***	3.15***	3.11***	3.11***	2.17***	1.51***	1.61***	4.33***	4.49***	4.51***
	(.042)	(.102)	(.095)	(.061)	(.162)	(.158)	(.031)	(.125)	(.124)	(.086)	(.310)	(.326)	(.041)	(.148)	(.152)
Observations	551	400	400	567	419	419	703	509	509	319	220	220	443	276	276
Countries	57	57	57	59	59	59	62	62	62	36	35	35	52	48	48
R-squared (within)	0.13	0.27	0.39	0.04	0.05	0.13	0.10	0.18	0.24	0.01	0.12	0.16	0.32	0.25	0.28
Panel B.															
Growth Rates															
Pre-Adjustment Growth Rate	.022**	-.006	.005	.010	-.018	-.012	-.029***	-.022**	-.021**	.004	.086***	.082***	-.049***	-.036*	-.039**
	(.011)	(.009)	(.008)	(.015)	(.014)	(.014)	(.009)	(.010)	(.010)	(.023)	(.025)	(.026)	(.010)	(.019)	(.019)
Post-Adjustment Change in Growth Rate	.024	.063***	.062***	.026	.058***	.062***	-.034***	-.050***	-.054***	-.025	-.134***	-.130***	.003	.005	.013
	(.015)	(.012)	(.011)	(.021)	(.020)	(.019)	(.012)	(.014)	(.013)	(.030)	(.033)	(.034)	(.013)	(.021)	(.021)
Cumulative Adjustment Loans	-.016	-.042**	-.205***	-.001	-.048	-.122*	.111***	.091***	.200***	.020	.009	.030	-.015	-.019	-.065
	(.023)	(.019)	(.035)	(.035)	(.034)	(.067)	(.020)	(.024)	(.050)	(.042)	(.045)	(.101)	(.018)	(.022)	(.049)
Macro/Institutional Controls Included?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Policy Variables Included?	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Constant	3.02***	3.24***	3.10***	2.56***	2.61***	2.55***	3.17***	3.16***	3.16***	2.27***	1.53***	1.61***	4.33***	4.48***	4.50***
	(.045)	(.102)	(.092)	(.065)	(.163)	(.160)	(.038)	(.124)	(.122)	(.097)	(.315)	(.327)	(.041)	(.148)	(.152)
Observations	545	400	400	561	419	419	657	509	509	312	220	220	443	276	276
Countries	57	57	57	59	59	59	62	62	62	36	35	35	52	48	48
R-squared (within)	0.13	0.28	0.45	0.04	0.05	0.14	0.14	0.20	0.26	0.01	0.12	0.16	0.33	0.25	0.29

All models include country fixed effects. Standard errors are within parentheses. *,**,*** indicates significant at 10, 5, and 1 percent, respectively. All policy and control variables are lagged one year. Loans devoted solely to microfinance are deleted from the database. There were no adjustment loans focused on SME finance, so that variable does not appear in the table. When loans for technical assistance are included, the SME variable does enter the model. Shading indicates coefficients differ at the ten percent level of statistical significance or better.

Table 7: Regional Fixed Effects Panel Regressions, Latin America Versus Rest of Developing World

	Log(M2/GDP)			Log(Private Credit/GDP)			Log(Cash/M2)			Log(Interest Spread)			Log(Concentration)		
	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	7.10	7.11	7.12	7.13	7.14	7.15
Latin America															
Growth Rates															
Received WB Adjustment Loans	.036***	.032***	.028***	.043***	.038***	.055***	-.058***	-.060***	-.045**	-.024**	-.068***	-.088***	-.066***	-.023	-.025
	(.004)	(.006)	(.007)	(.006)	(.009)	(.009)	(.008)	(.015)	(.019)	(.010)	(.019)	(.023)	(.008)	(.016)	(.018)
No WB Adjustment Loans	.014***	.011	.014*	.038***	.031***	.033***	-.020	-.023	-.025	-.008	-.006	-.011	-.060***	-.027	-.023
	(.005)	(.008)	(.008)	(.007)	(.011)	(.010)	(.012)	(.022)	(.022)	(.013)	(.027)	(.026)	(.012)	(.026)	(.026)
Macro/Institutional Controls Included?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Policy Variables Included?	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Constant	3.22***	3.11***	3.16***	2.85***	2.79***	2.75***	2.72***	2.74***	2.64***	2.47***	2.14***	2.06***	4.26***	4.44***	4.53***
	(.024)	(.120)	(.116)	(.033)	(.172)	(.151)	(.049)	(.323)	(.346)	(.060)	(.292)	(.287)	(.049)	(.235)	(.243)
Observations	235	149	149	235	149	149	240	154	154	238	128	128	172	106	106
Countries	20	20	20	20	20	20	20	20	20	21	20	20	19	19	19
R-squared (within)	0.27	0.30	0.41	0.29	0.24	0.47	0.20	0.16	0.19	0.03	0.14	0.27	0.38	0.32	0.39
Developing Countries Outside Latin America															
Growth Rates															
Received WB Adjustment Loans	.031***	.027***	.032***	.028***	.008	.017*	-.020***	-.031***	-.040***	.007	.005	.014	-.045***	-.036***	-.036***
	(.004)	(.004)	(.005)	(.007)	(.007)	(.009)	(.003)	(.003)	(.005)	(.009)	(.011)	(.013)	(.004)	(.006)	(.008)
No WB Adjustment Loans	.012**	.013***	.012***	.034***	.033***	.032***	-.016***	-.010**	-.009**	.028**	.031**	.031***	-.030***	-.029***	-.029***
	(.006)	(.004)	(.004)	(.009)	(.008)	(.008)	(.004)	(.004)	(.004)	(.012)	(.013)	(.012)	(.004)	(.005)	(.005)
Macro/Institutional Controls Included?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Policy Variables Included?	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Constant	3.16***	3.28***	3.20***	2.55***	2.41***	2.32***	3.11***	3.28***	3.32***	1.90***	1.53***	1.57***	4.38***	4.48***	4.45***
	(.025)	(.067)	(.066)	(.038)	(.120)	(.122)	(.018)	(.068)	(.068)	(.055)	(.243)	(.255)	(.021)	(.101)	(.105)
Observations	680	531	531	713	564	564	892	679	679	394	278	278	534	356	356
Countries	70	69	69	74	73	73	79	79	79	45	42	42	64	57	57
R-squared (within)	0.08	0.13	0.28	0.05	0.07	0.13	0.07	0.15	0.23	0.02	0.10	0.20	0.31	0.27	0.30

All models include country fixed effects. Standard errors are within parentheses. *,**,*** indicates significant at 10, 5, and 1 percent, respectively. All policy and control variables are lagged one year. Macroecnomic controls do not include surplus(-deficit)/GDP because its inclusion reduced the available number of observations by half. Loans devoted solely to microfinance are deleted from the database. There were no adjustment loans focused on SME finance, so that variable is not among the policy controls. Shading indicates coefficients differ at the ten percent level of statistical significance or better.

Appendix. Countries that Did and Did Not Receive WB Adjustment Loans for Financial Sector Reform 1991-2001

Yes		No
ALBANIA	PERU	ANGOLA
ALGERIA	PHILIPPINES	BENIN
ARGENTINA	POLAND	BANGLADESH
ARMENIA	ROMANIA	BELARUS
AZERBAIJAN	RUSSIA	BOTSWANA
BOLIVIA	RWANDA	CAMBODIA
BOSNIA & HERZ	SIERRA LEONE	CHILE
BRAZIL	SLOVAK REPUBLIC	CHINA
BULGARIA	SLOVENIA	CONGO, DEM. REP.
BURKINA FASO	TAJIKISTAN	COSTA RICA
CAMEROON	TANZANIA	COTE D'IVOIRE
CAPE VERDE	THAILAND	CZECH REPUBLIC
CENTRAL AFRICAN REP.	TUNISIA	DOMINICAN REPUBLIC
CHAD	TURKEY	EGYPT
COLOMBIA	UGANDA	ESTONIA
CROATIA	UKRAINE	ETHIOPIA
ECUADOR	URUGUAY	GABON
EL SALVADOR	UZBEKISTAN	GAMBIA
GEORGIA	VIETNAM	INDIA
GHANA	YEMEN	IRAN
GUATEMALA	ZAMBIA	KENYA
GUINEA		LEBANON
GUYANA		LESOTHO
HONDURAS		MALI
HUNGARY		MAURITIUS
INDONESIA		NEPAL
JAMAICA		NIGERIA
JORDAN		PANAMA
KAZAKHSTAN		PAPUA NEW GUINEA
KOREA, REP.		PARAGUAY
KYRGYZ REP.		SENEGAL
LAO, PDR		SOUTH AFRICA
LATVIA		SRI LANKA
LITHUANIA		SWAZILAND
MACEDONIA		TOGO
MADAGASCAR		TRINIDAD AND TOBAGO
MALAWI		VENEZUELA
MALAYSIA		ZIMBABWE
MAURITANIA		
MEXICO		
MOLDOVA		
MONGOLIA		
MOROCCO		
MOZAMBIQUE		
NICARAGUA		
NIGER		
PAKISTAN		

Note: The 106 countries in this table are those that appear in any of the regressions. The maximum number of countries in any single regression is 98.