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Access to Market Financing for IDA-eligible Countries—The Role of External Debt and IMF-Supported Programs

Alun Thomas

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Prepared by Alun Thomas

Authorized for distribution by Martin Mühleisen

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Abstract

Exclusion restrictions used to identify demand and supply relationships for market financing among IDA recipients (past and present) show that poor credit ratings and high political instability adversely impact the supply of market finance. While the adverse effects of external debt on market access occur at very high levels for IDA-eligible countries, the sizeable debt relief provided in the context of the enhanced HIPC Initiative has significantly raised the likelihood of market access for these countries. For countries that have graduated from IDA financing, the length of country spells in IMF-supported programs raises the likelihood of market access, although this effect is absent for IDA-eligible countries.

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I. INTRODUCTION

Prior to the current global financial crisis, many low income countries had just begun tapping into the global market for bond and loan financing after decades of no access. One of the explanations often cited for the inability of countries to obtain market access and for the volatility in access once it has been initiated is sharp fluctuations in country risk associated with high levels of external debt.

According to Reinhart, Rogoff and Savastano (2003), the peak frequency of the number of defaults among emerging markets occurs at an external debt to GDP ratio of only 35 percent. Moreover, more than half of the economies without a history of external default had external debt ratios below this threshold. Similarly, the IMF (2003) has shown that in cases where the real interest rate on debt is 10 percentage points higher than the growth rate, emerging markets can only avoid defaulting on public debt if it is below 30 percent of GDP.

While previous work on the determinants of market access and spreads among emerging markets is quite extensive, few papers have considered market access for low income countries. For emerging markets, Eichengreen, Kletzer, and Mody (2005) have found that weaker credit ratings and higher external debt ratios lower the probability of a bond issuance while higher reserve ratios raise the probability of bond issuance (Eichengreen and Mody, 1998). Moreover, IMF-supported programs raise the likelihood of bond issuance but have no effect on the supply/demand for international loans. They also find that higher external debt ratios raise spreads on the associated bond issues. Arora and Cerisola (2003) find that the ratio of net foreign assets to GDP lowers spreads and Ferrucci (2005) finds that the external debt ratio raises spreads, both measured in the secondary market. Kamin and von Kleist (1999) argue that credit ratings encompass all useful macroeconomic indicators and therefore they exclude fundamentals from their model. They find that a higher credit rating lowers spreads on new bond issues and on bank loans.

One of the few papers to analyze market access for low income countries is Gelos and others (2004.) They find that country size, quality of policies, political risk, and market perceptions significantly affect the frequency with which sovereign countries issue bonds and/or obtain international syndicated loans. A significant omission from their variable list is the ratio of total external debt to output since some of the studies highlighted above have shown that higher external debts lower the likelihood of bond issuance.[1]

In common with the work of Gelos and others. this paper focuses on the determinants of market access for all IDA eligible countries. It differs in that it focuses on whether external

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[1]Some of their analysis uses private sector debt.

debt is a determinant of market access by distinguishing between the demand and supply of financing. This is important since one of the motivations of the HIPC and MDRI relief efforts was to enable countries to initiate market access once previous debts had been cleared and countries were in a better position to service new debt.

The paper also tests the effects of IMF-supported programs on market financing. Many programs with low income countries impose limits on non-concessional financing, and therefore the presence of a Fund-supported program should lower the probability of market access because of this constraint. Countries are limited in being able to access market financing because additional market financing would breach the financing limits set in the program. For those countries with IMF-supported programs that are not subject to this non-concessional debt ceiling, access to market financing should be boosted by the presence of an IMF-supported program because of reputational effects and/or improved macroeconomic policies. On this latter point, there is some debate because many authors have argued that time spent in IMF-supported programs is associated with lower per capita income, lower investment rates and weaker governance (Bird, Hussain, and Joyce, 2000).

In short, the paper finds that the adverse effects of high external debt occur at levels that are far above historical levels of external debt. For IDA-graduates (i.e., countries that are no longer IDA eligible), higher external debt only starts lowering the likelihood of market access at levels approaching 70 percent of GDP. For IDA-eligible countries, the point at which external debt ratios reduce the likelihood of market access are much higher. Finally, IMF-supported programs have no adverse effect on countries' ability to obtain market financing in a particular year. Indeed, the length of time that countries have spent in IMF-supported programs raises the likelihood of market access for countries that have graduated from IDA concessional financing, although the effect on IDA-eligible countries is not significant.

II. MARKET ACCESS

As in the work of Gelos and others (2004), access to financial markets is defined in terms of bond issuance and/or the contracting of an internationally syndicated loan, with data obtained from Bondware. A main drawback of this is that the terms of the loans are not available and therefore we can only focus on the probability of receiving a market-based loan and not its terms.

As an introduction, some broad statistics are presented on market access, external debt and IMF-supported programs. The period covers 1970–2006 and the country composition includes those that were IDA-eligible over all or part of this period, except for small islands with populations less than half a million.[2] To assess these characteristics across country

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[2]Dominica, Grenada, St. Lucia, St. Vincent, Maldives, Kiribati, Samoa, Solomon Islands, Tonga, Vanuatu.

groups, three groups are presented: countries that have graduated from IDA concessional financing, poor countries that are in the IDA blend category because of large country size and/or systemic importance, and other IDA-eligible (HIPC and non-HIPC) countries (Table 1). [3]

Countries that have graduated from IDA financing and those that have been able to access international financial markets for historical reasons (IDA blend countries) have on average, accessed these markets every other year over the 1970–2006 period. Countries that have graduated from IDA financing and blend countries also show similarities in the cumulative number of years that they have experienced IMF-supported programs and in their average ratio of external debt to output over the 1993–2006 period. [4] In contrast, countries that continue to receive IDA financing on the most concessional terms have only accessed financial markets for external financing for about 3 years per country over the 1970–2006 period. Moreover, the average external debt ratio for these countries over the 1993–2006 period is considerably higher than for the other two categories, with the external debt ratio of non-HIPCs averaging about 70 percent of GDP and the external debt of HIPCs averaging almost 113 percent of GDP. These differences suggest the need to differentiate between country categories.

Table 1. Diagnostic Statistics 1970–2006

(except where stated)

Category	Cumulative number of years of market access	Cumulative number of years of IMF-supported programs	External Debt 1993–2006 (in percent of GDP)
Countries graduated from IDA financing	14.8	11.5	48.7
IDA blend LICs	14.4	10.6	43.4
Other countries (exc. HIPCs) 1/	2.8	7	70
HIPCs	2.5	14.5	112.8

1/ The low figure for the cumulative number of IMF-supported programs is a consequence of a number of countries without any IMF-supported program (Angola, Bhutan, Eritrea).

There are two possible ways of modeling market access. First, is the annual likelihood of obtaining market access based on analyzing a binomial distribution with one and zero as possible outcomes and modeled using the probit technique. [5] Second, in cases where a

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[3] IDA blend countries have shorter repayment periods and higher interest charges than IDA-only countries. Zimbabwe is not characterized as a IDA blend country because it is inactive.

[4] The study is confined to this period because it allows a differentiation between IMF-supported programs that include debt limits and those that do not.

[5] In this paper no distinction is made between receiving foreign loans and issuing bonds because the sample of bond issuers among the IDA-eligible countries is so small. According to Bondware data only two out of sixty IDA-eligible, non-blend countries (Niger and Vietnam) issued foreign bonds over the 2002–06 period.

number of countries have been unable to access the market at all over the historical period, and therefore, where the unavailability of market access is not temporary but systemic, defining the dependent variable as the cumulative number of years of market access may yield clearer results.[6]

A. Probit model

Let us first consider the probit model defined as follows:

$$y_{i*} = X_i\beta + \varepsilon_i$$
$$y_i = 0, y_{i*} \leq 0$$
$$y_i = 1, y_{i*} > 0$$

To properly identify the effects of higher external debt on bond issuance, a distinction is made between the supply and demand for financing. This distinction has recently been made by Erce (2008) who argues that failure to control for both influences leads to biased results. The supply of financing is assumed to depend negatively on the external debt ratio, positively on the credit rating, negatively on political risk and on the presence of a IMF-supported program with debt limits. External debt, political risk and weak credit ratings are assumed to negatively impact the supply of market financing because of uncertainties about ability to repay and sequestration of assets. The credit rating variable combines the ratings from Standard and Poor's and Moody's with the former agency's ratings taken as the baseline and supplemented with those of Moody's when S&Ps ratings are not available (see Appendix II, variable list). The variable measuring political risk is obtained from the International Country Risk Guide and is based on perceptions of government stability, socioeconomic conditions, the investment profile, and internal and external conflict (with a higher number indicating less risk). IMF-supported programs with low income countries that impose limits on non-concessional financing should lower the likelihood of market access while programs that do not include a non-concessional debt ceiling should raise the likelihood of market access.[7]

The demand for foreign financing is assumed to depend positively on the external debt ratio, the presence of an IMF-supported program and debt service payments and negatively on the size of the stock of reserves. The first three variables capture the need for financing to make repayments, either immediately (debt service and the IMF-supported program) or over a longer-term horizon (external debt). Reserves in relation to output capture alternative sources of finance.

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[6]As shown below about 20 percent of the sample had not received foreign loans or issued foreign bonds over the 1970–2006 period.

[7]The correction for the presence of debt limits makes no distinction between debt limits that are zero or positive because of data limitations.

Output per capita in relation to the United States and the size of the economy measured by output in U.S. dollars could be included in both demand and supply equations. On the supply side, higher productivity (output per capita) and economic size (output) could positively impact the ability to repay loans as suggested by Lane (2004). On the other hand, these two variables may also affect the demand for financing through greater investment opportunities.

The specification of demand and supply functions helps to separately identify the effects of changes in the ratio of external debt to output on these two relationships. Two variables excluded from the supply specification are used to identify it (debt service and reserves to output ratios) while one variable is excluded from the demand specification for identification purposes (credit rating/ political risk). All equations include time dummies to take account of trend and cyclical effects and to proxy variables that are the same across countries such as world stock market returns and volatility. They are estimated using the full sample, including countries that have graduated from IDA concessional financing as well as those that remain IDA-eligible.

Supply function

The baseline supply function includes political risk, the external debt ratio, and three dummy variables for countries with IMF-supported programs, HIPCs, and countries that have experienced debt distress. The dummy variable for HIPCs proxies characteristics of the poorest countries that are not reflected in the other variables while controlling for debt distress allows inference to be made on the association between external debt and market access in calmer times.[8] To control for the fact that most programs with low income countries limit all non-concessional financing, the sample is restricted to the period since 1993 when data on non-concessional financing limits were first made available. Since the structure of market financing has changed considerably over the past thirty years, this is not viewed as a major drawback.

The coefficient estimates indicate that countries with low political risk (higher value) are more likely to access the market, consistent with greater stability and better prospects for repayment in these countries. Countries with higher external debt ratios are less likely to access the market. The variable representing HIPCs is significantly negative, suggesting that the other included variables are not able to pick up all of the characteristics that limit access to financial markets for this sub-group. The coefficient on IMF-supported programs with or without debt limits is insignificant and the debt distress coefficient is also insignificant. consistent with the hypothesis that limits placed on non-concessional debt restrict market

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[8]Debt distress is defined as periods when a country received IMF stand-by and EFF financing or obtained a Paris Club debt rescheduling agreement (Kraay and Nehru, 2006)

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access but it is insignificant. It is also insignificant for countries with IMF-supported programs without debt limits, suggesting that an IMF-supported program does not enhance market access by itself. The number of observations falls dramatically when the credit rating variable is included in the specification but the coefficient estimates are comparable to those obtained with political risk in the specification (higher value indicates weaker credit rating).

To assess the robustness of the results, output per capita and output are added to the supply equation (columns 3 and 4). Both variable coefficients are significantly positive, providing support for the view that they capture countries' ability to repay debt. While the external debt ratio retains its significant negative coefficient when only output per capita is included in the specification, it turns significantly positive when the size of the economy (measured by output in U.S. dollars) is added. The inclusion of the squared external debt term allows the calculation of a threshold above which higher external debt leads to a reduction in the likelihood of market access. The threshold is defined at the point at which the derivative of the external debt terms turns negative. This is estimated to be slightly above 200 percent of GDP, a level of external debt that only 10 of the 41 HIPC countries incurred, mainly during the mid to late 1990s.[9] Interestingly, the debt distress term becomes significantly negative in this specification suggesting that during periods when countries suffer debt distress, access to financial market financing is more difficult than at other times.

In terms of differences in the sensitivity of market access to external debt across groups, no difference is found for countries with high export ratios, but counter intuitively, countries with high asset stocks have more difficulty in accessing financial markets when external debt is high. A possible rational for this effect is that the relationship is capturing the demand for external financing, with the idea that countries with higher asset stocks require less market financing because of the availability of domestic financing.

How do we square the finding that high external debt does not preclude market access with press coverage that countries gained new access to financial markets following the sharp reduction in external debt associated with the HIPC and MDRI Initiatives? One possible explanation is that a negative association between the level of external debt and the likelihood of market access cannot be identified because of the imposition of debt limits in many countries with IMF-supported programs. The explanation being that countries across a wide range of external debt ratios were not able to access the market because of the presence of debt limits in their respective IMF-supported programs.

To further probe this issue, a distinction is made between countries that experienced a large debt write off associated with the enhanced HIPC Initiative and those that did not. To control for Fund-supported programs that maintained debt limits even after the HIPC Initiative took

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[9]Burundi, Congo, Gambia, Guinea-Bissau, Guyana, Ivory Coast, Mauritania, Mozambique, Nicaragua, Zambia.

place, a further distinction is made for this category. This is because even if the debt level was reduced substantially at the decision/completion point associated with the HIPC Initiative, market access for these countries would be limited if debt limits were still binding. To proxy this effect, a dummy variable is set to unity for all countries subsequent to the decision point date of the enhanced HIPC Initiative provided that they are not engaged in an IMF-supported program that includes debt limits. To take an example, since Uganda was the first country to reach the decision point of the enhanced HIPC Initiative in January 2000, its dummy variable takes the value of zero for the year 2000 because it was still engaged in a PRGF-supported program that contained debt limits. It takes the value unity in 2001 and 2002 when the country was not engaged in a IMF-supported program. The value turns to zero subsequently when Uganda had Fund arrangements that contained limits on non-concessional debt. While the coefficient estimate of this variable is positive (Table 2, column 4), it is insignificant, suggesting that controlling for the other characteristics, countries reaching the decision point of the enhanced HIPC Initiative are no more likely to gain market access in one particular year than other HIPC countries. The same result holds substituting the timing of the completion point of the enhanced HIPC Initiative for the decision point.

Demand function

Evidence that a demand relationship is properly identified comes from the significant positive coefficients on debt service and on IMF-supported programs. Higher debt service payments require increased financing for debt rollovers and IMF-supported programs that contain debt limits include an implicit demand for debt finance.

The coefficients on output per capita relative to the United States and output in U.S. dollars are also significantly positive, demonstrating the greater need and demand for foreign financing as countries grow. Moreover, the coefficient on the ratio of reserves to GDP is significantly negative, consistent with the view that countries with higher reserves have less need for market financing. Finally, the coefficient estimate for external debt is insignificant, demonstrating its weak explanatory power in the demand specification. This is the same regardless of whether countries have high export or asset ratios to output.

Differences between IDA graduates and nongraduates

Table 1 suggests that the characteristics of market access for countries that have graduated from IDA financing may differ from those countries that remain IDA-eligible. To test for this difference, both groups were estimated separately. In the supply equation, the most interesting difference is for external debt. For countries that have graduated from IDA financing, higher external debt begins to impact negatively on access to financing at levels of about 67 percent of GDP (Table 3, column 1). This threshold level is found by differentiating the external debt ratio terms with respect to time and setting the derivative equal to zero. While this level of debt applied to a number of IDA graduates through 2002–03 (Turkey,

Jordan, Syria, Philippines, Tunisia, Papua New Guinea), all countries in the sample had subsequently managed to lower their debt ratio below this threshold, at least through 2006.

For IDA-eligible countries, higher external debt impacts negatively on access to financing at much higher debt levels of about 225 percent of GDP (Table 3, column 2). On the other hand, the dummy variable for HIPC countries is significantly negative while the dummy variable for IDA-blend countries (introduced into this specification) is significantly positive showing that these countries are more likely to access financial markets. For HIPC countries, decision point eligibility was added into the specification, but although positive, it is insignificant.

The other coefficient estimates for the supply equation are pretty similar except that output per capita is not significant for IDA-eligible countries. In the demand equation, the external debt variable is insignificant for both groups while the variable capturing IMF-supported programs is only significant for the IDA-eligible group, possibly reflecting a greater need for financing.

Table 2. Probit Models of Market Access

	Supply Function				Demand Function	
Political risk	1.08 ***		0.29	1.21 ***		
Credit rating		-1.23 ***				
Debt distress	-0.07	-0.12	-0.12	-0.3 **		
External Debt ratio **t-1** (in percent of GDP)	-0.32 ***	-0.39	-0.23 **	1.08 ***	-0.05	-0.06
External Debt ratio squared **t-1** (in percent of GDP)				-0.27 **		
External debt ratio for countries with high export ratios **t-1** 1/				-0.59		0.07
External debt ratio for countries with high oil export ratios **t-1** 1/				0.83		-0.06
External debt ratio for countries with large asset stocks **t-1** 2/				-0.88 ***		0.28
IMF-supported program (with debt limits)	-0.05	-0.2	-0.002	0.13	0.26 **	0.25 **
IMF-supported program (without debt limits)	-0.01	0.31	0.03	0.09		
Highly Indebted Poor Countries	-0.92 ***	-0.72 **	-0.68 ***	-0.4 **		
Post decision point effect				0.26		
Output per capita			0.39 ***	0.25 ***	0.32 ***	0.31 ***
GDP in U.S. dollars (logarithm)				0.68 ***	0.61 ***	0.61 ***
Debt service ratio **t-1** (in percent of GDP)					0.004 ***	0.004 ***
Reserves (in percent of GDP)					-1.2 **	-1.36 **
Number of Observations	870	336	870	870	1175	1175
Test of signficance of all coeffients: LR (chi squared)	206.2 ***	71 ***	237.6 ***	475.8 ***	613.2 ***	613.9 ***
Pseudo R squared	0.18	0.17	0.21	0.41	0.43	0.43
Percent of correct predictions	70.8	75.4	73.1	89.1	85.9	85.9

Note: Asterisks indicate statistical significance at the 90 percent (*), 95 percent (**), and 99 percent (***) levels.

1/ Countries with exports above 50 percent of GDP.
2/ Countries with asset stocks above 40 percent of GDP.

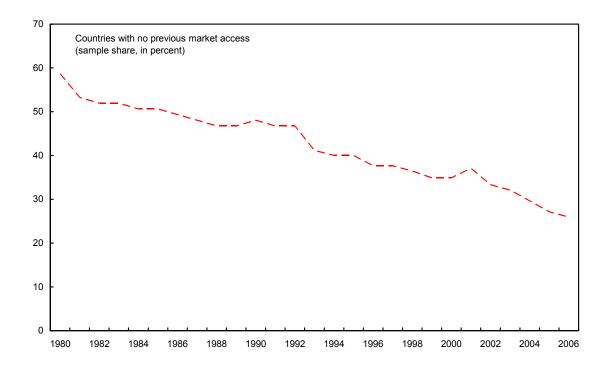Table 3. Probit Models of Market Access for various IDA categories

	Supply Function		Demand Function	
	IDA graduates	IDA-eligible	IDA graduates	IDA-eligible
Political risk	0.7	1.05 **		
Debt distress	-0.35	-0.05		
External Debt ratio **t-1** (in percent of GDP)	4.7 ***	1.13 ***	-0.15	-0.08
External Debt ratio squared **t-1** (in percent of GDP)	-3.4 ***	-0.25 **		
IMF-supported program	0.56 *	0.13	0.33	0.27 **
IDA Blend Countries		0.76 ***		
Highly Indebted Poor Countries		-0.42 **		
Post decision point effect		0.15		
Output per capita	0.86 **	0.02	0.78 ***	0.2 **
GDP in U.S. dollars (logarithm)	1.06 ***	0.56 ***	0.92 ***	0.54 ***
Debt service ratio **t-1** (in percent of GDP)			0.005	0.004 ***
Reserves (in percent of GDP)			-1.67 **	-1.15
Number of Observations	257	612	301	874
Test of signficance of all coeffients: LR (chi squared)	160.8 ***	237.2 ***	209.3 ***	294.5 ***
Pseudo R squared	0.48	0.34	0.51	0.34
Percent of correct predictions	92.6	82.5	91.4	85.9

Note: Asterisks show statistical significance at the 90 percent (*), 95 percent (**), and 99 percent (***) levels.

B. Tobit model

The tobit specification may be a better way of modeling market access if the same country has been unable to access the world financial markets for a long period. To assess whether this is indeed the case, the figure below shows the percentage of the sample in each year that has not been able to access the market up until that point. In 1980, almost 60 percent of the sample had not previously accessed the market while, over time, this percentage fell to slightly above 20 percent in 2006.[10] Since a large fraction of the sample has historically been unable to access financial markets, this supports the use of the Tobit specification for modeling purposes.

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[10]There are a few increases in the percentage resulting from changes in sample size across years.

In the Tobit specification, the dependent variable is defined as the cumulative number of years that each country has issued a new bond or contracted a loan in foreign currency (measured in logarithms).[11] The model is a latent model and can be expressed as follows:

$$y_{i*} = X_i\beta + \varepsilon_\iota$$
$$y_i = 0, y_{i*} \leq 0 \tag{0.1}$$
$$y_i = X_i\beta, y_{i *} > 0$$

The variables are identical to those in the Probit model except for the addition of a variable that measures the cumulative number of years of accession to Fund-supported programs. Its effect on the probability of market access could be positive or negative. On the positive side, the longer a country has access to a Fund-supported program, characteristics of proper macroeconomic management are developed that lenders in the market appreciate. On the negative side, the duration of Fund engagement could imply the inability to achieve sufficient macroeconomic stability to warrant graduating from such Fund involvement.

Differences between Graduates and Nongraduates of IDA Financing

For the Tobit specification, we focus on differences between IDA graduates and nongraduates. In the supply equation, an important difference comes from the sensitivity of market access to external debt and to IMF-supported programs. For IDA graduates, external

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[11]While it is also possible that a Heckman model specification is applicable, especially if the error terms from the supply and demand equations are correlated with each other, the model was not able to converge when estimated in this way.

debt begins to impact negatively on access to financing at about 75 percent of GDP (the turning point of the external debt variables) while for the IDA-eligible countries, external debt impacts negatively on access to financing at much higher debt levels of about 315 percent of GDP.

The IMF-supported program dummy and the cumulative total of IMF engagement in years both have significant positive effects on market access for countries that have graduated from IDA concessional financing. This contrasts with the insignificant effect in the probit regression. The coefficient on the cumulative sum of years under a IMF-supported program suggests that, over time, these programs have beneficial effects on the probability of market access. The finding that time spent in IMF-supported programs stimulates market access differs from the view that recidivism in Fund-supported programs is associated with lower per capita income, lower investment rates and weaker governance (Bird, Hussain, and Joyce, 2000). Of course, this paper controls for per capita income and weaker governance (to the extent that it is related to political risk) in order to isolate the relationship between IMF-supported programs and market access. On the other hand, IMF-supported programs with countries that remain IDA-eligible have not been successful in stimulating market access.

In the specification for IDA-eligible countries, countries with blend-IDA terms are more likely to access financial markets (positive coefficient) while HIPC countries are less likely (negative coefficient). The coefficient estimate for countries that have reached the decision point and have no IMF-supported program or one without debt limits is significantly positive at twice the magnitude of the dummy variable for HIPCs. This suggests that, following the decision point of the enhanced HIPC initiative, the likelihood of market access for these countries rises substantially. Once countries are guaranteed debt relief through the HIPC Initiative and do not require debt limits in their IMF-supported programs, their ability to access the market is comparable if not higher than that of other countries with similar macroeconomic characteristics. The same significant result holds substituting the timing of the completion point of the enhanced HIPC Initiative for the decision point. In terms of debt distress, IDA-eligible countries with experiences of debt distress are more likely to have accessed financial markets. This effect could of course be related to reverse causality since financial market access may have contributed to debt distress.

High external debt does not increase demand for market financing from IDA graduates but does enhance demand by IDA-eligible countries. This could reflect differences in debt levels between groups. Demand for market financing for IDA-eligible countries with IMF supported programs is also significant but not for IDA graduates.[12]

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[12]Results using a longer sample period with no distinction made between IMF-supported programs with and without debt limits are comparable to those from the shorter sample period. The only difference is that the coefficient on the squared external debt term is much smaller in the specification with a longer time series (tables available on request).

Table 4. Tobit Models of Market Access for various IDA categories

	Supply Function		Demand Function	
	IDA graduates	IDA-eligible	IDA graduates	IDA-eligible
Political risk	-0.08	0.43 **		
Debt distress	0.08	0.15 *		
External Debt ratio **t-1** (in percent of GDP)	1.01 **	1.52 ***	0.2	0.46 ***
External Debt ratio squared **t-1** (in percent of GDP)	-0.67 **	-0.24 ***		
IMF-supported program	0.16 **	0.002	0.05	0.18 ***
Cumulative IMF-supported programs (in logarithms)	0.36 ***	-0.02		
IDA blend countries		0.62 ***		
Highly Indebted Poor Countries		-0.15 *		
Post decision point effect		0.29 **		
Output per capita	-0.07	0.19 ***	0.12 *	0.19 ***
GDP in U.S. dollars (logarithm)	0.27 ***	0.62 ***	0.39 ***	0.66 ***
Debt service ratio **t-1** (in percent of GDP)			0.01 ***	0.004 ***
Reserves (in percent of GDP)			-0.58 ***	-2.15 ***
Number of Observations	257	610	301	872
Test of signficance of all coeffients: LR (chi squared)	277 ***	575.6 ***	422.9 ***	2634 ***
Pseudo R squared	0.48	0.31	0.48	0.37
Percent of correct predictions	100.0	77.9	91.0	79.6

Note: Asterisks show statistical significance at the 90 percent (*), 95 percent (**), and 99 percent (***) levels.

How do these results compare with those of Gelos and others, 2004? The major difference is that the specifications in this paper include the external debt ratio and control for whether IMF-supported programs contain debt limits. In general, high external debt ratios do not appear to be constraints in obtaining external financing because they only adversely affect the probability of obtaining market financing at levels that are far above current levels of external debt. In terms of the effects of IMF-supported programs, the significant negative coefficient associated with PRGF-supported programs in Gelos and others' work likely results from the fact that many PRGF-supported programs are with HIPC countries that have been unable to access market finance for many years, irrespective of whether they have a IMF-supported program or not.

III. CONCLUSION

This paper uses exclusion restrictions to identify demand and supply relationships for market financing for countries that are currently or were once IDA-eligible. While poor credit ratings and a high degree of political instability are found to adversely impact the supply of market finance, the adverse effects of high external debt occur at levels that are far above current levels of external debt and are therefore not binding. Indeed, while a number of studies have indicated the strong likelihood of an economic crisis at debt levels of around 30–40 percent of GDP, experience over the past 15 years suggests that market lenders have given IDA-graduates the benefit of doubt up to debt levels approaching 70 percent of GDP. For IDA-eligible countries, the external debt ratios are even less binding, but this is strongly related to the fact that many of these countries had IMF-supported programs with debt limits on non-concessional debt.

One of the less publicized objectives of the HIPC and MDRI debt relief initiatives was to raise the likelihood for HIPC countries to obtain market finance. To test this hypothesis, a dummy variable for the period since the decision point of the enhanced HIPC Initiative (except for periods when IMF-supported program debt limits were binding) was added to the supply specification. While the positive coefficient is not significant in the Probit specification, it is large and significant in the Tobit specification and more than wipes out the negative effect on the probability of market access of being in the HIPC group. This suggests that once countries are guaranteed debt relief through the HIPC Initiative and once they stop requiring debt limits in their IMF-supported programs, their ability to access the market is comparable, (if not better) than that of other countries with similar macroeconomic characteristics.

Finally, the length of time that countries have spent in IMF-supported programs raises the likelihood of market access for countries that have graduated from IDA concessional financing, although the effect on IDA-eligible countries is not significant. It will be

interesting to analyze in future years whether the recently introduced PSI (Policy Signaling Instrument) for low-income countries will provide such a positive signal to market lenders.

Appendix I. Country List

IDA eligible countries		IDA graduates (graduation in parentheses)	Countries with export-GDP ratios above 50 percent	Countries with asset ratios above 40 percent
IDA Non-blend countries	IDA blend countries			
Albania	Haiti	Azerbaijan, Rep. of	Botswana (1974)	Angola	Botswana
Angola	Honduras	Bolivia	Chile (1961)	Botswana	Chile
Armenia	Ivory Coast	India	China,P.R.: Mainland (1999)	Congo	Jordan
Bangladesh	Kenya	Indonesia 3/	Colombia (1962)	Equatorial Guinea	Swaziland
Benin 4/	Kyrgyz Republic 4/	Pakistan	Costa Rica (1962)	Guyana	
Bhutan 4/	Lao 4/	Sri Lanka	Dominican Republic (1973)	Macedonia	
Bosnia 4/	Liberia		Ecuador (1974)	Mauritius	
Burkina Faso	Malawi		Egypt (1999) 1/	Papua New Guinea	
Burundi 4/	Madagascar		El Salvador (1977)	Swaziland	
Cambodia 4/	Mali		Equatorial Giunea (1999) 4/		
Cape Verde 4/	Moldova		Jordan (1978)		
Central African Republic 4/	Mongolia		Macedonia (2002) 4/		
Chad 4/	Mozambique		Mauritius (1975) 4/		
Comoros 4/	Nepal 4/		Morocco (1975)		
Cameroon	Nicaragua		Papua New Guinea (1983) 2/		
Congo, Republic of	Niger		Paraguay (1977)		
Djibouti 4/	Nigeria		Philippines (1993) 1/		
Eritrea 4/	Senegal		Swaziland (1975) 4/		
Ethiopia	Sierra Leone		Thailand (1979)		
Gambia, The	Togo		Tunisia (1977)		
Georgia 4/	Uganda		Turkey (1973)		
Ghana	Vietnam				
Guinea	Zambia				
Guinea-Bissau	Zimbabwe				
Guyana					

1/ Graduation for the second time. Egypt and Philippines both re-entered IDA in 1991.

2/ Papua New Guinea became blend country in 2003 but is treated as IDA graduate up to this point.

3/ Indonesia re-entered IDA in 1998 having originally graduated in 1980 and is treated as an IDA-blend country after this date.

4/ These countries only appear in the demand relationship because they do not have observations for political risk.

Appendix II

Variable List

Access (used in Probit model): Takes the value unity if country issued a bond or obtained a syndicated loan (Bondware)

Cumulative access (used in Tobit model): Cumulates the number of years that country issued a bond or obtained a syndicated loan (Bondware)

External Debt: Total external debt in U.S. dollars (WEO)

Political Risk: Index of political risk (measured inversely, ICRG)

Credit risk: Variable ranging from 1 to 25 set to replicate S&P and Moody ratings. Missing S&P ratings were obtained based on the coefficient estimates from a regression of the S&P rating on the Moody rating. For example, a AAA rating is assigned a value of unity while a AA rating is assigned a value of 4. At the other end of the spectrum, countries in the state of default are assigned a value of 25 (Standard and Poor's and Moody's)

IMF-supported program with debt limits: Takes the value unity if country had a program in the year and if the program contained limits on contracting non-concessional debt (MONA database). Program years are defined as those years in which the country spent more than six months in a IMF-supported program.

IMF-supported program without debt limits: Takes the value unity if country had a program in the year and if the program did not contain limits on contracting non-concessional debt (MONA database)

Cumulative IMF-supported programs: Cumulates the number of years that the country was engaged in IMF-supported programs (MONA database)

Output: GDP in U.S. dollars (WEO)

Output per capita: GDP in U.S. dollars divided by population (WEO)

Debt service ratio: Amortization and interest payments (World Bank, World Development Indicators) divided by GDP

Reserves ratio: Foreign exchange reserves (IFS) divided by GDP

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