



## UNIFICATION OF DISCOUNT RATES USED IN EXTERNAL DEBT ANALYSIS FOR LOW-INCOME COUNTRIES

October 4, 2013

### EXECUTIVE SUMMARY

**This paper proposes reforms to the discount rates used by the Bank and the Fund to (a) calculate the present value (PV) of the external debt of low-income countries (LICs) in debt sustainability analyses (DSAs) and (b) to calculate the grant element of individual loans.** Consistent with the conclusions of the March 2013 review of the Fund's debt limits policy, the paper proposes a single uniform discount rate to be used for these related operational purposes. It has been prepared as a joint product of Bank and Fund staff, with the exception of the decision, which is Fund-specific.

**The current discount rate system is complex, creating anomalies and significant operational difficulties.**

**Following an extended period of historically low interest rates in the advanced economies, reflecting weak economic activity, the discount rate used in DSAs has become a poor measure for discounting cash flows over the longer term.** Estimates of the burden of debt service have been inflated, leading to an unjustifiable narrowing of the assessed borrowing space available to countries under the Debt Sustainability Framework for LICs (LIC DSF).

**In view of these shortcomings, staffs propose that a uniform discount rate be used for both PV and grant element calculations.** This discount rate would be set at 5 percent, a level broadly aligned with the discount rate currently used for calculating the grant element of long-term U.S. dollar-denominated loans. Given the significant convergence of long-term interest rates across major economies, the approach of using a regime of currency-specific discount rates for concessionality calculations would cease to apply.

**Staffs propose that the new uniform discount rate remain unchanged until the completion of the next review of the LIC DSF by the Executive Boards of the Bank and the Fund.** This would provide stability in both PV and grant element calculations, eliminating operational problems associated with the current system.

Approved By  
**Siddharth Tiwari and  
Jaime Saavedra  
Chanduvi**

Prepared by an IMF team consisting of Laurence Allain (lead) and Yanliang Miao, under the overall guidance of Seán Nolan, Peter Allum and Reza Baqir (all SPR). Jayendu De and Yan Sun-Wang provided very able research assistance. The World Bank team was led by Sudarshan Gooptu under the overall guidance of Jeffrey Lewis, and consisted of Juan Pradelli and Carlos Cavalcanti.

## CONTENTS

<b>INTRODUCTION</b>	<b>3</b>
<b>THE LIMITATIONS OF THE CURRENT DISCOUNT RATE SYSTEM</b>	<b>5</b>
<b>PROPOSED REFORMS</b>	<b>7</b>
<b>STAFF RECOMMENDATIONS</b>	<b>9</b>
<b>BOX</b>	
1. Discount Rates Used for Fund and Bank Lending Policies	4

## INTRODUCTION

**1. Discount rates are used by the Fund and the Bank to calculate the present value (PV) of the external debt of low-income countries (LICs).** In the debt sustainability framework (DSF) for LICs, the PV of future external debt service is used in assessing the risk of encountering debt distress and the available space for new external borrowing. In the context of the policy on debt limits in Fund-supported program (the “debt limits policy”) and the Bank’s Non-Concessional Borrowing Policy (NCBP), PV calculations are used to compute the grant element of individual loans and to assess observance of limits on non-concessional external debt.

**2. The current discount rate system is complex, producing anomalies and operational difficulties.** While the discount rates used in the LIC DSF and for grant element calculations are all linked to the OECD’s Commercial Interest Reference Rates (CIRRs),<sup>1</sup> the methodologies used to calculate and update the different discount rates vary significantly (Box 1). In recent years, with the sharp decline in key interest rates to historically low levels in advanced economies, reflecting an extended period of sluggish economic activity, these discount rates have become a poor measure for discounting cash flows over the long run, distorting calculations of the burden of debt service and unjustifiably narrowing the assessed borrowing space available to countries in the DSF.

**3. The deficiencies of the existing discount rate system were considered by the Fund’s Executive Board in the context of its March 2013 review of the Fund’s debt limits policy.**<sup>2</sup> Most Directors saw merit in moving toward a single uniform discount rate and addressing unwarranted fluctuations in concessionality assessments that have occurred since the DSF was originally designed. A number of Directors also favored maintaining the link between the discount rate and market interest rates. Directors looked forward to receiving a concrete reform proposal from the staffs of the Fund and the Bank.

---

<sup>1</sup>CIRRs are the minimum interest rates imposed on export financing by official bilateral lenders compliant with the OECD’s Arrangement for Officially Supported Export Credits. These rates are determined monthly for 15 currencies on the basis of secondary market yields on government bonds and published on the OECD’s website, [www.oecd.org](http://www.oecd.org).

<sup>2</sup>See [IMF Executive Board Reviews the Policy on Debt Limits in Fund-Supported Programs](#). See also [Review of the Policy on Debt Limits in Fund-Supported Programs](#).

### Box 1. Discount Rates Used for Fund and Bank Lending Policies

Discount rates are used by the IMF and the World Bank for two main purposes in the context of debt policy for LICs: (i) to assess the concessionality of a loan for purposes of the IMF's debt limits policy and IDA's non-concessional borrowing policy (the "grant element" calculator); and (ii) to calculate the present value of debt in the context of the LIC DSF.<sup>3</sup> Although all discount rates used for these purposes are based on the CIRRs, different methodologies are used to derive them (see table below):

- Discount rates for the grant element calculator use currency-specific CIRRs and are updated regularly (semi-annually or annually); the LIC DSF uses a single rate based on the U.S. dollar CIRR, adjusted only when the six-month average of the U.S. dollar CIRR deviates from the prevailing discount rate by at least 100 basis points for six consecutive months.
- The discount rate for the LIC DSF is calculated based on the six-month average of the U.S. dollar CIRR. For the grant element calculator, the length of time over which CIRRs are averaged in calculating discount rates depends on loan maturity: a six-month average CIRR is used in the case of loans with maturity of less than 15 years, a ten-year average for loans with a maturity of 15 years or more.
- The discount rate for the LIC DSF is derived directly from the average CIRR, but with rounding to produce an integer value. The discount rates for the grant element calculator are also derived from an average CIRR, but include a margin added to the average CIRR that depends on the maturity of the loan, with rounding to two decimal places.

These methodological differences have resulted in the build-up over time of substantial differences in the various discount rates used for Bank-Fund purposes. As a result, the assessment of concessionality can differ significantly across Bank-Fund policies and tools (Table 1).

**Table 1. Discount Rates used in Different PV Calculations**

Purpose	Discount rate	Period for average rates 1/	Margin (%)	Update frequency	Discount rate as of September 2013 (%)	
					US\$	SDR
Grant element calculator	Currency specific long-term CIRR from OECD web site plus a margin 2/					
	Loans < 15 year	6-month average CIRR Avg. of 2/15-8/14; update on 8/15 Avg. of 8/15-2/14; update on 2/15	0.75	Update twice on Feb. 15 and Aug. 15	3.11	3.00
	Loans ≥ 15 year for maturity = 15 < 20 years for maturity = 20 < 30 years for maturity ≥ 30 years	10-year average CIRR	1.00 1.15 1.25	Update every Dec. 15	5.32 5.47 5.57	5.09 5.24 5.34
LIC DSF	A fixed discount rate corresponding to the US\$ CIRR, currently 3% (effective as of September 2012)	The discount rate was set initially at 5 percent (close to the U.S. dollar CIRR around March/April 2005, when the LIC DSF was first introduced) and adjusted by a full percentage point, whenever the U.S. dollar CIRR (six-month average) deviates from the prevailing discount rate by at least this amount (100 bp) for a consecutive period of six months.			3.0	

Sources: OECD; and Fund staff calculations.

1/ All the average rates refer to the average of the longest maturity CIRR. For example, the 6-month average US\$ CIRR is the average of CIRR > 8.5 years. See link below for the CIRR data from the OECD.

<http://www.oecd.org/trade/exportcredits/minimuminterestrates.htm>

2/ A margin reflecting the maturity of the loan is added to the average CIRR to derive the discount rate.

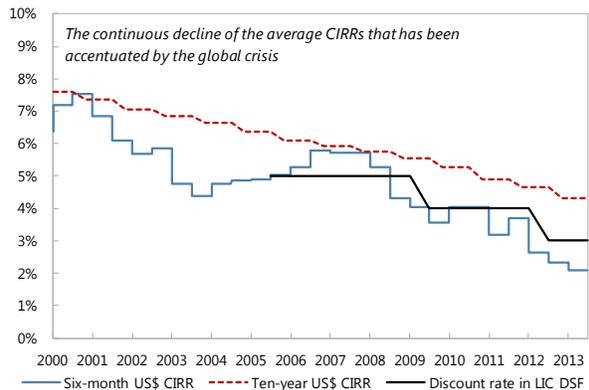
<sup>3</sup>The use of discount rates to assess eligibility and qualification under the HIPC Initiative is outside the scope of this paper, and is not discussed here.

**4. This paper proposes a set of reforms to address limitations of the current discount rate system.** First, one unified discount rate would be employed, both in the LIC DSF and in the grant element calculator. Second, this discount rate would be linked to a long-term moving average of the U.S. dollar CIRR, rectifying the distortions created by the current use of a six-month moving average in the DSF and in assessing the concessionality of loans with a maturity of 15 years or less. Third, this unified discount rate would be changed only at the time of reviews of the DSF, ensuring a greater degree of stability in both DSF and concessionality calculations.

## THE LIMITATIONS OF THE CURRENT DISCOUNT RATE SYSTEM

**5. The current approach to establishing discount rates for external debt analysis involves multiple discount rates, linked to market rates in different ways and updated with varying frequencies.**

As discussed in Box 1, the DSF uses a single discount rate that is linked directly to a six-month moving average of the U.S. dollar CIRR and is adjusted on an irregular basis. The discount rates used for concessionality calculations are based on currency-specific CIRRs that are linked, with a mark-up, to either a six month or ten-year moving average of the relevant CIRR and are updated on a regular schedule (one group semi-annually, others on an annual basis).<sup>4</sup> Given the varying methodologies, discount rates have moved at different times and at varying speeds (text figure), creating significant operational problems (discussed below).



**6. The methodology for determining the LIC DSF discount rate has produced an unwarranted tightening of assessed borrowing space available to LICs in recent years.** The LIC DSF discount rate has dropped by 200 bps since 2009 to its current level of 3 percent, reflecting an extended period of exceptionally low interest rates in the advanced economies as major central banks sought to support economic activity.<sup>5</sup> The reduction in this discount rate has pushed up the estimated present value of LIC debt and reduced the assessed borrowing space available to LICs, which is measured relative to established thresholds for evaluating the risk of debt distress. Against the backdrop of broad stability in

<sup>4</sup>Currency specific CIRR have been established for 15 currencies. These, however, do not include currencies of emerging market creditors such as the Chinese RMB, the Brazilian real, the Russian ruble, and the Turkish lira. Under the current system, the concessionality of loans denominated in currencies for which no currency-specific CIRR is available is assessed using the SDR-based CIRR.

<sup>5</sup>The lagged adjustment mechanism used to adjust the DSF discount rate was intended to limit the impact of cyclical movements in interest rates in the advanced economies, but did not contemplate a multi-year period of weak demand and monetary stimulation in advanced economies.

the terms at which financing has been made available to LICs by official creditors,<sup>6</sup> this reduction in estimated borrowing space is unwarranted, reflecting cyclical factors in the advanced economies rather than a change in longer-term fundamentals for LICs.

**7. Experience with the Fund’s debt limits policy and the Bank’s non-concessional borrowing policy with respect to LICs also revealed several issues with the current use of multiple discount rates.**<sup>7</sup> The issues are four-fold:

- First the tightening of the assessed concessionality arising from the steady decline in the discount rate used in the grant element calculator, has reduced, *ceteris paribus*, the availability of loans that meet Fund and Bank concessionality requirements.
- Second, frequent updates (twice a year for loans with a maturity of less than 15 years, once a year for loans with a maturity of 15 years or more) of the discount rates have led to unpredictable fluctuations in the assessed concessionality of loans. In some cases, loans under negotiation that were originally assessed to be concessional under the prevailing discount rate turned out to be non-concessional, because the loan became effective shortly after an intervening decline in the discount rate. These cases led to requests for modifications and for waivers of non-observance of debt limit performance criteria (PCs) in Fund-supported programs, often for shortfalls in assessed concessionality that were very small.<sup>8</sup> In other instances, exceptions were requested to the Bank’s non-concessional borrowing policy.
- Third, the regime has created a sharp discontinuity in the assessment of concessionality for shorter and longer term loans. The U.S. dollar discount rate used for assessing concessionality of loans with a maturity of less than 15 years is currently 3.11 percent, while that used for loans with longer maturities is at least 5.32 percent (see box 1). As a result, the grant element in a loan of 15-year maturity can be twice as large as that for a 14-year loan with a similar interest rate and grace period.<sup>9</sup>
- Last but not least, differences as large as 250 bps existed between discount rates used in the LIC DSF and in concessionality assessments, resulting in inconsistent PV calculations for the same underlying loans across Fund and Bank policies.

<sup>6</sup>According to the World Bank’s Global Development Finance database, since 1999, the average loan extended by official creditors has had a maturity of 26 years, with a 7-year grace period and an interest rate of 1.4 percent, with little variation (standard deviations of 2.8, 0.8, and 0.1, respectively).

<sup>7</sup>For a recent discussion, see [Review of the Policy on Debt Limits in Fund-Supported Programs](#).

<sup>8</sup>Concessional external loans are typically excluded from debt limits in Fund-supported programs. As a result, loans initially assessed as concessional, which would have been automatically accommodated in Fund-supported programs, became subject to additional scrutiny, in spite of the fact that their economic characteristics (financing terms, expected return on the debt-financed investment) had not changed.

<sup>9</sup>For example, the grant element would be 28.4 percent and 12.9 percent, respectively, for 15- and 14-year loans with a 1.5 percent interest rate and a 5-year grace period.

## PROPOSED REFORMS

**8. To correct these shortcomings, staffs propose to move to a uniform discount rate linked to the 10-year average level of the U.S. dollar CIRR published by the OECD.** While different period averages could be considered, the use of a 10-year average has the merits that a) it ensures smoothing of the discount rate over the business cycle, eliminating fluctuations in PV calculations attributable to temporary factors, and (b) it provides continuity vis-à-vis the current system for calculating concessionality, in that this is the averaging method currently applied in deriving discount rates for the bulk of external loans contracted by LICs.<sup>10</sup>

**9. Staffs propose that the discount rate be set by reference to the 10-year average U.S. dollar CIRR in line with the approach currently used to determine concessionality of loans with a maturity of 20 to 30 years.**<sup>11</sup> As shown in Box 1, this discount rate has been set as the 10-year average CIRR plus a set margin of 1.15 percent:<sup>12</sup> using 2013 data for the CIRR, this would yield a calculated discount rate of 5.26 percent.<sup>13</sup> For simplicity, and consistent with past practice in the DSF, this estimate would be rounded to 5 percent — the same level used at the inception of the DSF in 2004 (see [Debt Sustainability in Low-Income Countries – Proposal for an Operational Framework and Policy Implications](#)).<sup>14</sup> The new discount rate would apply across all Bank and Fund debt-related calculations for LICs—specifically, in the DSF, in the Fund’s debt limits policy, and in the Bank’s NCBP.<sup>15</sup>

<sup>10</sup>That is, all loans with a maturity of 15 years or more.

<sup>11</sup>Over the past five years, the average maturity of loans extended to 60 PRGT-eligible countries has been 28 years; for more than half of these countries, the average maturity of new commitments is in the 20-30 year range, with the average maturity exceeding 30 years in one-third of cases.

<sup>12</sup>This 1.15 margin is calculated by the OECD and is meant to reflect the term premium for loans with a maturity longer than the bond yields (typically five-year bonds) used in the CIRR calculations.

<sup>13</sup>This rate is based on the projected 10-year average US dollar CIRR for the 10 years ending in mid-December 2013 (when current discount rates would be re-set), with the CIRR remaining unchanged from July 2013.

<sup>14</sup>Basing the approach on the SDR CIRR, rather than the US dollar CIRR, would yield the same result: for 2013, the 10-year average SDR CIRR, including the 1.15 percent margin, is projected to be 5.04 percent.

<sup>15</sup>As noted previously, the discount rate used to assess eligibility and qualification under the HIPC Initiative is not considered in this paper.

**10. The proposed discount rate framework would no longer feature currency-specific CIRRs:**

- The original case for using currency-specific CIRRs was that interest rates differed markedly across donor countries; using one CIRR for all currencies understated (overstated) the true concessional element of loans denominated in currencies of countries with high (low) nominal interest rates. In recent years, interest rate levels in these countries have converged markedly, implying that the distortions created by using a single discount rate are now modest.
- The share of official credits to LICs denominated in currencies for which no OECD CIRR is available has risen steadily: the discount rate for loans denominated in any of these currencies is the SDR discount rate. Were currency-specific CIRRs to continue to be used for the “OECD-covered” currencies, equity of treatment across lenders would call for introducing currency-specific CIRRs for other currencies that meet some minimum threshold of significance in terms of lending to LICs.
- Against this backdrop, there are clear merits—simplicity, transparency, ease of use—to using a single CIRR for all loans instead of an expanded system of currency-specific discount rates to calculate the grant element and concessionality of loans.

**CIRRs - Six Month Average**

Currency		2/15/2013 - 8/14/2013
AUD	Australian Dollar	3.94
CAD	Canadian Dollar	2.64
DKK	Danish Krone	1.91
JPY	Japanese Yen	1.43
KRW	Korean Won	3.80
NZD	New Zealand Dollar	4.64
NOK	Norwegian Krone	2.67
SEK	Swedish Krona	2.58
CHF	Swiss Franc	1.48
GBP	United Kingdom Pound	2.51
USD	United States Dollar	2.36
EUR	Euro	2.24
<i>SDR</i>	<i>SDR</i>	<i>2.25</i>
<i>Summary Statistics</i>		
	Weighted Average <sup>1/</sup>	2.33
	Maximum Spread	3.22
	Standard Deviation	0.98

Data source: IMF WEO and OECD

<sup>1/</sup>GDP weights; excludes SDR.

**11. Staffs propose that the value of the discount rate be fixed until the next LIC DSF review, scheduled for 2015.** As noted previously, changing the discount rate on an annual or semi-annual basis has created operational difficulties for both country authorities and Bank-Fund teams. To prevent this, the discount rate would remain unchanged until the next joint review of the LIC DSF. That review would also provide an opportunity to examine in greater depth the appropriate discount rate to use for debt sustainability analysis.

**12. Overall, staffs see several benefits to the proposed reforms.** A uniform discount rate based on a longer-term historical average allows for greater stability and predictability in concessionality calculations and protects assessments of concessionality and the PV of debt from cyclical fluctuations of interest rates, a key weakness of the current framework. The sharp discontinuity in assessed concessionality between shorter and longer term loans would disappear. Shifts in the assessment of the concessionality of individual loans over the course of loan negotiations would be eliminated. Finally, the methodology ensures that the unified discount rate retains its link to market interest rates, albeit filtering out the impact of short-term changes.

**13. Implementation of the proposed reforms will be spread over several months,** as country teams update their regular assessments of debt sustainability under the LIC DSF and as concessionality assessments are made on new loans in line with the Fund's debt limits policy and the Bank's NCBP.<sup>16 17</sup> The initial impact of the change in the discount rate to be used in the DSF on debt distress ratings is expected to be limited: based on a review of current debt sustainability analyses, 3 of the 45 countries currently rated as being at high or moderate risk of debt distress could potentially be upgraded from high risk to moderate risk in the next DSA, while one country could potentially be upgraded from moderate to low risk of debt distress. The implications of revised DSAs for external borrowing limits under Bank-Fund supported programs would be assessed, as at present, in the context of program reviews; the firm emphasis in these assessments on containing the risk of debt distress, as evaluated using the DSF, would remain unchanged.

## STAFF RECOMMENDATIONS

### 14. Staffs recommend that:

- A single uniform discount rate should be used in calculating the present value of external debt in the joint Bank-Fund Debt Sustainability Framework for Low Income Countries (LIC DSF) and in calculating the grant element of loans in the implementation of the Bank's Non-Concessional Borrowing Policy and the Fund's debt limits policy.
- The discount rate should be set by reference to a 10-year average of the monthly U.S. dollar CIRR, while including a margin to reflect a term premium for long-term loans.
- The discount rate should be re-set in the context of the periodic reviews of the LIC DSF conducted by the Executive Boards of the Bank and the Fund.
- The discount rate to be used until the completion of the next review of the LIC DSF, expected in 2015, shall be 5 percent.

<sup>16</sup>Pending Board consideration of the proposed decision below, ongoing DSAs will include an alternative scenario using the proposed new discount rate. In the event that the proposed decision is approved by the Executive Board, for DSAs already issued to the Board, staff would issue a short written statement to the Board confirming that the change in the discount rate does not affect the thrust of the staff's assessment of the member's debt sustainability. For countries where the change in the discount rate would affect staff's assessment, a revised DSA based on the new discount rate would have to be issued prior to its consideration by the Board.

<sup>17</sup>Upon its approval by the IMF Executive Board, the new unified discount rate would not automatically apply to concessionality assessments under conditionality that has been already established in existing IMF-supported programs until and unless such conditionality is modified to provide for the use of the new unified discount rate for concessionality assessments. Such modifications could be achieved, inter alia, in the context of completing the next program review.

## Decision

The following decision, which may be adopted by a majority of votes cast, is proposed for adoption by the Executive Board:

1. For purposes of implementation of the Guidelines on Performance Criteria with Respect to External Debt in Fund Arrangements (Decision No. 6230-(79/140), as amended), and calculation of the present value (PV) of debt in debt sustainability assessments under the Debt Sustainability Framework for Low-Income Countries, the Executive Board endorses the use of the unified discount rate set forth in this paper *Unification of Discount Rates Used in External Debt Analysis for Low Income Countries* (hereinafter the "Unified Discount Rate").

2. Paragraph 8(g)(i) of the Guidelines on Performance Criteria with Respect to External Debt in Fund Arrangements, attached to Decision No. 14416-(09/91), shall be replaced with the following:

"8(g)(i) For members with lower capacity and higher debt vulnerabilities, the performance criterion would generally preclude any accumulation of non-concessional external debt.

Concessional external debt would be excluded from coverage of the performance criterion. For these purposes, concessional debt is defined as debt with a grant element of at least 35 percent, although a higher grant element may be required on a case-specific basis for members in this category. Concessional debt would generally be determined on a debt-by-debt basis, using the unified discount rate set out in "Decision No 15462 adopted October 11, 2013".

3. Decision No. 11248-(96/38), adopted April 15, 1996, shall remain applicable to any conditionality on external debt that is in place as of the date of this decision unless and until such conditionality is amended to provide for the use of the Unified Discount Rate.