



Demand for World Bank lending

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Received 17 February 2005; received in revised form 25 August 2005; accepted 1 September 2005

Abstract

This paper attempts to quantify the relevance of crisis lending in IBRD and IDA lending commitments. It finds that IBRD and IDA lending commitments are positively related to an increase in debt service payments and inversely related to the level of reserves of the borrowing country. These two variables explain a large part of the variation in IBRD and IDA lending commitments – adjustment lending as well as project lending – not only since the Asian crisis, but also during tranquil times over the last two decades. This finding implies that bridging the financing gap has been an important factor affecting developing countries' decision to seek financial help from the Bank. While borrowing for servicing debt during a crisis is consistent with the World Bank's goal of poverty reduction and assisting countries without access to financial markets, such borrowing during tranquil times may conflict with these goals.

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JEL classification: F33; F34; F35

Keywords: Foreign aid; Financing gap; Fungibility; World Bank; International Monetary Fund

1. Introduction

The World Bank (the Bank, henceforth) is one of the major sources of external finance for developing countries.¹ This is especially true during financial crises when access to private capital markets is greatly reduced even for middle-income countries such as Argentina or Korea. In response to the Asian crisis, for example, lending from the International Bank for Reconstruction and Development (IBRD) rose by nearly 50%, from \$14.6 billion during FY1996–1997 to \$21.6

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¹ The relevance of the WB as a source of financing depends upon the relevant comparison with other sources. For the changing relevance of sources of disbursements to developing countries, see Evrensel (2004, pp. 235–56).

billion in FY1998–1999.² There is no question that bridging the external financing gap was an important consideration for borrowing from the World Bank during crisis years. But has this also been a driving factor during tranquil times? This is the central theme of this paper.

Econometric analysis of data for the period 1980–2000 reveal that a large part of the variation in IBRD and IDA lending commitments over the last two decades is explained by the variation in debt service payments (including long-term and short-term debt) and international reserves. Countries seem to demand more World Bank lending when their debt service payments increases, and when their international reserve position declines. And this is true not only during the recent crisis episodes, but also during tranquil times over the last two decades. To a lesser extent, investor confidence and global liquidity conditions – represented by Institutional Investor country risk rating and the U.S. interest rates respectively – are also found to (inversely) influence the demand for IBRD lending. These results indicate that resource transfer remains a dominant consideration behind borrowing from the World Bank. These results may not surprise those familiar with the pleas for “positive net flows” from borrowing countries, or to those familiar with instruments such as Debt and Debt Service Reduction Loans and Sectoral Adjustment Loans which are directly related to debt service payments of borrowers.³

These results do not rule out defensive or forced lending, noted among others in Birdsall et al. (2001), by which some parts of new lending may have been committed to simply avoid defaults on past IBRD or IDA debt. However, defensive lending may have been less significant in the context of IBRD loans. Although preliminary results indicated that the amortization due on past IBRD loans had a significant influence on the aggregate level of new IBRD lending, such evidence from analysis of panel data was not statistically significant at the country level. This is understandable in middle-income countries such as Argentina, Korea or Thailand where debt service payments on IBRD loans are quite small, and yet, large IBRD commitments were made following the recent financial crisis. Thus, it appears that the overall supply of IBRD lending is guided by “positive net flow” considerations, which is then allocated to different countries according to the financing gap.

Short-term, counter-cyclical borrowing from the Bank during a crisis is consistent with the World Bank's core objective of fighting poverty in a manner similar to the flow of humanitarian aid in the aftermath of a natural disaster. Additionally, a World Bank lending program during a crisis may lead to reforms, and an improvement in the policy and institutional environment with a time lag (Ratha, 2001). However, it has been argued that borrowing from the Bank to fill “the financing gap” in general and to service debt in particular may not be entirely consistent with the Bank's long-term objective of poverty reduction. To make a lasting impact on growth and poverty in the recipient country, Bank loans combined with conditionality should be able to increase investment “even more than one-to-one” (Easterly, 1999). Yet, if Bank loans are used for debt service payments, its impact on investment is almost certain to be less than one-to-one. This may in part explain Easterly's (1999) finding that the aid-investment relationship failed to be greater than one in 82 out of 88 aid-recipient countries during the period 1965–1995. Such lending may also create incentives for borrowers to delay reforms necessary for growth and poverty reduction (Easterly, 2000; Svensson, 2000).

Such borrowing may also violate selectivity by which official assistance is allocated to countries with good policies (Birdsall et al., 2001). For example, if Bank lending has an impact

² The World Bank fiscal year runs July–June.

³ See World Bank (2000a) for a description of IBRD and IDA lending instruments.

on growth and poverty reduction in a favorable macroeconomic policy environment, a marginal dollar of loan is better spent after a crisis when stabilization has been achieved, not during the crisis. This argument has been made forcefully by Collier and Dollar (1999), and Collier (2000) in the context of concessional aid flows to poor countries. Based on the findings in Burnside and Dollar (1997), aid is more effective in a good policy environment and it should “taper in” after a crisis. However, in reality, it tends to “taper out.”

The finding that even investment lending commitments are related to debt service payments implies that aid fungibility noted in the context of Sub-Saharan Africa in Devarajan and Swaroop (2000) may be more widespread than previously believed. If Bank lending is fungible and there is no guarantee that a particular Bank loan is financing an identified investment project or program, there is a case to be made for greater use of program-oriented lending (with well-defined conditionality). Also, since financing needs are bound to increase in the future as developing economies become larger, and more integrated with volatile international capital markets, there is likely to be a greater need for fast-disbursing, contingent program lending facilities from the World Bank.

Our results also have some implications for the debate surrounding the roles of various multilateral institutions. There is a considerable overlap between the programs of the Bank and the IMF (Collier, 2000), despite a general consensus that the Bank (and other multilateral development banks) should focus on long-term structural issues, leaving short-term crisis financing to the IMF.⁴ If, however, a short-term resource transfer motive has a significant influence on developing countries’ desire to borrow from the Bank, it would be difficult for the Bank to refrain from providing short-term, counter-cyclical liquidity support, and focus exclusively on long-term structural programs, as has been suggested by some authors (Lerrick, 1999; Summers, 1999).

The plan of the paper is as follows. The next section (Section 2) discusses the trends in IBRD and IDA lending commitments, and shows that Bank lending commitments appear to be correlated with debt service payments and the level of international reserves in borrowing countries. Section 3 undertakes a more rigorous analysis of this correlation using econometric techniques. Following a general discussion of factors that may influence the demand of World Bank lending, this section presents empirical results on the relationship between external liabilities of a borrowing country and IBRD/IDA lending commitments. The focus of the econometric analysis is on IBRD lending, which has the larger share in World Bank lending. Some preliminary results on IDA lending are also provided. The concluding section of this paper discusses the implications of the main findings.

2. Trends in World Bank lending commitments

The International Bank for Reconstruction and Development (IBRD) was founded in 1945 with the objective of channeling capital, on a cost pass-through basis, from international capital markets to developing countries (Kapur et al., 1997; Gilbert and Vines, 2000). IBRD lending

⁴ The Meltzer Commission on International Financial Institutions also argued that multilateral development banks (MDBs) should stay away from crisis-financing, leaving it to the IMF (see Lerrick, 1999). As Summers (1999) argues, “Going forward the IMF . . . should not be a source of low-cost financing for countries with ready access to private capital, or long-term support for countries that cannot break the habit of bad policies Official estimations of the need for external support need increasingly to move from a predominant focus on macroeconomic issues to more clearly emphasizing the nature of human needs.”

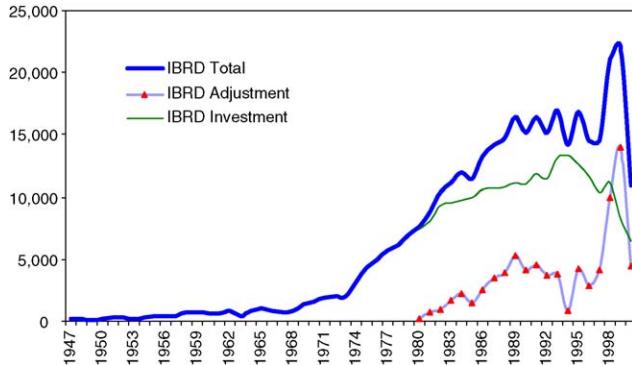


Fig. 1. IBRD lending commitments (\$ million).

commitments rose from \$250 million in fiscal 1947 – a loan to France for post-war reconstruction – to \$22.2 billion in FY1999. The International Development Association (IDA) was created in 1960 to provide long-term (up to 40 years) concessional resources to poor developing countries that were not considered creditworthy for the IBRD's non-concessional lending.⁵ IDA lending commitments rose from \$101 million in fiscal 1961 to a high of \$7.5 billion in FY1998. During FY2000, IBRD lending commitments were at \$10.9 billion, and IDA lending commitments at \$4.4 billion.

The evolution of IBRD lending volumes is marked by three distinct phases (Fig. 1). The first phase lasted until FY1979 and was marked by a steady increase in investment lending to finance the post-war reconstruction efforts. Adjustment lending was introduced in the second phase beginning in FY1980 to address structural balance-of-payments difficulties that emerged in many developing countries following the oil crises of the 1970s. The third phase began in the 1990s after the resolution of the debt crisis and the end of the cold war. As governments embraced market economies and embarked on privatization drives, there was a surge of private capital flows to developing countries. In this phase, IBRD lending commitments exhibited volatility around a rather flat trend line. IBRD lending commitments rose from \$14.6 billion in FY1996–1997 to \$21.6 billion in FY1998–1999, but fell to \$10.9 billion in FY2000. These fluctuations came almost entirely from adjustment loans which surpassed investment lending for the first time in history in FY99.

The Bank has been called upon to help bridge the external resource gap in almost every crisis that affected its borrowing members in the last half century. Such a “stabilizing” or “counter-cyclical” role of IBRD lending is evident in Fig. 2: IBRD lending commitments (deflated by the GDP of low- and middle-income countries) rose sharply during the debt crises of the 1980s, declined in the early 1990s, and then rose sharply again during the recent Asian crisis. The trend in private non-FDI flows was exactly the opposite during this period.⁶

This resource transfer motive is also evident in the form of a high degree of correlation between IBRD lending commitments as a share of GDP of low- and middle-income countries and

⁵ See World Bank (2000b) for a list of IBRD and IDA countries.

⁶ World Bank's investment lending has been steadily replaced by private direct investment (FDI) flows, while adjustment loans – which are typically disbursed faster and have shorter maturities than investment loan – show strong counter-cyclicalities with respect to private non-FDI flows (Dasgupta and Ratha, 2000).

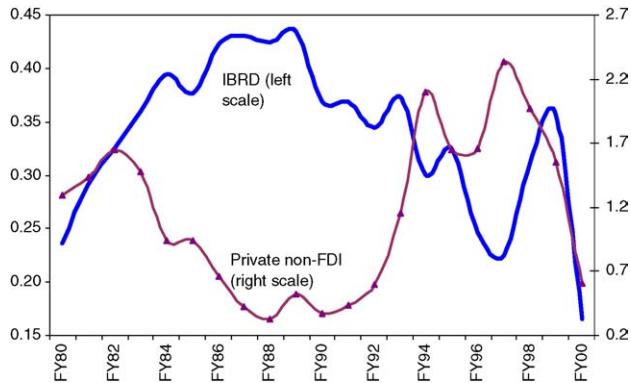


Fig. 2. IBRD lending commitments and net private non-FDI flows (as % of GDP of low- and middle-income countries).

the ratio of debt service payments⁷ to international reserves in developing countries (Fig. 3a). Such correlation is also present between IBRD commitments and debt service payments on long-term debt (both as share of GDP) in Fig. 3b which shows a cross-section of 28 IBRD countries in 1998. We will present more analyses of this relationship in the next section.

The size of annual IDA lending commitments is significantly smaller than that of IBRD lending in nominal dollar terms. However, since most IDA countries have almost no access to private capital flows (Lensink and White, 1998), IDA loans constitute a much larger share of the borrowing countries' GDP. IDA lending is also found to be correlated with the ratio of debt service payments to reserves (Fig. 4). This is also consistent with a high correlation (72% in 1997 and 55% in 1998), as noted in UNCTAD (2000), between disbursements from multilateral creditors and debt service paid in the least developed countries.

3. Determinants of World Bank lending

Since the World Bank lends exclusively to governments (or to others with explicit government guarantee), the demand for its lending arises from the public sector of a member country. Given the external financing needs, a country's decision to borrow from the World Bank depends on the availability of alternative funding from the private, bilateral and other multilateral sources, and on perceived costs and benefits associated with World Bank loans.⁸

⁷ Debt service payments include amortization and interest payments on long-term debt, and the stock of short-term debt (i.e., debt with maturity equal to or under 1 year). The level of international reserves excludes gold.

⁸ Benefits of Bank loans include favorable borrowing terms (low interest rates, long maturities) and technical assistance. In July 2005, IBRD lending rate was approximately 39 basis points over LIBOR for variable-spread loans and 52 basis points over LIBOR for fixed-spread loans (the 3-month LIBOR in US dollar was 4.05%). Costs include longer loan preparation time and policy conditionality. Available information suggests that IDA and IBRD lending terms are the cheapest among all multilateral development banks (not to mention private creditors) offering comparable loan products. Preparation time, however, is longer in the case of World Bank loans as these may involve environmental safeguards and consultations with the program country. Policy conditionality can be perceived as a benefit or a cost: sometimes a government may desire conditionality to implement politically difficult reforms, or as a signal to attract private investment, because private monitoring and implementation of conditionality may not be feasible (Rodrik, 1995). A country's decision to borrow from the Bank may also be guided by political and strategic considerations such as colonial past and political alliances, conflict, sanctions, etc. (Polak, 1991; Alesina and Dollar, 1998; Rodrik, 1995).

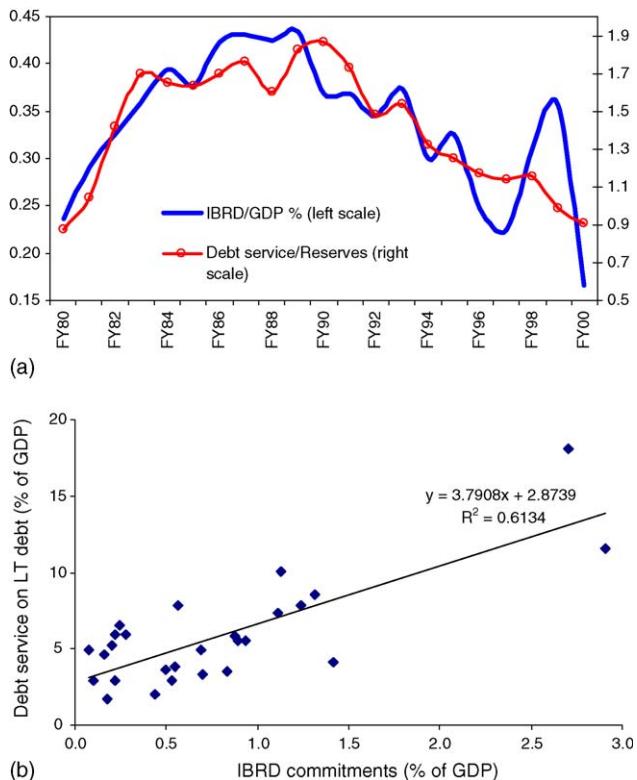


Fig. 3. (a) IBRD lending as share of GDP and debt service payments as a ratio of international reserves. (b) IBRD lending commitments and long-term debt service (as % of GDP) in FY1999, 28 IBRD countries.

In the following econometric analyses, we represent the external financing needs of the public sector by debt service payments relative to the level of international reserves. We include debt service payments of both public and private sectors in recognition of the government's role as a lender of last resort. Private banking debt, in particular short-term debt, has been frequently

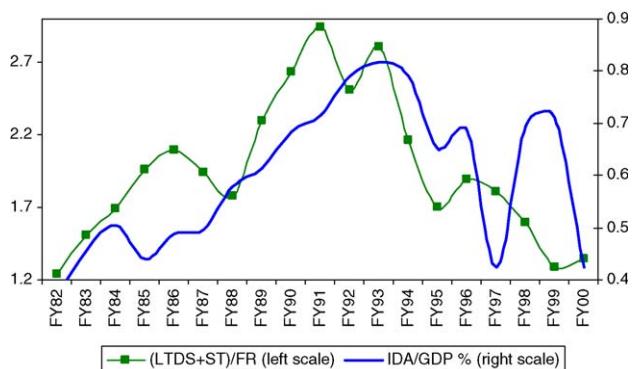


Fig. 4. IDA loans as a share of GDP of low-income countries, and ratio of debt service payments to reserves.

bailed out by governments, because such debt carries systemic implications (World Bank, 2000b). The use of debt service and reserves to represent the public sector external financing gap is arguably better than using current account balance, because the latter includes trade deficit incurred by the private sector and can be corrected, via import compression if necessary, without significant systemic disruption. Additionally, information on debt service payments on outstanding debt are more readily available than that on current account deficit; therefore, governments are more likely to use the former to estimate the upcoming external financing gap.

For econometric estimation, the IBRD lending commitments are assumed to be determined by the following model:

$$\log\left(\frac{\text{IBRD}}{\text{GDP}}\right) = c_0 + c_1 \log\left[\frac{(\text{LTDS} + \text{ST})}{\text{GDP}}\right] + c_2 \log\left(\frac{\text{FR}}{\text{GDP}}\right) + c_3 \text{IIR} + c_4 \text{INT} \\ + c_5 \text{DASIA} + e \quad (1)$$

where IBRD stands for IBRD lending commitments, LTDS stands for principal and interest payments on long-term debt, ST for short-term debt, FR for the level of international reserves (excluding gold), IIR indicates country risk rating from Institutional Investor, INT stands for 10-year U.S. Treasury rate, and DASIA is a dummy for the Asian crisis (which takes the value of 1 during FY1998–1999 and 0 otherwise), and e is the error term with the standard assumptions of a least-squares regression.

The hypothesis behind this equation is that the demand for IBRD lending rises in response to an increase in the debt service payments and a decline in the level of international reserves. Thus, the expected signs of the relevant coefficients are $c_1 > 0$ and $c_2 < 0$. At this point, the question of reverse causality may be raised: the World Bank lending would increase both debt payments and reserves. However, the fact that usually there is a time lag between Bank lending commitment and disbursement, and even a longer grace period between commitment and repayment of principal and interest eliminates this problem.⁹

The availability of private funding is represented by the country risk rating. An increase in sovereign rating indicates an improvement in investor sentiment towards the borrowing country, which implies that $c_3 < 0$. However, an improvement in investor confidence may not translate into increased private flows to a country, if the global liquidity condition happens to be tight. We have tried to control for this by introducing the U.S. 10-year treasury rate: an increase in interest rates in the U.S. signals tighter global liquidity and discourages private flows to developing countries, which in turn may increase the demand for IBRD lending (using the counter-cyclical argument). Additionally, an increase in interest rates usually translates into a larger increase at the short end of the yield curve than at the long end (Romer and Romer, 2000). Thus, a rate increase may discourage shorter-term borrowing and encourage longer-term borrowing (Dasgupta et al., 2000). Since IBRD loans carry significantly longer maturities than private loans, demand for IBRD loans may increase in response to a rate increase. Based on these arguments, we expect that $c_4 > 0$. However, since IBRD operates on a cost-plus basis, a rise in the U.S. interest rates may raise the cost of

⁹ For this reason, it is arguably better to use lending commitments rather than disbursement or net flows in this equation. Also, the decision variable for the Bank's operations is new lending commitment rather than disbursement or net flow of funds: after lending commitments are made, there is only limited flexibility in varying disbursements from year to year.

IBRD funding, which may depress the demand for IBRD loans.¹⁰ In the end, the sign of c_4 is an empirical question.

In addition to IBRD lending, we estimate the following regression model for IDA lending commitments:

$$\log\left(\frac{\text{IDA}}{\text{GDP}}\right) = c_0 + c_1 \log\left[\frac{\text{LTDS} + \text{ST}}{\text{GDP}}\right] + c_2 \log\left(\frac{\text{FR}}{\text{GDP}}\right) + c_3 \text{INT} + c_4 \text{D97} + e \quad (2)$$

where IDA stands for IDA lending commitments. Since most IDA countries have limited access to international capital markets and IIR is not available for many of these countries, we excluded this variable in Eq. (2). We also replaced the dummy for Asian crisis by a dummy for fiscal 1997 (D97) during which IDA lending declined sharply, apparently owing to internal reorganization in the Bank (World Bank, 1998).

3.1. Data

In our empirical analysis, we estimate Eqs. (1) and (2) using aggregated time series data for the FY1980–1999 period, as well as using panel data. The IBRD panel data analysis is carried out for 30 major IBRD borrowers for the period FY1987–1999. Data availability is an important factor for the selection of this period, because IIR is not available for earlier periods. The IDA panel covers 44 countries for the period FY1980–1999. We also estimate separate equations for total lending commitment and its two sub-components, namely adjustment lending and investment lending commitments.

Data for World Bank lending are obtained from the Finance Complex of the World Bank (FINCR). Debt service payments on long-term debt and short-term debt (by original maturity) are taken from the World Bank's Global Development Finance database (World Bank, 2000c). Data on international reserves are taken from International Financial Statistics published by the IMF. Country risk ratings are obtained from the Institutional Investor. The 10-year U.S. interest rates are from the U.S. Treasury. Because the Bank's fiscal year runs July through June, the convention followed in the econometric estimation is to treat calendar year 1999 as comparable to fiscal year 2000 and so on.

¹⁰ There are conceptual difficulties in separating supply factors from demand factors in the case of IBRD and IDA lending. The IBRD intermediates funds and, instead of maximizing profits, it charges a fixed spread over its borrowing costs. Therefore, the supply of IBRD lending is bounded above by its callable (and usable) capital at the aggregate level and by guidelines on portfolio concentration limits at the country level. Because there has never been a call on IBRD's callable capital and there is sufficient "head room" to make additional loans, IBRD lending commitments to individual countries – with the exception of a few countries that are near portfolio concentration limits – are largely demand-determined. However, because the financial strength of the IBRD is based in part "in the record of its borrowing members in meeting their debt-service obligations to it", a desire to enable members to service debt – a supply factor – may affect the volume of IBRD loans (World Bank, 2000a; Gilbert and Vines, 2000). A similar conceptual difficulty in separating supply and demand factors arises in the case of IDA as well. The IDA does not intermediate funds; instead it receives contributions from donors and lends to recipient countries. Because of the highly concessional terms, IDA loans are largely supply determined. However, the allocation of IDA funds is guided by "need" and country policy performance. As Easterly (1999) points out, a typical model used for aid allocation in multilateral institutions is based on the investment-savings gap or "need," as implied by Harrod–Domar growth models. Birdsall et al. (2001) found that aid allocation in the Heavily Indebted Poor Countries (HIPC) was marked by defensive lending and non-selectivity, i.e., countries with larger debt burdens received more aid than those with better policies, again underscoring the importance of the external financing gap.

Table 1

Results on IBRD commitments

Dependent variable	(1) log(IBRD/GDP) (aggregated time series data)	(2) log(IBRD/ GDP) (panel data)	(3) log(IBRDadj/ GDP) ^a (panel data)	(4) log(IBRDinv/ GDP) ^b (panel data)
C	-0.792* (-1.8)	—	—	—
log[LTDS + ST]/GDP]	0.622*** (3.6)	0.674*** (4.0)	0.120 (0.5)	0.346* (1.81)
log(FR/GDP)	-0.898*** (-6.8)	-0.097 (-1.2)	-0.233* (-1.7)	-0.137 (-1.6)
Institutional Investor rating	—	-0.034*** (-3.8)	-0.043*** (-3.2)	-0.014 (-1.3)
INT	-0.003 (-0.2)	0.204*** (3.9)	0.05 (0.4)	0.176*** (3.0)
Dummy for the Asian crisis (FY1998–1999 = 1, 0 otherwise)	0.310*** (3.2)	0.415*** (2.8)	0.540** (2.0)	-0.168 (-1.0)
Adjusted R^2	0.72	0.49	0.50	0.39
Durbin–Watson stat	1.7	2.1	1.6	2.1
No. of observations	20	272	97	262
Sample	FY1980–1999	FY1987–1999	FY1987–1999	FY1987–1999

Regression (1) shows results from aggregated data, i.e., the sum across all low- and middle-income countries of IBRD, LTDS, ST, FR and GDP (see main text for definitions). Columns (2)–(4) show results from panel data regressions including fixed effects (coefficients suppressed in this presentation). The panel includes 30 IBRD countries for the sample period mentioned under each regression. T -statistics in parentheses, estimated using White's heteroskedasticity-consistent standard error.

The panel consists of annual time series data for the period FY1987–1999 for 30 major IBRD borrowers: Algeria, Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Ecuador, Egypt, Hungary, India, Indonesia, Jordan, Kazakhstan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, the Philippines, Poland, Romania, Russia, Thailand, Tunisia, Turkey, Ukraine and Venezuela.

^a Adjustment lending only.

^b Investment lending only.

* Indicate significance at 10% level.

** Indicate significance at 5% level.

*** Indicate significance at 1% level.

3.2. Results on IBRD lending commitments

Table 1 shows results regarding total lending commitments using aggregated time series data for the period FY1980–1999, and on total lending, adjustment lending and investment lending, respectively, using panel data for FY1987–1999.¹¹ There is no convenient indicator for country risk rating at the aggregate level, so this variable is dropped from the analysis of aggregate data.¹² In all four regressions, the coefficients of debt service (LTDS + ST) and international reserves (FR) have the correct signs. Regression (1) shows that these two variables (along with a dummy for the Asian crisis) explain 79% of the variation in IBRD total lending commitments.

The coefficient of debt service payments is highly significant (and positive) in the case of IBRD total commitments (regression 2), which is somewhat unexpected, considering that adjustment lending is more in line with balance-of-payments support than total lending. However, this coefficient is not significant in the case of adjustment lending (regression 3)¹³ and

¹¹ Results from aggregated data are expected to yield a higher R^2 than those from panel data.

¹² We could have used an indicator such as the spread on the Emerging Market Bond Index (EMBI) spread, but it does not have adequate country coverage, and the available time series for this variable is short. Additionally, the EMBI largely reflects the Latin American debt.

¹³ A regression similar to (1) in **Table 1** that uses IBRD adjustment lending commitments as the dependent variable yields a lower adjusted R^2 (65%) than in regression (1).

its significance level is weaker in the case of investment lending (regression 4). These results may be a reflection of the fact that for financing external gap, a borrowing country is more interested in the total volume of financing (i.e., adjustment plus investment lending) rather than its composition. Additionally, demand for adjustment lending may not arise except in abnormal, crisis-type situations, because typically (though not always) an adjustment loan from the IBRD is preceded by an IMF program. Finally, supply-side guidelines stipulate that the share of adjustment loans, excluding debt and debt service reduction loans, should not exceed 25% of total loans in a fiscal year (World Bank, 2000b). Although this is not a rigid guideline and the limit was exceeded after the Asian crisis, it implies some degree of ad hoc rationing of adjustment lending at the country level.

The panel data regressions – based on 30 IBRD borrowers that accounted for over 90% of total IBRD loans in recent years – include IIR, the Institutional Investor rating of country risk. The coefficient of this variable is found to be significant and negative, reflecting that higher country creditworthiness implies better market access and less demand for IBRD lending. This is consistent with the counter-cyclical behavior of IBRD lending noted earlier.

While the coefficient of the interest rate variable (INT) is not significantly different from zero in the aggregate results reported in Table 1, it is found to be positive and significant in the panel data results on total lending and investment lending.¹⁴ Once again, this underscores the counter-cyclical nature of the demand for IBRD lending. When interest rates are low, global liquidity is high and private funding may be available to IBRD borrowers, resulting in a decline in the demand for IBRD loans.

The results regarding IBRD lending commitments thus revolve about the following theme: When both adjustment- and investment-related IBRD lending is considered, while total interest payments, reserves, interest rate, and the Asian crisis have a positive relation with IBRD commitments, reserves and country risk have a negative relation. These results verify our expectations that IBRD commitments increase as debt service payments of countries become larger. Because an increase in the 10-year U.S. Treasury bill rate may indicate the increasing cost of credit in private capital markets, countries would want to make use of IBRD funds that have a lower interest rate. The Asian crisis increased IBRD commitments as well, reflecting the counter-cyclical function of these loans. Additionally, lower international reserves and lower country ratings tend to increase IBRD commitments. When looking at IBRD adjustment and investment loans separately, we observe the following changes in the results. When only adjustment-related commitments are considered (regression 3), debt service payments and the 10-year U.S. Treasury bill rate become statistically insignificant. When only investment-related commitments are considered (regression 4), international reserves and country ratings become statistically insignificant. One can argue that adjustment-related IBRD commitments are in fact provided when countries are in a crisis that is characterized by lower reserves and weaker country ratings. However, investment-related IBRD commitments may be provided to countries that have limited access to private capital markets in general.

The empirical results remain robust in alternative specifications that are not shown in the tables. Our results remain unchanged, when first differences of explanatory variables are added to Eq. (1). When we regress IBRD net flows normalized by GDP against the same set of explanatory variables, the coefficients are found to have the expected signs, although some are now not

¹⁴ Note that the panel data regressions are based on a shorter sample period (FY1987–1999) than the aggregate results (FY1980–2000).

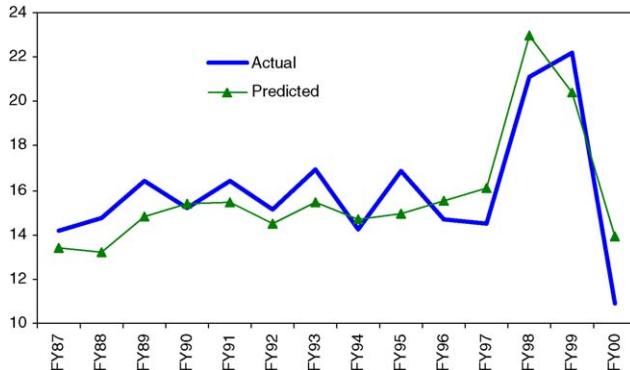


Fig. 5. Actual and predicted IBRD commitments (\$ billion).

statistically significant. Similarly, when we regress IBRD lending commitments normalized by GDP against the ratio of long-term debt service to exports, the ratio of reserves to short-term debt, risk rating, the U.S. interest rates and a dummy for Asia, the signs and statistical significance of independent variables remain largely the same as in Eq. (1).

We carried out another robustness check of the results by examining the predictive power of the model specified in Eq. (1). We obtained FY2000 data on debt service from the Global Development Finance 2000 and on international reserves from the World Bank's SIMA database, and assumed that the Asian crisis was over (i.e., the dummy for Asian crisis is assumed to be 0 in FY2000). We then predicted IBRD commitments for FY2000 by applying the estimated coefficients from regression 1 in Table 1 to these explanatory variables.

The model predicts a sharp decline in IBRD lending to \$13.9 billion in FY2000 (Fig. 5). The main reasons behind this drop are: (a) a sharp increase in the level of international reserves of low- and middle-income countries in response to an increase in their current account from a deficit of \$31 billion in 1998 to a surplus of \$10 billion in 1999, and (b) a decline in short-term debt as some large borrowers during the crisis – such as Korea – rescheduled part of their short-term debt to long-term maturities.

The predicted level of IBRD lending commitments in FY2000 at \$13.9 billion is still higher than the realized lending amount of \$10.9 billion. The difference can be attributed to a number of factors including political transitions in Indonesia, Argentina, Jordan and Morocco, conflict and sanctions in India and Pakistan, and poor performance in Ecuador, Russia, and Ukraine.

3.3. Results on IDA lending commitments

As shown in Table 2, the results regarding IDA lending commitments can be summarized as follows. These results confirm the hypothesis that the level of IDA lending commitments is positively related to the debt service payments and negatively to the level of international reserves. A strong positive relationship between concessional aid flows and outstanding debt (or debt service payments) has been observed by several studies in the literature, although in a somewhat narrower context of the Heavily Indebted Poor Countries (HIPC).¹⁵ Birdsall et al.

¹⁵ The coefficient of the dummy for FY1997 is consistently negative. As mentioned before, this confirms the drop in IDA lending during the internal reorganization of the Bank that year (World Bank, 1998).

Table 2

Results on IDA commitments

Dependent variable	(1) log(IDA/GDP) (aggregate data)	(2) log(IDA/GDP) (panel data)	(3) log(IDAAdj/GDP) ^a (panel data)	(4) log(IDAinv/GDP) ^b (panel data)
C	-1.12 (1.5)	—	—	—
log[(LTDS + ST)/GDP]	0.692*** (2.9)	0.712*** (6.2)	1.189*** (3.8)	0.307*** (2.9)
log(FR/GDP)	-0.428*** (-3.2)	0.023 (0.6)	-0.149* (-1.7)	0.076** (2.4)
INT	-0.027 (-0.9)	0.020 (1.1)	0.217*** (4.2)	0.017(1.0)
Dummy for FY97	-0.470*** (-3.2)	-0.698*** (-3.1)	-0.828*** (-2.4)	-0.289* (-1.7)
Adjusted <i>R</i> ²	0.70	0.28	0.24	0.33
Durbin-Watson stat	1.6	2.0	2.2	2.0
No. of observations	19	569	246	540
Sample	FY1982–2000	FY1980–1999	FY1980–1999	FY1980–1999

Regression (1) shows results from aggregated data, i.e., the sum across all low- and middle-income countries of IDA, LTDS, ST, FR and GDP (see main text for definitions). Columns (2)–(4) show results from panel data regressions including fixed effects (coefficients suppressed in this presentation). The panel includes 53 IDA-only and “blend” countries. *T*-statistics in parentheses, estimated using White’s heteroskedasticity-consistent standard error.

There are 44 countries in the IDA panel: Angola, Bangladesh, Benin, Bolivia, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, China, Congo, Dem. Rep., Congo, Rep., Cote d’Ivoire, Djibouti, Equatorial Guinea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Nepal, Nicaragua, Niger, Rwanda, Senegal, Sierra Leone, Somalia, Sri Lanka, Sudan, Tanzania, Togo, Uganda, Yemen, Zambia.

^a Adjustment lending only.

^b Investment lending only.

* Indicate significance at 10% level.

** Indicate significance at 5% level.

*** Indicate significance at 1% level.

(2001) analyzed 35 countries in Sub-Saharan Africa for the period 1977–1998 and found evidence of defensive or forced lending—i.e., new lending from creditors (in particular, the IMF in the 1988–1998 period) for the purpose of financing the service due to them. Based on a data set of 18 countries in Sub-Saharan Africa from 1975 through 1995, Devarajan et al. (1999) found that one-third of aid goes towards repaying the principal on past loans (see also UNCTAD, 2000; Killick and Stevens, 1997; Claessens et al., 1997). The finding in Collier and Dollar (1999) that aid tapers in when the macroeconomic policy environment worsens—for example, during a crisis—and tapers out when the policy environment improves is also broadly consistent with the positive association between aid flows and debt service payments, and negative association between aid flows and the level of international reserves.

These results regarding IDA revolve about the following theme. When both adjustment- and investment-related IDA commitments are considered, total interest payments have a positive, but statistically insignificant relation with IDA commitments.¹⁶ When looking at IDA adjustment and investment commitments separately (Eqs. (3) and (4), respectively), we observe the possibility that these commitments may be provided due to a crisis as well. This is the case especially regarding adjustment-related IDA commitments, where reserves and the 10-year U.S. Treasury bill rate have a negative and positive effect on these commitments, respectively. When only investment-related IDA commitments are considered, the 10-year U.S. Treasury bill rate

¹⁶ The coefficient of the dummy for FY1997 is consistently negative. As mentioned before, this confirms the drop in IDA lending during the internal reorganization of the Bank that year (World Bank, 1998).

becomes insignificant, suggesting that these commitments may not be related to the changes in the cost of funds, but to the chronic inability of the recipient countries to access private capital markets.

4. Conclusion

The objective of this paper was to empirically assess to what extent financing gap (or resource transfer) considerations affected the decision of developing countries to borrow from the World Bank. Econometric analysis of time series and cross-country data for the period 1980–2000 suggests that countries seem to demand more World Bank lending when their debt service payment increases and when their international reserve declines. And this is true not only during the recent crisis episodes, but also during tranquil times over the last two decades.

Borrowing from the World Bank to mitigate the effects of a crisis is consistent with the Bank's poverty reduction objective. Additionally, crisis lending by the Bank is typically accompanied by advice for policy reforms and efforts to improve the institutional environment, which may foster sustainable growth and better access to private capital markets over time (Ratha, 2001). As has been argued in the aid-effectiveness literature, however, such beneficial effects of World Bank lending crucially depend on program countries' policy environment and commitment to reforms.

Acknowledgements

An earlier version of this paper was issued as a World Bank Policy Research Working Paper WPS2652. The views expressed in this paper are the author's own, and do not represent that of the World Bank. I am grateful to Ayse Evrensel and Ali Kutan for constructive comments on an earlier version. This paper has benefited from discussions with Sudhir Chitale, Shantayanan Devarajan, William Easterly, Stefan Koeberle, William Shaw and Ulrich Zachau. Thanks to Eung Ju Kim for research assistance.

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