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The HIPC Initiative: What Affects Duration?

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Abstract

In light of calls to improve the delivery of aid and debt relief, this paper uses survival analysis to examine possible factors affecting completion rates in the HIPC debt relief programme. The findings suggest that better economic management, increased economic, social and media freedoms, more effective government machinery, increased trade, a faster GDP per capita growth rate, increased democracy and a more stable political environment are all significant in speeding up completion times. Countries enrolled in the HIPC programme have an incentive to improve these indicators in order to reach completion point as quickly as possible and access debt relief so these results imply that improvements are feasible if there are tangible rewards at the end of the process.

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1. Introduction

In September 1996, the IMF and the World Bank combined efforts to launch the Highly Indebted Poor Countries Initiative (HIPC) aimed at reducing the debt burdens of highly indebted developing countries to sustainable levels through substantial reductions in debt service obligations and commitment to a series of reforms aimed at shifting resources away from debt servicing toward productive investments in health and education. Under the HIPC initiative, eligible countries must commit to sustained poverty reduction by developing a Poverty Reduction Strategy Paper (PRSP) through a broad-based participatory process. As at the end of 2011, the HIPC initiative had delivered over $76 billion (in end-2010 net present value terms) in debt relief to 36 countries (World Bank, 2012). After a comprehensive review in 1999, the HIPC programme was "enhanced" to increase the number of eligible countries, increase the amount of relief available to each country and to deliver that relief faster. An extensive and rapidly expanding literature has developed around issues of aid and debt relief over the years (e.g. see Nwachukwu 2008; Sun 2004; Gunter 2011). The overall conclusion from the literature indicates that aid and debt relief appear to have a largely insignificant effect on economic growth and development outcomes in recipient countries. This is summed up by Doucouliagos and Paldam (2008) who conduct a meta-analysis of 100 papers on aid and debt relief effectiveness, finding that although the effect of aid and debt relief on economic growth is positive, this effect is very small, insignificant and falling over time. Additionally, differences in publication outlet, model specification and data appear to account for the bulk of the differences between reported results.

One issue that remains unexplored is an empirical investigation of the factors influencing country completion rates in debt relief programmes such as the HIPC initiative. In light of calls to improve the delivery of aid and debt relief, a clear understanding of some of these factors will shed light on areas that need urgent attention. This paper aims to fill this gap. The analytical framework and data are presented in section 2, section 3 discusses the methodology, the results are presented in section 4 and conclusions follow in section 5.

2. Analytical Framework And Data

A HIPC-eligible country with a proven track record of reform, sound policies and macroeconomic stability is at the 'decision point' when it concludes an agreement with multilateral creditors to settle outstanding arrears and has developed a PRSP. The amount of debt relief required to bring the country's debt burden to HIPC sustainability thresholds is calculated and the country begins receiving debt relief. Upon the satisfactory implementation of key reforms agreed to at the decision point and the maintenance of macroeconomic stability and good performance under programmes supported by loans from the IMF and World Bank, the country reaches the 'completion point' where it receives any outstanding debt relief agreed to at the decision point. Thus, once a country has reached the decision point, reaching the completion point is critically dependent on its ability to implement its poverty reduction strategy and maintain sound economic management. Consequently, an examination of the factors affecting the duration of stay in the HIPC programme is essentially an examination of the factors affecting a country's ability to implement reforms and maintain economic stability. This paper therefore examines how selected economic, governance, social and institutional indicators influence the speed with which a country is able to implement reforms and maintain sound economic management. Table 1 summarises these indicators, their sources and their possible effects on HIPC duration.

Table 1: Variable description

Indicator	Description	Expected effect on completion rate
Economic and social indicators		
CPIA EMC	Quality of Economic Management – reflects the quality of government management of the economy. Ranges from a low of 1 to a high of 6.	Possibly +
GDPpc	GDP per capita.	Possibly +
GDPpc growth	The GDP per capita growth rate (%).	Possibly +
Ex Debt Stock	External debt stock (% of GDP).	Possibly +
Inflation	Inflation Rate (%).	Could be either + or -
Trade	Trade (% of GDP).	Possibly +
GINI	The Gini coefficient – an indicator of the level of societal inequality.	Possibly -
Upop	Urban population (% of total population) – an indicator of the level of societal development.	Possibly +
Source: World Development Indicators (World Bank, 2012)		
Governance and Institutional Indicators		
CC[a]	Control of Corruption – captures the extent to which public power is used for private gain.	Possibly +
VA[a]	Voice and Accountability – reflects the level of freedom of expression, freedom of association and a free media as well as the extent to which a citizens are able to participate in selecting their government.	Possibly +
PV[a]	Political Stability – measures the likelihood that government may be destabilised through unconstitutional or violent means	Possibly +
GE[a]	Government Effectiveness – reflects the quality of public services and the quality of the civil service as well as the degree of its independence from political pressures.	Possibly +
CPIA TAC	Government Transparency and Accountability – reflects the level of transparency and government accountability. Ranges from 1 (low) to 6 (high).	Possibly +
Democ	An indication of the level of democracy.	Possibly +
Africa	Dummy. Equals 1 if country is in Africa	Could be + or –
EHIPC	Dummy. Equals 1 if a country enrolled under the enhanced HIPC initiative	Possibly +
Source: World Governance Indicators (Kaufman et al, 2010)		

[a] normalised, with a zero mean and a standard deviation of one and range from -2.5 to 2.5. Higher values indicate "better" governance/institutional quality.

The sample comprises all the 36 countries that have completed or are currently in the HIPC programme. The period of analysis is from April 1997 (when Uganda became the first country to enrol in the HIPC programme) to December 2010.

3. Methodology

The analysis uses the Cox-proportional hazard model, a semi-parametric survival model often used to quantify the effect of one or more covariates on failure time. If T is a random variable with a probability distribution F(t) and a probability density function f(t) representing survival time, then the probability of surviving to time t or beyond is given by:

$$S(t) = P(T > t) = 1 - F(t) \quad (1)$$

Where

$$F(t) = P(T \leq t) \quad (2)$$

The survival function S(t) in (1) therefore describes the probability that a randomly selected country is still in the HIPC programme at a particular time t. The probability (or hazard) that a country completes the HIPC programme at time t given that it has not yet reached completion point at that time can be written as:

$$P(t \leq T < t + \Delta t \mid T \geq t) \quad (3)$$

The hazard function can thus be defined as:

$$h(t) = \lim_{\Delta t \to 0} \frac{1}{\Delta t} P(t \leq T < t + \Delta t \mid T \geq t) \quad (4)$$

Hence,

$$S(t) = \exp[-H(t)] \quad (5)$$

Where

$$H(t) = \int_0^t h(t)dt \quad (6)$$

H(t) represents the conditional probability of exit from the HIPC programme given that the country was in the HIPC programme at time t.

The following specification of the hazard model and its corresponding survival function is used:

$$h_i(t) = h_0(t)\exp(\beta X_i) \quad (7)$$

$$S_i(t) = S_0(t)^{\exp(\beta X_i)} \quad (8)$$

Where X_i denotes a vector of explanatory variables for country i's spell in the HIPC programme and β is a vector of unknown coefficients. $h_0(t)$ and $S_0(t)$ represent the baseline hazard and survival function respectively, denoting the risk and survival probability of exiting from the HIPC programme for a particular country in the case where all X's are 0. The dependent variable is the duration (in months) from when a country achieves decision status to when it reaches completion. The failure event is when a country reaches completion. Countries still in the HIPC programme as at 31 December 2010 are censored (i.e. the country completes the programme beyond the observation period). One key advantage of survival models over ordinary regression or probability models is that they are able to incorporate information from censored observations and can handle time varying covariates.

A positive coefficient β for each covariate x_i indicates that the covariate shortens a country's spell in the HIPC programme whilst a negative coefficient β lengthens duration in the HIPC programme. Correspondingly, a hazard ratio β_i (the instantaneous exit rate), greater than 1 increase the risk of exit relative to the baseline hazard and thus shortens a country's spell in the HIPC programme whilst a hazard ratio less than 1 increases HIPC duration.

4. Results

Table 2: Cox proportional hazard model estimates

Variable	Coefficient β_i	Std. Err	Hazard Ratio Exp β_i	P-Value
VA	1.438	1.667	4.215	0.011***
CC	0.159	1.222	1.173	0.152
PV	0.216	0.697	1.241	0.042***
GE	1.437	1.612	3.741	0.049***
CPIA EMC	1.171	1.016	5.228	0.000***
CPIA TAC	0.435	0.995	1.546	0.003***
Ex debt stock	0.018	0.006	1.018	0.003***
GDPpc	0.001	0.002	1.000	0.961
GDPpc growth	0.442	0.202	1.557	0.004***
Gini	-0.052	0.049	0.949	0.291
Inflation	0.055	0.059	1.056	0.352
Trade	0.670	0.015	1.956	0.003***
Upop	0.685	0.027	1.984	0.572
Africa	-2.153	1.095	0.116	0.049***
Democ	0.370	0.229	1.448	0.000***
EHIPC	-3.369	1.166	0.034	0.004***
Log likelihood	-43.096			
LR χ^2 *(16)*	75.38			0.000

**significant at 5%; ***significant at 1%

The effects of the covariates on survival times are presented in table 2. Starting with the governance and institutional indicators, a 1-unit increase in social freedoms in one year makes a country 4 times more likely to complete the HIPC programme in the following year possibly due to the fact that higher social freedoms foster a quicker and broader based formulation of the PRSP and widespread support for its implementation. Additionally, a 1-unit increase in the quality of economic management in one year makes a country 5 times more likely to reach completion point the following year. Increases in government transparency and accountability also significantly shorten HIPC duration. Government efficiency increases the likelihood of completion by a factor of 4 for a 1-unit increase in efficiency. Consistent with expectations, less democratic countries tend to take longer to reach completion point. However, increased political stability and corruption control are not directly assessed at completion point and so do not factor into whether a country reaches completion point or not, possibly explaining why they are not significant in the model although their effects are as expected. The enhanced version of the HIPC initiative was aimed at increasing the number of eligible countries and lowering adjustment costs in order to speed up completion rates (and thus access to debt relief). One would therefore expect that countries that enrolled under the enhanced HIPC (EHIPC) would have a shorter spell in the programme. The results however do not support this intuition – countries that enrolled under EHIPC were much slower in reaching completion point, possibly suggesting the effect of the lower adjustment costs and other enhancements may not have been as significant as expected. On the average, countries enrolling under the original HIPC completed the programme 8 months faster than those under the EHIPC (Table 3).

Table 3: Average duration under HIPC and Enhanced HIPC

Programme	Average Duration	No of countries	% of total
HIPC	44	6	17
EHIPC	52	30	83

Among the economic and social indicators, countries with a marginally higher external debt stock are likely to finish 1.02 times faster. Although the effect is small, this suggests that a relatively higher external debt stock is likely to motivate a government to implement reforms faster in order to access debt relief. GDP per capita growth rate, trade openness and the Africa dummy are all significant and have the expected effects. The Gini coefficient, inflation rate and the percentage of urban population are however not significant.

I use Schoenfeld residuals (Schoenfeld, 1983) to test for the appropriateness of using a proportional hazards model for this analysis (table 4) fail to reject the null hypothesis of proportional hazards against an alternative of non-proportional hazards. Additionally, the *LR* χ^2 statistic indicates that the model as a whole is significant in explaining HIPC duration.

Table 4: test of proportional-hazards assumption

	χ^2	df	Prob> χ^2
Global test	10.20	15	0.806

5. Conclusion

This paper uses survival analysis to examine possible factors affecting completion rates in the HIPC programme. The findings suggest that better economic management, increased economic, social and media freedoms, more effective government machinery, increased trade, a faster GDP per capita growth rate, increased democracy and a more stable political environment are all significant in speeding up completion times. Countries enrolled in the HIPC programme have a clear incentive to improve these indicators in order to reach completion point as quickly as possible and access debt relief. In spite of the various challenges inherent in the improvement of governance and institutional culture in developing countries, these results show that such improvements are quite feasible if there are tangible rewards at the end of the process. For policy makers, this may be a key insight.

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