



## IMF POLICY PAPER

### REVIEW OF THE ADEQUACY OF THE FUND'S PRECAUTIONARY BALANCES

January 14, 2014

#### EXECUTIVE SUMMARY

**This paper reviews the adequacy of the Fund's precautionary balances, using the framework approved by the Board in 2010.** The review takes place on a standard two year cycle. The paper discusses developments since the last review in 2012 and revisits several issues relating to the assessment of reserve adequacy that were discussed at that time.

**The framework provides an indicative range for precautionary balances linked to developments in total credit outstanding.** The reserve coverage ratio of 20-30 percent draws on approaches in other IFIs, adapted to the specific circumstances of the Fund. The credit measure used to determine the range includes a strong forward-looking element while also seeking to smooth credit volatility. Commitments under precautionary arrangements are currently excluded from the credit measure, but are taken into account when the Board exercises judgment on where to set the target.

**Staff proposes that the indicative medium-term target for precautionary balances remain unchanged at SDR 20 billion.** This is broadly consistent with the mid-point of the updated indicative range. The forward-looking credit measure has declined moderately since the last review and market indicators suggest that correlated risks have also declined. However, the Fund still faces large concentrated exposures that are expected to increase further and together will substantially exceed the target for an extended period. Also, undrawn commitments remain large, the average maturity of Fund credit has lengthened, and the Fund's credit capacity has increased further as a result of the 2012 bilateral borrowing agreements.

**The expected pace of reserve accumulation will depend on upcoming Board reviews of Fund charges.** Based on the illustrative assumptions presented in this paper, staff projects that the SDR 20 billion target is expected to be reached in FY 2017-FY 2018.

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## INTRODUCTION<sup>1</sup>

1. **This paper reviews the adequacy of the Fund's precautionary balances** (Box 1). It uses the more transparent and rules-based approach for assessing reserve adequacy agreed by the Board in 2010. It also revisits several issues relating to the assessment of reserve adequacy that were discussed at the time of the last review. The paper concludes that no change in the indicative medium-term target for precautionary balances is needed at this time.
2. **This review takes place on a standard two-year cycle and the paper's timing allows the assessment of reserve adequacy to inform upcoming Board reviews of Fund charges.**<sup>2</sup> The review precedes the decision to be taken in April 2014 setting the basic margin for the rate of charge for FY 2015 and FY 2016 and the review of access and surcharges planned for March. The paper will also inform the forthcoming review of the FCL/PLL/RFI in February, which is expected to consider among other issues the level and structure of commitment fees.
3. **The paper is organized as follows.** The first section reviews the role of precautionary balances in the Fund's framework for mitigating financial risks and the adoption of a more rules-based framework for assessing reserve adequacy. The second section takes stock of developments since the last review, while the third section assesses the adequacy of the current target for precautionary balances in light of these developments. The last section concludes.

## THE ROLE OF PRECAUTIONARY BALANCES AND THE FRAMEWORK FOR ASSESSING RESERVE ADEQUACY

### A. Role of Precautionary Balances

4. **The Fund faces a range of financial risks in fulfilling its mandate** (Table 1):
  - *Credit risks* typically dominate, reflecting the Fund's core role of providing balance of payments support to members when other financing sources may not be readily available. Credit risks can fluctuate widely since the Fund does not target a particular level of lending or lending growth, and Fund lending can also be highly concentrated and subject to correlated risks.

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<sup>2</sup> Reviews of the adequacy of precautionary balances have been on a two year cycle since 2002 but can be brought forward by the Executive Board if needed.

### Box 1. The Composition of the Fund's Precautionary Balances

The Fund's precautionary balances comprise retained earnings (the Fund's general and special reserves) that are not linked to the gold profits from the recent limited gold sales and the Special Contingent Account (SCA-1). Reserves are available to absorb financial losses, including credit or income losses:

**Special Reserve.** The special reserve was established in 1957. The Board also agreed in 1957 that any administrative losses would first be charged against the special reserve. The special reserve is therefore the first line of defense against income losses.<sup>1</sup> Under the Fund's Articles, no distributions can be made from the special reserve.

**General Reserve.** The general reserve is available for absorbing capital or meeting administrative losses, as well as for making distributions. Distributions of the general reserve are to be made to all members in proportion to their quota, and require an Executive Board decision adopted by a 70 percent majority of the total voting power.

**Special Contingent Account (SCA-1).** Set up in 1987 with the specific purpose to protect the Fund against the risk of a loss resulting from the ultimate failure of a member to repay its overdue charges and repurchases in the GRA. The SCA-1 has primarily been funded through burden sharing contributions generated equally from debtors and creditors through adjustments to the rates of charge and remuneration, respectively.<sup>2</sup> SCA-1 accumulations were suspended effective November 1, 2006. The accumulated balances in the SCA-1 are to be distributed to contributing members when there are no outstanding overdue obligations or at such earlier time as the Fund may decide. The decision to distribute SCA-1 balances requires a 70 percent majority of the total voting power.

<sup>1</sup> Executive Board Decision No. 708-(57/57). This decision has been applied in the financial years the Fund has since suffered a loss covering some SDR 342 million in losses, i.e., FY 1972–FY 1977 (SDR 103 million), FY 1985 (SDR 30 million), and FY 2007–FY 2008 (SDR 209 million).

<sup>2</sup> In FY 1987, the SCA-1 was initially funded from GRA income in excess of the target for the financial year.

**Table 1. Financial Risk Mitigation in the Fund**

Financial Risk	Risk Mitigation Measures
<p><b>Credit risk:</b> The risk that a borrower could fail to meet its financial obligations to the Fund</p>	<p>Lending policies (e.g., conditionality, access limits, charges and maturities, exceptional access framework)                      De facto preferred creditor status                      Safeguards assessments                      Arrears strategy                      Burden-sharing mechanism                      Co-financing of arrangements by other official lenders  <i>Precautionary balances</i></p>
<p><b>Liquidity risk:</b> The risk that available resources will not be sufficient to meet financing needs of members and the Fund's obligations under borrowing agreements</p>	<p>Monitoring of Forward Commitment Capacity (continuous)                      Financial Transactions Plans (quarterly)                      Liquidity reviews (semi-annually)                      General quota reviews (every five years)                      Bilateral borrowing and note purchase agreements; NAB and GAB  <i>Precautionary balances</i></p>
<p><b>Income risk:</b> The risk that the Fund's annual income may not be sufficient to cover its annual expenditures.</p>	<p>Margin on the basic rate of charge                      Surcharges                      Burden sharing mechanism                      Investment Account and investment mandate  <i>Precautionary balances</i></p>
<p><b>Interest rate risk:</b> The risk that future cash flows will fluctuate because of changes in market interest rates</p>	<p>The Fund does not incur interest rate risk on credit as it uses a floating market interest rate (SDR interest rate) to determine the rates of charge and remuneration. The interest rate risk of the Fund's non-gold investment portfolio is reduced by limiting the duration of the portfolio to a weighted average of 1-3 years. The gold portfolio is currently invested in short-term deposits pending implementation of the investment strategy. Going forward, and in light of the expanded investment authority, the Executive Board will review the investment strategy of the non-gold portfolio; the gold-related endowment will be gradually invested over three years in a diversified strategic asset allocation approved by the Board in early 2013.</p>
<p><b>Exchange rate risk:</b> The exposure to the effects of fluctuations in foreign currency exchange rates on the Fund's financial position and cash flows</p>	<p>The Fund has no exposure on its holding of member currencies, Fund credit, or borrowings which are all denominated in SDRs, the Fund's unit of account. Members are required to maintain the SDR value of the Fund's holdings of their currencies. Exchange rate risk on investments is managed by investing in financial instruments denominated in SDRs or in constituent currencies with a view to matching currency weights in the SDR basket, and in the case of the endowment subaccount, by partially hedging developed country currencies into the US dollar, which is the unit of account of this subaccount.</p>
<p><b>Operational risk in financial matters:</b>                      The risk of loss attributable to errors or omissions, process failures, inadequate controls, human factors, and/or failures in underlying support systems</p>	<p>Internal control procedures and processes                      Executive Board approved investment guidelines for external asset managers                      Audit arrangements: independent external audit, oversight of controls and financial processes by an independent external audit committee, and an internal audit function  <i>Precautionary balances</i></p>

- The Fund also faces *income risks*—the risk of shortfalls in annual income relative to expenses. These risks have been significant in the past, including when lending fell to very low levels in the period prior to the recent global crisis. Further progress has been made in implementing the Fund's new income model, which is intended to mitigate these risks by providing a sustainable source of income to meet the costs of non-lending activities. In addition, the increasing level of precautionary balances—which generate investment income for the Fund as well as being a critical part of the risk mitigation framework—adds further protection to the Fund's income.
- The Fund faces *liquidity risk*—the risk that the Fund's resources will be insufficient to meet members' needs. Quota reviews are the key medium-term mitigating factor, and the Fund can also borrow temporarily to supplement its quota resources, as it has done in response to the recent global crisis. In addition, the Fund retains a prudential balance of quota resources to manage liquidity risks and provides a buffer to support the encashability of members' reserve tranche positions.<sup>3</sup>
- The Fund does not currently face significant *market* (exchange and interest rate) *risks* in its lending and funding operations with members. While market risks associated with the Fund's investment portfolios have increased somewhat, they currently remain modest, mitigated by the narrow range of instruments in which the Fund currently invests its reserves. However, under the expanded investment mandate, market risks will likely increase and these risks will be assessed at the next scheduled review of precautionary balances, or earlier, if warranted.<sup>4</sup> The Fund self-insures for certain risks (for example, to cover losses of a capital nature) and faces limited *operational risks*, reflecting its strong internal controls.

5. **The Fund employs a multi-layered framework for managing credit risks.** The primary tools are Fund policies on access, program design, and conditionality, which are critical for ensuring that Fund financial support helps members resolve their balance of payments difficulties in a timely manner. These policies include assessments of members' capacity to implement adjustment policies and repay the Fund, and the exceptional access policies. The framework also includes the structure of charges and maturities (which provide incentives for timely repurchases), safeguards assessments, requirements for adequate financing assurances including from other official lenders, and the Fund's de facto preferred creditor status. In the event that arrears arise, the Fund has an agreed strategy for addressing them. This includes the burden sharing mechanism for deferred charges aimed at

<sup>3</sup> The prudential balance is currently set at 20 percent of the quotas of members participating in the financing of IMF transactions (Financial Transactions Plan) and amounts made available under active bilateral borrowing and note purchase agreements that do not provide a buffer for encashment calls. The prudential balance does not cover the encashment needs of NAB participants' outstanding claims under bilateral borrowing agreements folded into the NAB; nor does it extend to the claims of participants in the expanded NAB, as such resources are provided by setting aside a portion of the total credit arrangements under the NAB. The same holds for claims that could arise under the 2012 bilateral borrowing agreements.

<sup>4</sup> See *IMF Approves New Rules and Regulations for Investment Account*, PR No. 13/37, February 4, 2013 <http://www.imf.org/external/np/sec/pr/2013/pr1337.htm>.

protecting the Fund's income from overdue charges, although the capacity of this mechanism remains very limited at current low SDR interest rates and given heavy reliance on borrowed resources (see Annex III). It also includes the maintenance of an adequate level of precautionary balances as discussed below. Moreover, the Fund's cooperative nature is of crucial importance when credit risks materialize (Boxes 2 and 3).

6. **Maintaining an adequate level of precautionary balances is a key element of the Fund's overall strategy for managing financial risks and ensuring the strength of the Fund's balance sheet.** Precautionary balances are available to protect the balance sheet in the event that the Fund were to suffer a loss as a result of credit or other financial risks.<sup>5</sup> In this way, they play an important role in protecting the value of reserve assets that members place with the Fund and underpinning the exchange of international reserve assets through which the Fund provides assistance to members with financing needs.<sup>6</sup>

7. **The Fund conducts regular, biannual reviews of the adequacy of precautionary balances.** The Board adopted an SDR 10 billion target in 2002 in light of the increasing risks arising from large financial arrangements with several middle-income countries. The SDR 10 billion target was subsequently reaffirmed on three occasions in 2004, 2006, and 2008.

8. **A more transparent rules-based framework for assessing precautionary balances was endorsed by the Board during the 2010 Review and applied again in 2012.**<sup>7</sup> Based on this framework, the Board agreed in 2010 to raise the indicative medium-term target to SDR 15 billion in light of the sharp increases in commitments and actual and projected lending, the projected rises in individual exposures, and the limited capacity of the burden sharing mechanism. The target was further increased to SDR 20 billion in 2012 given the continued increase in lending and commitments since the 2010 review. A minimum floor for precautionary balances of SDR 10 billion was also agreed in 2010 and reaffirmed in 2012.

9. **Directors noted that the framework will need to be kept under review and refined, as needed, in light of further analysis and experience.** They noted that the framework only serves as a guide for determining the appropriate indicative target for precautionary balances and emphasized the importance of judgment and the use of Board discretion in light of a broad assessment of the financial risks facing the Fund.

<sup>5</sup> The Fund drew on its precautionary balances during FY 2007–FY 2008 to cover income losses.

<sup>6</sup> Although the Fund's gold holdings are an important factor of strength in the Fund's balance sheet, they offer limited protection against arrears. In particular, outside of a liquidation of the Fund the use of gold by the Fund is restricted by the Fund's Articles and any authorized use requires a decision by an 85 percent majority of the total voting power.

<sup>7</sup> See Public Information Notice (PIN) No. 10/137 September 30, 2010 <http://www.imf.org/external/np/sec/pn/2010/pn10137.htm> and Press Release No. 12/132 April 12, 2012 <http://www.imf.org/external/np/sec/pr/2012/pr12132.htm>.



## Box 2. The Role of the Fund's Burden Sharing Mechanism and Precautionary Balances in the Event of Arrears

**The burden sharing mechanism seeks to ensure that the Fund's cash flow from its lending operations is not negatively impacted by members' failure to settle financial obligations to the Fund.**<sup>1</sup> Under burden sharing, temporary financing in equal amounts is obtained from debtor and creditor members by increasing the rate of charge and reducing the rate of remuneration on reserve tranche positions, respectively, to: (i) cover income shortfalls due to unpaid charges ("deferred charges") and (ii) accumulate precautionary balances against possible credit default (both overdue charges and repurchases) in a contingent account (the SCA-1).

**To the extent that burden sharing makes the Fund's income position whole, the Fund can continue to assert that there is no impairment loss under International Financial Reporting Standards (IFRS)** (see also Box 3). In particular, even though a member may not be meeting its obligation to pay charges, the "collection" of an equivalent amount from other members through the burden sharing mechanism enables the Fund to demonstrate that on a net present value basis there is no impairment of credit outstanding under the current incurred loss model (see Box 3).

**However, should the loss of income exceed the capacity of burden sharing, the difference would reduce the Fund's net income during the period in which the loss is incurred. In these circumstances, the carrying value of the asset in arrears on the Fund's balance sheet would need to be reassessed.**

- The non-receipt of charges would lower annual net income and reduce the pace of accumulation of precautionary balances.
- The reduction in future cash flows due to the limited capacity of the burden sharing mechanism could undermine the Fund's ability to demonstrate that the carrying value of credit outstanding has not been impaired. This would have implications for the accounting treatment of credit outstanding on the Fund's balance sheet, including the possibility of an impairment loss.<sup>2</sup> Under IFRS, should an impairment loss be recognized, the carrying value of the credit outstanding in arrears could be reduced either directly or through the use of an allowance account.<sup>3</sup> A variety of factors would need to be considered in addressing this question, including the unique nature of the Fund's financing mechanism and the associated provisions in the Fund's Articles, but recognizing an impairment loss would further reduce net income and possibly precautionary balances.<sup>4</sup>

**Precautionary balances play an important role in protecting the Fund's balance sheet by providing a buffer to absorb potential losses.** The SCA-1 serves as the first line of defense should the Fund ultimately recognize an actual loss. Any such loss would be charged against the SCA-1, and losses that exceed balances in that Account would lead to a reduction in the Fund's income, and possibly the Fund's reserves. Annex III provides burden sharing capacity and credit scenario analyses

**Box 2. The Role of the Fund's Burden Sharing Mechanism and Precautionary Balances in the Event of Arrears (concluded)**

and stress tests of the Fund's balance sheet that illustrate the critical role of precautionary balances.

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<sup>1</sup> See Annex III of *Review of the Adequacy of the Fund's Precautionary Balances* (8/25/10) for more details on structure and capacity of the Burden Sharing Mechanism.

<sup>2</sup> Under IFRS, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows.

<sup>3</sup> The recognition of an impairment loss is not equivalent to writing off the outstanding claims against the member in arrears. The recognition of an impairment loss does not relieve the member of its obligations to the Fund. If the amount of impairment loss decreases as a result of events (e.g., settlement) occurring after the impairment was recognized, the previously recognized impairment loss can be reversed.

<sup>4</sup> Current accounting standards do not provide any specific methodology on measuring impairment losses, but recognize that any impairment loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows using the effective interest rate. The Fund is subject to limitations on loss recognition under the Articles of Agreement. These limitations would need to be taken into account in addressing impairment losses in the context of arrears.

### Box 3. International Financial Reporting Standards

**Accounting requirements.** While not required under the Articles, the Fund prepares its annual financial statements in accordance with International Financial Reporting Standards (IFRS). IFRS require that financial assets be measured and reported on the balance sheet at amortized cost or fair (market) value. For example, on the Fund's balance sheet, loan receivables (Fund credit) are carried at their amortized cost, i.e., outstanding principal obligations, while investments are carried at their fair value.<sup>1</sup>

When the carrying (or book) value of an asset (either a loan or investment) exceeds its true realizable value, adjustments are required to reflect such assets at their true recoverable or realizable amount. Under current provisions, an entity shall assess at the end of each reporting period whether there is objective evidence (a "loss event") that assets carried at amortized cost are impaired. Under this incurred loss model, a loss event could be a default or delinquency in interest or principal payments.<sup>2</sup> The adjustment is measured as the difference between the asset's carrying amount and the present value of expected future cash flows. The reductions in the value of an asset are normally charged against income and either the asset values carried on the balance sheet are reduced directly by an equivalent amount or an allowance account is established, i.e., use of an equivalent provision.<sup>3</sup> At the Fund, such charges against income would need to be weighed against the burden sharing capacity for deferred charges and the amounts in the SCA-1, which was established as a general precaution to absorb losses from overdue obligations (overdue charges and repurchases).<sup>4</sup>

General prudent financial and accounting practices necessitate that an adequate level of reserves be maintained, in addition to the specific provisions for value impairment, to ensure the viability and continued operation of an entity and provide protection against general business risk.

**Audit requirements.** The failure to adjust the valuation of assets or use of allowance accounts on the balance sheet in accordance with IFRS could cause an auditor to conclude that these assets are not fairly stated and, when such amounts are significant, this could result in a qualified audit opinion.<sup>5</sup> Further, if the overall available resources of an entity were to be considered inadequate to guarantee continued operations or if there were considerable uncertainty about the ability of an entity to honor its liabilities the auditor would need to consider the impact on its audit opinion on the financial statements.

**IAS 19 and Fund pensions.** Precautionary balances are also affected by the accounting treatment for the Fund's obligation for pension and post-employment benefits and the related expense prescribed under IAS 19. The present value of the obligation is actuarially determined based on demographic and financial assumptions (e.g., discount rate). These assumptions change from year to year, thereby giving rise to actuarial gains and losses. Since the adoption of IAS 19, the Fund has deferred the recognition of such gains and losses, as permitted under the current standard, and carried them forward on the balance sheet. The actuarial gains and losses have then been amortized and recognized into income over time. IAS 19 has been amended and, effective in FY 2014, would disallow the deferral of actuarial gains and losses. The adoption of the amended IAS 19 requires retrospective application such that any cumulative unrecognized losses as reported in the audited financial statements would be charged

### Box 3. International Financial Reporting Standards (concluded)

against the Fund's reserves. Going forward, the immediate recognition of the effect of changes in actuarial assumptions would flow through to, and give rise to volatility in, the Fund's income and reserves. No allowance for possible IAS 19 adjustment has been included in the projections shown in this paper. As of end-FY13, cumulative unrecognized losses amounted to SDR 1.4 billion. However, while it is premature to predict the final outcome, developments in the current financial year point towards a potential reversal of those unrecognized losses. The forthcoming paper on the Fund's income position is expected to discuss this issue in more detail.

<sup>1</sup> The IFRS accounting treatment is based on the economic substance of the Fund's lending arrangements and not the legal form of the underlying transactions, which involve the purchase and repurchase of currencies.

<sup>2</sup> Discussions continue on when to shift to reporting standards based on an expected loss model. Under the expected loss model, a loss event would no longer need to occur before an impairment loss is recognized. Due to this revision, it is anticipated that the expected credit loss model would likely result in earlier recognition of credit losses compared with the current incurred loss model.

<sup>3</sup> When the issue of provisioning was last discussed by the Executive Board in 1987, the Board rejected both special and general provisioning as tools for protecting the Fund's financial position against the risk from overdue financial obligations. The Executive Board would have to revisit the issue of loss recognition and provisioning in the event of significant arrears.

<sup>4</sup> If the capacity of burden sharing for deferred charges was such that it could not absorb the full amounts of delinquent interest payments, then the Fund's income statement for the reporting period would no longer recognize income for the interest not covered by burden sharing. Further charges against income would be needed to take account of any reduction in the carrying value of the loan receivable after assessment of the protection provided by SCA-1.

<sup>5</sup> A qualified opinion is issued when auditors disagree with the treatment or disclosure of a material matter in the financial statements.

## B. Framework for Assessing Reserve Adequacy

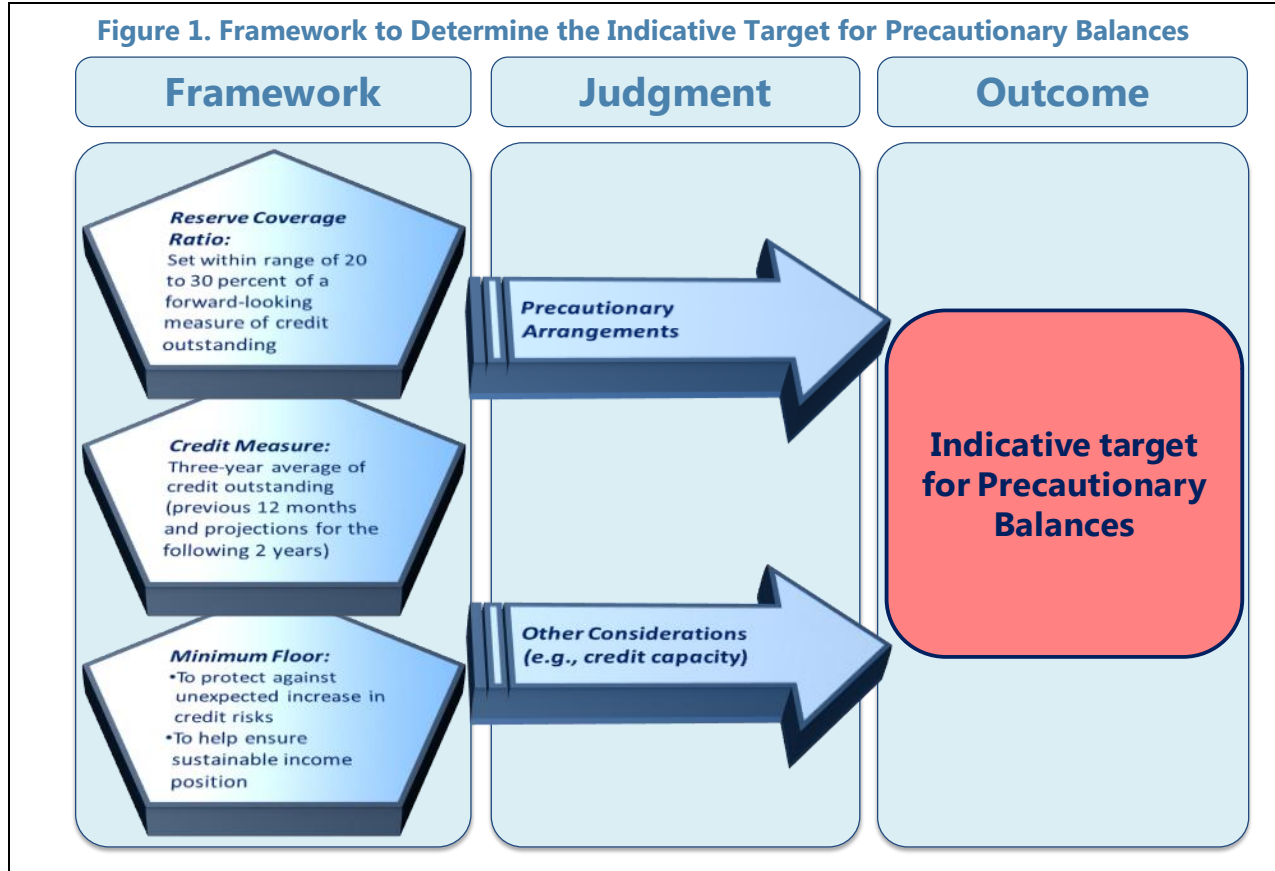
10. **Under the framework, the target for precautionary balances is broadly maintained within a range linked to developments in total credit outstanding.** The framework provides an indicative range that serves as a guide to decisions on adjusting the target over time, and the Board retains flexibility to determine where the target should be set based on a comprehensive assessment of the risks facing the Fund. It is generally envisaged that the target will be maintained within the range, but there could be occasional circumstances where the Board would decide to set or maintain the target outside the range if this is warranted by a broader assessment of financial risks.

11. **The framework consists of four main elements** (Figure 1): (i) a *reserve coverage ratio*, set to 20 to 30 percent of a forward-looking credit outstanding measure, subject to a floor. This element draws on approaches in other IFIs (Box 4), adapted to the specific circumstances of the Fund (in particular the highly concentrated needs-driven nature of its lending portfolio), (ii) a *forward-looking credit measure* to anchor the range—specifically, a three-year average of credit outstanding covering the past twelve months and projections for the next two years—which helps smooth year-to-year volatility of credit movements,<sup>8</sup> (iii) commitments under *precautionary arrangements*, which

<sup>8</sup> Given the inherent difficulty of forecasting future credit demand, the two-year projection is based on scheduled net disbursements under non-precautionary arrangements, similar to the methodology used in the medium-term income projections. Staff considers this a reasonable approach. While the methodology makes no provision for possible

(continued)

are excluded from the credit measure used to derive the indicative range, but are considered by the Board in setting the target, and (iv) a *minimum floor*—currently set at SDR 10 billion—to protect against an unexpected increase in credit risks, particularly after periods of low credit, and ensure a sustainable income position.<sup>9</sup>



future arrangements (which could bias the projections downwards) it also assumes the timely completion of all reviews and related purchases under existing arrangements, with no provision for early repurchases (which could bias the projections upwards). See also *Review of the Adequacy of the Fund's Precautionary Balances* (8/25/10) <http://www.imf.org/external/np/tre/risk/2010/082410.htm>.

<sup>9</sup> While Fund credit is highly volatile and can increase sharply, it takes a considerable time to rebuild precautionary balances. Thus the floor provides a buffer in the face of an unexpected increase in credit risks. The initial floor of SDR 10 billion was retained under the 2012 review of precautionary balances, consistent with past practices and in line with the 10-year average of credit outstanding. The floor is kept under review in light of longer-term trends in Fund lending.

#### Box 4. Overview of Other IFIs' Risk Management Practices

This box summarizes the risk management approach of selected International Financial Institutions (IFIs). The institutions reviewed are the International Bank for Reconstruction and Development (IBRD), the Inter-American Development (IDB), the Asian Development Bank (ADB), the African Development Bank (AfDB), the European Bank for Reconstruction and Development (EBRD), and the Bank for International Settlements (BIS).<sup>1</sup>

**Capital adequacy framework.** The IBRD, the IDB, and the ADB employ, or employed until recently, an explicit target for equity to loan types of measures. The IBRD sets a target for the equity-to-loans ratio in the range of 23-27 percent; the ratio at end-June 2013 stood at 26.8 percent. The IDB had a target for its equity-to-loans ratio of 32-38 percent. While currently using the capital utilization ratio as the main indicator of capital adequacy, the IDB continues to publish the equity-to-loans ratio (31.1 percent at end-2012) in its information statements to investors. Similarly, the ADB previously had an equity-to-loans ratio target of 35 percent; under its current framework, the ADB uses the ratio in assessing the impact of stress scenarios. The capital adequacy frameworks of the remaining IFIs are generally built on economic capital policy measures, where the required economic capital to mitigate risks is managed within the level of available capital.

**Market risks.** Treatment of market risks in the IFIs' capital adequacy frameworks varies. The capital adequacy frameworks of the IBRD and the ADB focus on credit risks, and market risks are managed mainly through asset-liability management. Other IFIs have integrated market risks in their capital frameworks, although the specific risks covered and the amount of allocated capital vary considerably. The IDB requires the minimum capital of five percent of the size of its investment portfolio. The AfDB allocates risk capital equivalent to 1.9 percent of its total on-balance sheet risk capital resources to counterparty credit risks related to their investments and derivative instruments. The EBRD has established risk limits derived from an economic value-at risk approach. The BIS determines the minimum capital requirements, based on the Basel II framework, to absorb potential losses due to credit, market, operational and other risks; this minimum capital amounted to SDR 2.1 billion at end-March 2013, while the allocated capital was SDR 9.6 billion.

**Operational risks.** As in the case for market risks, treatment of operational risks varies across IFIs. For the IBRD and the ADB, no capital is set aside for operational risks, which are managed mainly through strong internal controls. The IDB allocates capital of one percent of total assets to operational risks. The AfDB's capital adequacy framework provides for an operational risk capital charge of 15 percent of the average operating income for the preceding three years. The EBRD's required economic capital takes operational risks into account. The BIS allocates certain economic capital to mitigate operational risks as described above.

<sup>1</sup> The 2010 precautionary balances paper (<http://www.imf.org/external/np/tre/risk/2010/082410.htm>) reviewed the capital adequacy practices of the IBRD, the IDB, and the ADB, and the 2012 paper reviewed market and operational risk practices of these three institutions plus the BIS.

## DEVELOPMENTS SINCE THE LAST REVIEW

12. **Developments since the last review confirm that credit risks remain elevated.** Credit outstanding and commitments remain near all-time highs, credit remains highly concentrated with a few very large and correlated exposures, and the average maturity of Fund credit has lengthened.

- **Credit outstanding and total commitments remain high by historical standards** (Table 2 and Figure 2, Panel A). Credit outstanding stood at SDR 84 billion at end-November 2013, near its all-time high. At the time of the last review, credit outstanding was projected to peak at about SDR 100 billion, whereas the actual peak was modestly lower at SDR 94.2 billion in April 2012, mainly reflecting purchases not made under arrangements that have now expired, including with Iraq, Romania, and Ukraine (Figure 3). The current figure also includes projected credit outstanding for four new programs approved since last April. Total commitments remain very high at SDR 190 billion as of end-November 2013 (compared with about SDR 202 billion at the time of the last review). Given the high level of outstanding commitments and still fragile global outlook, it is too early to be confident that credit has peaked.

**Table 2. Current versus Past Reviews: 2008–2013**

	Oct-08 1/	Jul-10 1/	Feb-12	Nov-13
(In billions of SDRs)				
Precautionary balances	6.9	7.3	9.2	11.5 2/
Arrears	1.1	1.1	1.1	1.1
Largest individual exposure				
Actual	5.7	9.0	17.5	23.6
Projected	11.0	26.4	28.1	27.6
Credit outstanding				
Actual	17.2	48.6	88.5	84.1
Projected peak	30.0	78.2	100.6	87.1 3/
Total commitments 4/	36.5	144.0	201.6	189.9
Credit capacity	165.9	310.1	451.4	668.7
(In percent of)				
Precautionary balances				
Credit outstanding	40.5	15.1	10.4	13.7
Total commitments	19.0	5.1	4.6	6.1
Credit capacity	4.2	2.4	2.0	1.7

Source: IMF Finance Department

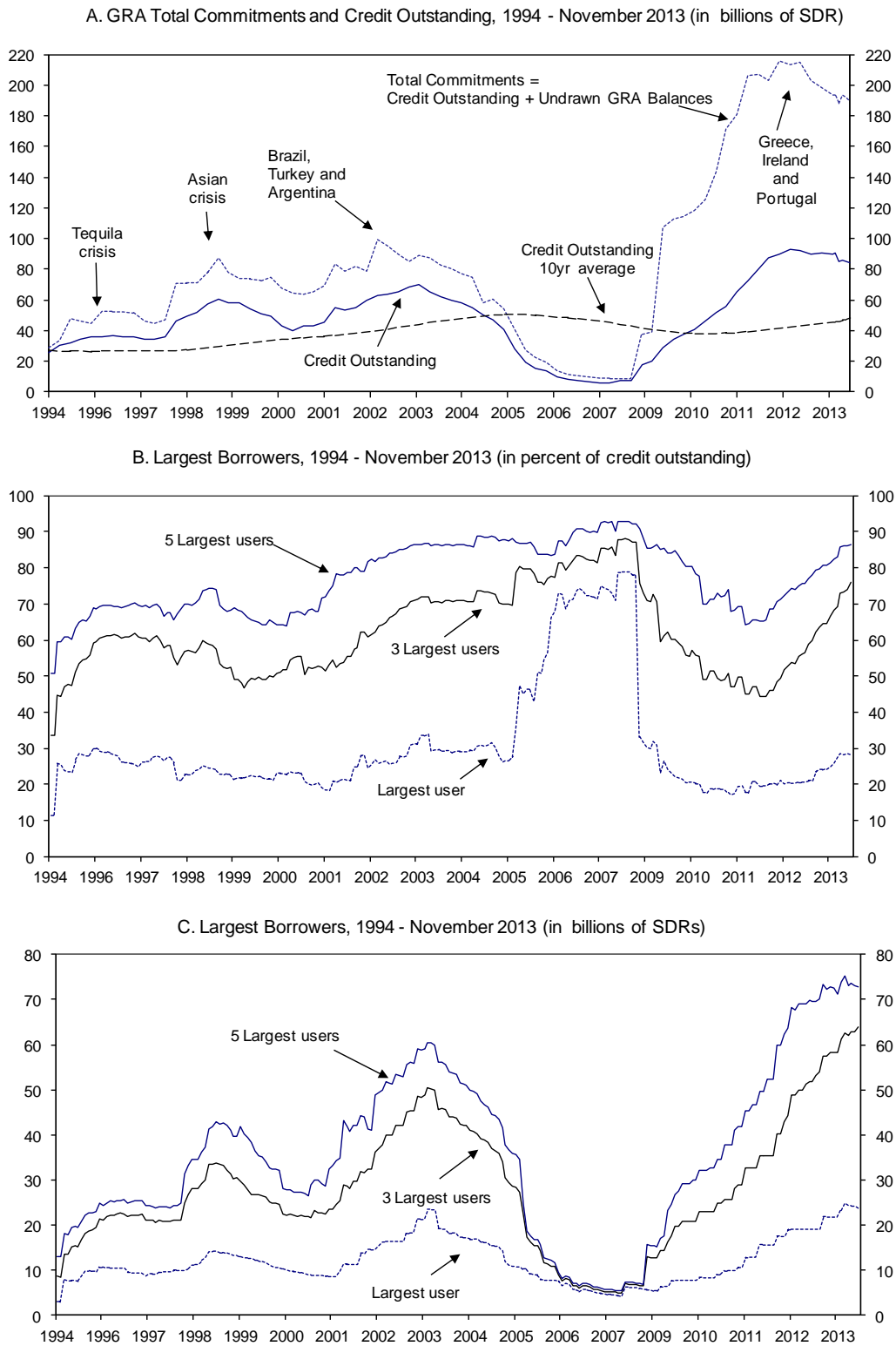
1/ Review of the Adequacy of the Fund's Precautionary Balances, August 25, 2010.

2/ Unaudited staff estimates.

3/ Actual peak of SDR 94.2 billion was reached in April 2012.

4/ Total commitments equal GRA credit outstanding plus undrawn balances.

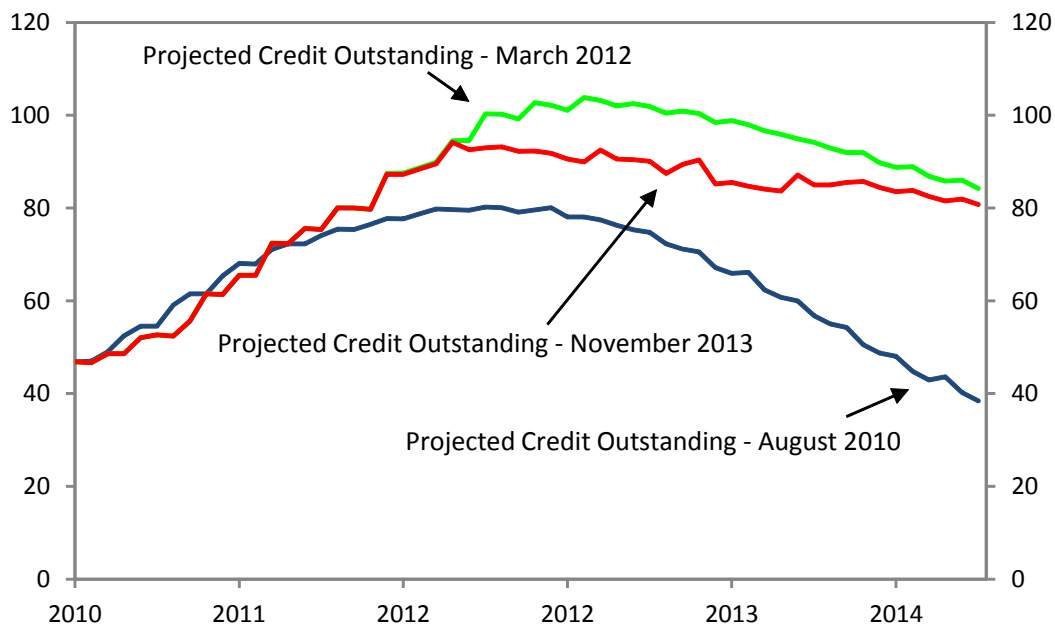
**Figure 2. Total Commitments, Credit Outstanding and Credit Concentration: 1994–2013**



Source: IMF Finance Department



**Figure 3. Projected Credit Outstanding at the Time of Recent Reviews: 2010, 2012, 2013  
(In billions of SDRs)**

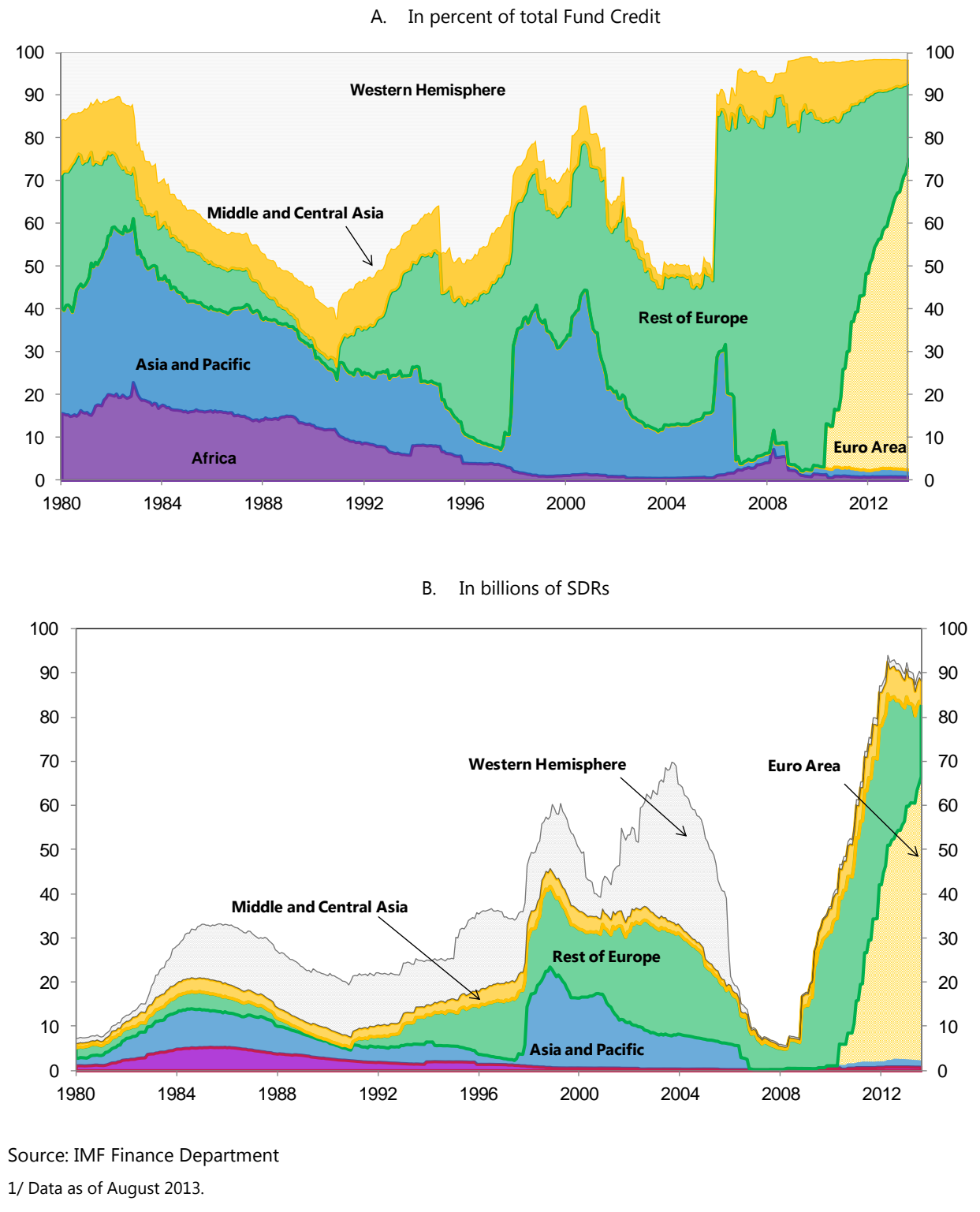


Source: IMF Finance Department

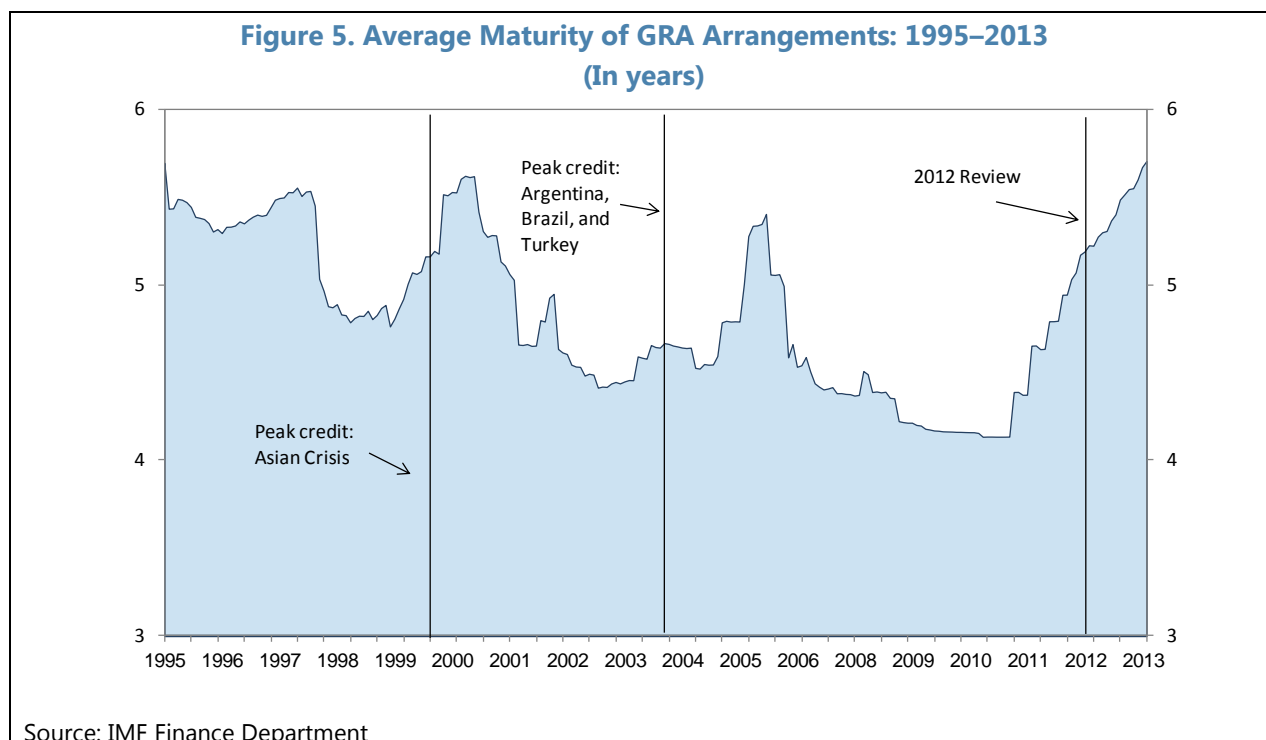
- Credit concentration also remains very high, reflecting continued large lending to euro area members.** The top five largest borrowers account for about 86 percent of total credit at end-November 2013 (Figure 2, Panel B), compared with 70 percent in early 2012. The degree of regional concentration is also very high, with the top three borrowers, all members of the euro area (Greece, Ireland, and Portugal), representing about 76 percent of credit outstanding (Figure 4); this compares with about 50 percent at the time of the last review. While high concentration has been a feature of Fund lending in the past (Figure 2, Panel B), outstanding credit to the largest borrowers has risen to new peak levels in SDR terms (Figure 2, Panel C).<sup>10</sup> The risks associated with these large exposures are also exacerbated by the potential for them to be affected by correlated shocks.

<sup>10</sup> More formally, the Herfindahl index—a commonly used measure of concentration—also shows that the concentration of Fund lending has also risen further since the last review.

**Figure 4. Credit Concentration by Region: 1980–2013 1/**



- The average maturity of Fund credit has lengthened since the 2012 review** (Figure 5), reflecting a continued increase in the share of total GRA credit accounted for by the three large Extended Fund Facility (EFF) arrangements with euro area countries, where maturities of Fund lending are longer than under Stand-by Arrangements (SBAs). Hence, although projected peak credit outstanding has fallen somewhat, credit is projected to remain at elevated levels for longer than was projected in 2010 and close to the levels projected in 2012 (Figure 3).



- Credit capacity has increased significantly since the last review.** At the time of the last review, credit capacity had reached a new high of SDR 451 billion in February 2012 as a result of the effectiveness of the expanded NAB. Since then, the Fund has mobilized substantial additional resources through the 2012 bilateral borrowing agreements aimed at enhancing its capacity to meet members' potential needs in the context of its crisis prevention and resolution activities. As a result, the Fund's credit capacity has increased further to nearly SDR 670 billion as of end-November 2013.<sup>11</sup> The 2012 agreements provide a backstop to quota and NAB resources, and are automatically activated if the modified FCC, which takes into consideration all available uncommitted NAB resources (rather than those that have been activated, as is the case with the FCC), falls below SDR 100 billion.

<sup>11</sup> Allowing for a prudential balance of 20 percent, the 30 bilateral agreements totaling SDR 274 billion that were effective at end-November 2013 raised the Fund's credit capacity by SDR 219 billion.

**13. Precautionary balances have increased since the last review, although they remain well short of the indicative medium-term target and coverage of key metrics remains low:**

- **Precautionary balances are now above the floor agreed at the last review** (Table 3). At the end of FY 2013, precautionary balances increased to SDR 11.5 billion, comprising retained earnings in the special and general reserves of SDR 10.3 billion and SDR 1.2 billion in the Special Contingent Account (SCA-1, see Box 1).
- **While precautionary balance coverage has increased modestly since the last review, it remains low** (Table 3 and Figure 6). Precautionary balances have increased to about 13 percent of total credit outstanding, compared to about 10 percent at the time of the last review and equate to 6 percent of total commitments, compared with less than 5 percent at the time of the last review. However, including the lending capacity provided by the 2012 borrowing agreements, precautionary balances have fallen to 1.8 percent of the Fund's credit capacity compared with over 2.0 percent at the last review. Moreover, precautionary balances still cover only about one-half of each of the Fund's three largest individual exposures.

**Table 3. Precautionary Balances in the GRA: 2007–2013**

	(End of Financial Year)						
	2007	2008	2009	2010	2011	2012	2013
	(In billions of SDRs)						
Precautionary balances 1/	7.6	6.9	7.1	7.3	8.1	9.5	11.5
Reserves	5.9	5.8	5.9	6.1	6.9	8.3	10.3
General	3.5	3.5	3.5	3.5	4.0	4.9	6.1
Special	2.4	2.2	2.4	2.6	2.9	3.4	4.2
SCA-1	1.7	1.2	1.2	1.2	1.2	1.2	1.2
Free reserves 2/	7.0	6.6	6.8	7.0	7.8	9.2	11.2
<i>Memorandum items:</i>							
Credit capacity 3/	166.3	166.7	219.5	309.2	451.2	451.6	635.2
Total commitments 4/	11.2	9.0	72.2	117.5	181.5	201.6	198.2
Credit outstanding	7.3	5.9	20.4	41.2	65.5	94.2	90.2
Credit in good standing	6.8	5.6	20.1	40.9	65.3	93.9	89.9
Arrears 5/	1.6	1.1	1.1	1.1	1.1	1.1	1.1
Principal	0.6	0.3	0.3	0.3	0.3	0.3	0.3
Charges	1.1	0.8	0.8	0.8	0.8	0.8	0.8
	(In percent)						
Precautionary balances to							
Credit capacity	4.6	4.2	3.2	2.4	1.8	2.1	1.8
Total commitments 4/	67.5	77.2	9.8	6.2	4.5	4.7	5.8
Credit outstanding	103.5	117.7	34.7	17.8	12.4	10.1	12.8
Free reserves to							
Credit capacity	4.2	4.0	3.1	2.3	1.7	2.0	1.8
Credit in good standing	103.8	118.7	33.8	17.2	12.0	9.8	12.5

Source: IMF Finance Department

1/ Precautionary balances as of end-FY 2011 exclude profits from gold sales (see *Review of the Fund's Income Position for FY 2010 and FY 2011* (4/14/10) <http://www.imf.org/external/np/pp/eng/2010/041410.pdf>).

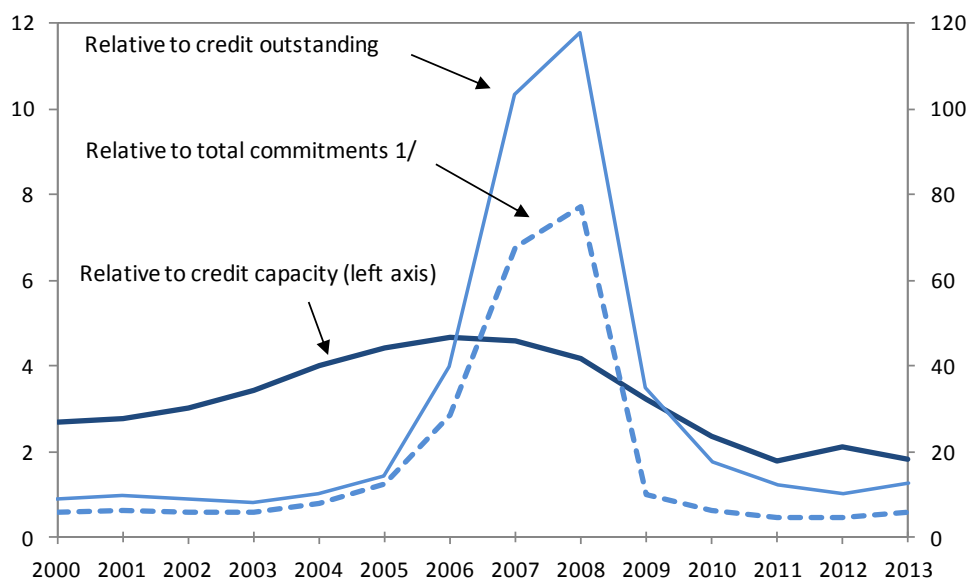
2/ Precautionary balances in excess of arrears on principal.

3/ The Fund's credit capacity is approximated by the quotas of members in the FTP plus resources made available under effective bilateral loan and note purchase agreements plus resources that could be made available by activating the NAB and GAB, excluding a prudential balance based on these combined resources.

4/ Total commitments equal credit outstanding plus undrawn balances under GRA arrangements.

5/ Obligations to the GRA that are overdue for six months or more.

**Figure 6. Precautionary Balance Ratios: FY2000 – FY2013**  
(In percent)



Source: IMF Finance Department

1/ Total commitments equal credit outstanding plus undrawn balances under GRA arrangements.

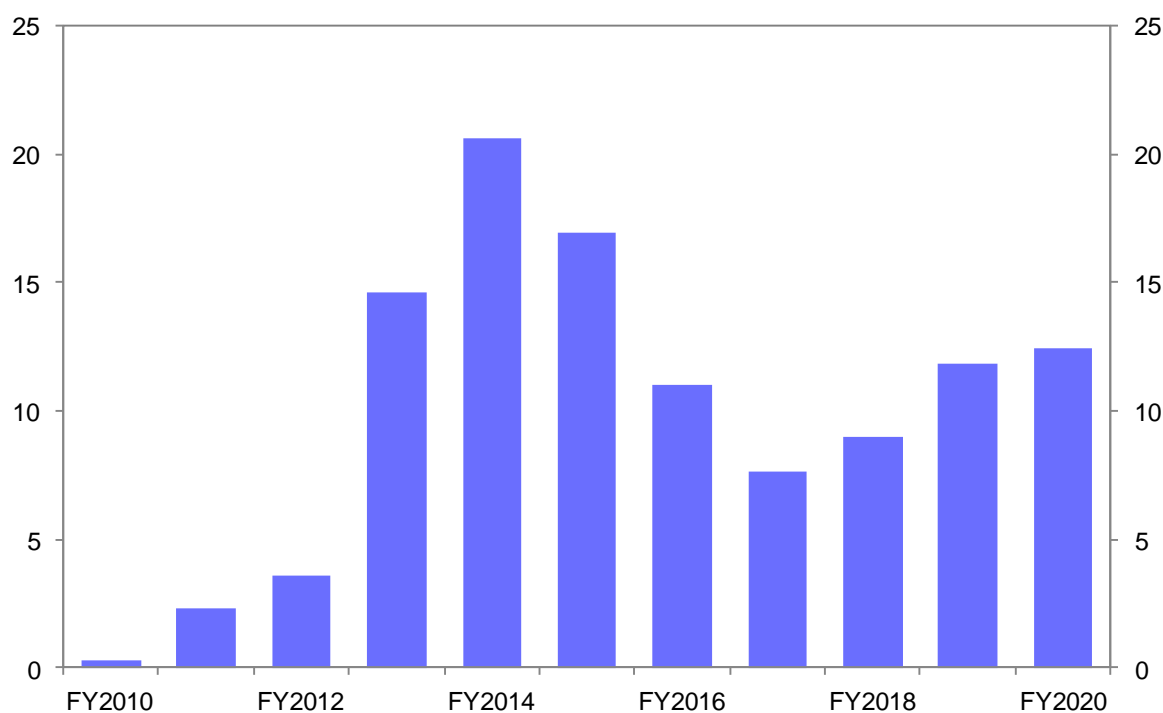
14. **Despite increased lending, arrears remain low.** Current principal arrears total SDR 0.3 billion, and have not changed significantly in recent years. Members have so far been able to fully meet their repurchase obligations falling due to the Fund, which rose in FY 2013 and are expected to peak in FY 2014 at over SDR 20 billion (Figure 7) and remain high in FY 2015. Given the longer maturity of average Fund lending, repurchase obligations are projected to rise and peak again in FY 2021, declining to below SDR 5 billion only in FY 2024.

15. **Near and medium-term income risks remain low.** The still-high projected path for Fund lending has underpinned the operational income outlook over the medium term envisaged at the time of the last review.<sup>12</sup> Positive net operational income is projected over the medium term, and these surpluses, combined with substantial surcharge income and a gradual increase in investment income in the outer years will allow the accumulation of precautionary balances in line with the current target.<sup>13</sup>

<sup>12</sup> *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13) <http://www.imf.org/external/np/pp/eng/2012/041212.pdf>. Projections have been updated to reflect arrangements approved through end-November 2013.

<sup>13</sup> This partly reflects the recent agreement to broaden the Fund's investment mandate and the phased implementation of the new endowment. See *IMF Approves New Rules and Regulations for Investment Account*, PR No. 13/37, February 4, 2013, <http://www.imf.org/external/np/sec/pr/2013/pr1337.htm>.

**Figure 7. Repurchases in the GRA: FY 2010 – FY 2020 1/**  
(In billions of SDRs)



Source: IMF Finance Department

1/ Projected data as of FY 2014.

## ASSESSMENT OF THE ADEQUACY OF PRECAUTIONARY BALANCES

16. **This section assesses the adequacy of precautionary balances in light of the above developments.** It also revisits the treatment of commitments under precautionary arrangements, which Directors agreed to keep under review in light of experience. The section also presents the results of scenario analysis covering alternative outlooks for future credit demand and stress tests of the potential impact of arrears on the Fund's balance sheet in light of the current very limited capacity of the burden sharing mechanism.

17. **Under the framework, the starting point for assessing reserve adequacy is the forward-looking measure of credit outstanding.** This measure stood at SDR 83.6 billion as of November 2013 (Table 4, column 2), down moderately from SDR 91.8 billion at the time of the 2012

Review. As in the past, this projection assumes full and timely disbursements under all non-precautionary arrangements approved to date, but makes no allowance for possible new arrangements or for drawings under existing precautionary arrangements. It also assumes that all repurchases are made as scheduled.

18. **The midpoint of the indicative range based on this measure is SDR 21 billion.** A 20-30 percent indicative range for the precautionary balances target yields a range of SDR 16.7-25.1 billion (columns 3-4), with a mid-point of SDR 20.9 billion. This compares with a mid-point of SDR 23 billion at the time of the 2012 review (column 5). In 2012, staff proposed that the target be set below the mid-point, noting that it would already imply more than a doubling from the then-current level of precautionary balances, actual arrears remained very low, and the global situation and potential demand for new Fund lending was highly uncertain. Directors supported this approach, though a number saw a case for a higher target, given the potential further increase in the Fund's lending capacity through bilateral borrowing and the possibility of substantially higher lending.<sup>14</sup>

19. **Based on the above considerations, staff believes that the current SDR 20 billion target remains appropriate.** This would be broadly in line with the mid-point of the indicative range based on updated calculations, and reflects an assessment that the overall balance of financial risks is largely unchanged since the last review. Total credit outstanding and financing commitments remain high, some individual exposures remain very large and potentially subject to correlated risks, and the Fund's credit capacity has been expanded further to meet possible additional financing needs. On the other hand, all members benefiting from Fund support during the crisis have so far been able to fully meet their obligations to the Fund, and debt distress indicators have fallen sharply over the past year. Earlier concerns about global tail risk events have also eased somewhat, raising at least the possibility that Fund lending may have peaked. In the staff's view, these and other considerations do not provide a strong basis for deviating significantly from the mid-point of the range. The following paragraphs elaborate on these considerations.

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<sup>14</sup> Press Release No. 12/132 April 12, 2012, <http://www.imf.org/external/np/sec/pr/2012/pr12132.htm>.

**Table 4. Target for Precautionary Balances with a Built-In Floor: FY 2002 – FY 2016 1/**  
(In billions of SDRs)

	Average Credit Outstanding 2/	Measure for Credit Outstanding 3/	Coverage for Credit Outstanding 4/		Higher of Mid-point of bounds or Minimum floor of SDR 10 billion	Precautionary Balances
			Lower Bound	Upper Bound		
			20%	30%		
(1)	(2)	(3)	(4)	(5)	(6)	
FY-2002	51.2	59.8	12.0	17.9	14.9	4.6
FY-2003	61.6	61.4	12.3	18.4	15.4	5.4
FY-2004	66.5	52.3	10.5	15.7	13.1	6.4
FY-2005	56.1	34.0	6.8	10.2	10.0	7.2
FY-2006	34.2	17.5	3.5	5.3	10.0	7.6
FY-2007	11.7	10.5	2.1	3.1	10.0	7.6
FY-2008	6.6	18.3	3.7	5.5	10.0	6.9
FY-2009	13.1	34.4	6.9	10.3	10.0	7.1
<b>July 2010</b>	<b>48.6</b>	<b>59.5</b>	<b>11.9</b>	<b>17.8</b>	<b>14.9</b>	<b>7.3</b>
FY-2010	35.2	57.3	11.5	17.2	14.3	7.3
FY-2011	54.8	76.1	15.2	22.8	19.0	8.1
<b>Feb. 2012</b>	<b>77.5</b>	<b>91.8</b>	<b>18.4</b>	<b>27.6</b>	<b>23.0</b>	<b>9.2</b>
FY-2012	81.9	86.9	17.4	26.1	21.7	9.5
FY-2013	91.7	86.0	17.2	25.8	21.5	11.5
<b>Nov. 2013</b>	<b>88.4</b>	<b>83.6</b>	<b>16.7</b>	<b>25.1</b>	<b>20.9</b>	<b>11.5</b>
FY-2014	86.1	81.5	16.3	24.5	20.4	13.2
FY-2015	81.8	-	-	-	-	-
FY-2016	76.7	-	-	-	-	-

Source: IMF Finance Department

1/ Italicized figures reflect calculations at the time of the respective 2010 and 2012 reviews and as of November 2013. Figures shown between FY 2002 and FY 2013 are actual outturns, not projections, and hence differ from the figures in the equivalent tables from previous precautionary balance review papers. Figures for FY 2014 - FY 2016 are based on projections.

2/ For July 2010, February 2012, and November 2013, the figure shown reflects the average credit during the previous twelve months (August 2009 - July 2010, March 2011 - February 2012, and December 2012 - November 2013, respectively).

3/ Three-year average based on one-year of backward looking data and projections two-years forward.

4/ The lower and upper bound correspond to 20 percent and 30 percent coverage for credit measure, respectively.

20. **The Fund continues to have several very large exposures to individual members.** Each of the Fund's two largest individual exposures currently exceed the precautionary balances target, and the third largest is only slightly below the target. If all purchases and repurchases are made as scheduled, total credit outstanding to Greece, Ireland, and Portugal combined would increase from SDR 62 billion (or 73 percent of credit outstanding) as of end-November 2013 to over SDR 69 billion (93 percent of projected credit outstanding) two years later. Moreover, the combined annual average exposure to these three largest borrowers would remain in excess of three times the current target through FY 2017, and the largest single exposure would remain above this target through FY 2019 (Figure 8).

21. **In addition to their scale, these exposures are all to euro area members and therefore subject to potentially correlated risks.** At the time of the last review, concerns about euro area



risks and their potential global spillovers were near their peak. These concerns have since eased, and recent market indicators suggest that implied joint probabilities of distress have fallen sharply, though they remain elevated in some cases (Box 5). These developments suggest a reduction in the Fund's own credit risks associated with these exposures, though they also highlight the potential for conditions to change rapidly. Given that the Fund's largest exposures are now expected to decline only gradually, as noted above, these potential risks may remain elevated for some time.

**22. Commitments under precautionary arrangements have risen modestly since the last review.** Total commitments currently amount to about SDR 77 billion, compared with SDR 71 billion at the 2012 review. Under the current framework, these commitments are taken into account when setting the target for precautionary balances rather than in calculating the indicative range. This approach was agreed in view of the historically low drawing rates under precautionary arrangements.<sup>15</sup> Most Directors supported this approach at the 2012 review, though a number preferred to take precautionary arrangements more explicitly into account in the credit measure and it was agreed to revisit this issue in light of experience.

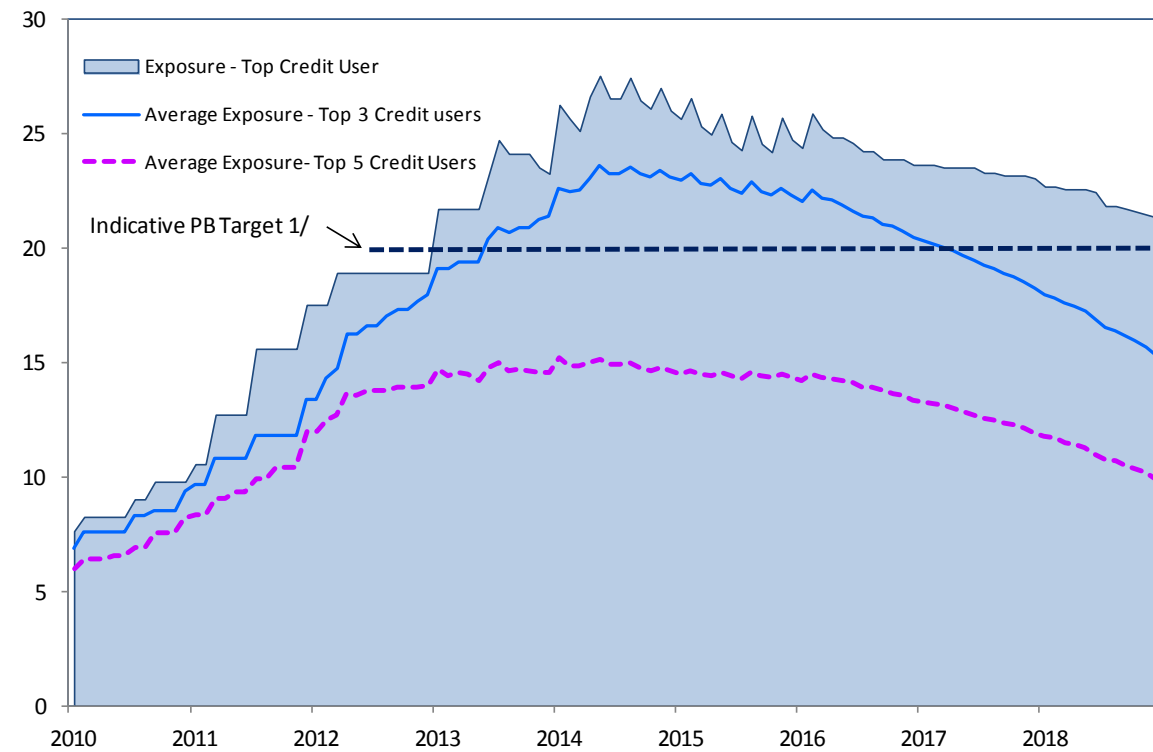
**23. Experience since the last review and further staff analysis suggest that the current approach remains broadly appropriate.** Since the last review, there have been no drawings under the three FCL arrangements (with Colombia, Mexico, and Poland)—which account for the bulk of precautionary arrangements—and only one SDR 0.2 billion drawing under the PLL arrangement for Macedonia. Staff has also extended its analysis of the likelihood of drawings under precautionary arrangements based on stress scenarios for selected external shocks (see Annex I).<sup>16</sup> These scenarios suggest that the probability of drawing would be relatively low at the 25<sup>th</sup> percentile of shocks,<sup>17</sup> but would be significantly higher for shocks at the 10<sup>th</sup> percentile. These results are illustrative and unlikely to fully capture the range of possible shocks or the authorities' policy responses to those shocks. However, both this analysis and recent experience would seem to support the current approach of excluding commitments under precautionary arrangements from the forward-looking credit measure used to calculate the indicative range but taking them into account when setting the target. Staff therefore proposes no change in how such commitments are treated at this time, but that this issue be kept under review in light of future developments.

<sup>15</sup> Historically, only about 2.5 percent of amounts available under precautionary arrangements were drawn between 1994 and end-July 2013.

<sup>16</sup> The analysis, based on kernel distributions of key external variables across emerging market economies in 1991, 2001, and 2009, focuses on episodes of large declines (more than one standard deviation) in aggregate demand in advanced economies. Univariate kernel distributions are then used to shock key components of countries' balance of payments, including exports, FDI, and short and medium and long term rollover rates. The impact of simultaneous shocks on reserves and reserve coverage are applied to 2012 data on exports, FDI, short-term debt and amortization of medium and long term debt to members with FCLs (Colombia, Mexico, and Poland), PLLs (Morocco), and large SBAs treated as precautionary by authorities (Romania).

<sup>17</sup> Countries with credit ratings similar to those of FCL-qualifying countries typically do not experience simultaneous shocks in key balance of payments categories associated with the 25<sup>th</sup> percentile of past shocks, although individual components of highly-rated countries' external accounts do, on occasion, witness shocks of this order of magnitude. Moreover, assuming a shock at the 25<sup>th</sup> percentile is typically more conservative than the shock scenarios assumed under the various FCL requests to date.

**Figure 8. Precautionary Balances and Average Largest Exposures: 2010–2018**  
(In billions of SDRs)



Source: IMF Finance Department

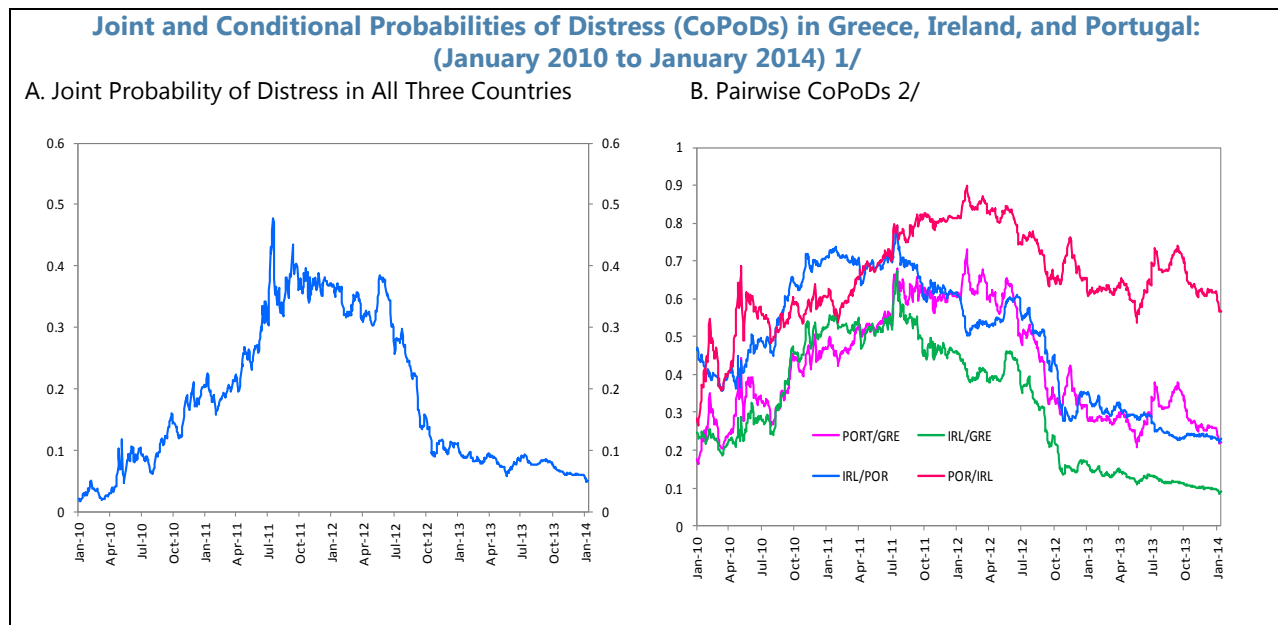
1/ SDR 20 billion target in effect as of the 2012 review.

**Box 5. A Market-Based Measures of Correlated Risk**

**Information from sovereign credit default swaps (CDS) can be used to calculate implied probabilities of distress (PoD).**

This analysis is widely used in the Fund in other contexts to gauge market views on credit risks and interconnectedness. Market quotes of five-year sovereign credit default swap (CDS) spreads are used to extract market expectations on the PoDs of specific borrowers, and to gauge perceived correlation of risks using pairwise CoPoDs. These are estimated using dependence between individual PoDs as discussed in Segoviano (2006) and Segoviano and Goodhart (2009). A matrix of distress dependence is derived. Each element ( $i,j$ ) of the dependence matrix shows the implied probability that a country  $i$  will get into distress conditional on distress in country  $j$ . The joint PoD is the unconditional probability that all countries will get into distress at the same time. See *Euro Area Policies—Spillover Report—Selected Issues*, Chapter III (7/5/11) <http://www.imf.org/external/pubs/ft/scr/2011/cr11185.pdf> for the use of CoPoDs in a euro area context.

**Market indicators suggest that correlated risks on the Fund's largest exposures have fallen since the last review** (see figures below). Using information from sovereign credit default swaps (CDS), the implied joint probabilities of distress (JPODs) of the top three borrowers are estimated to have fallen, reflecting improved market sentiment, particularly following the announcement in August 2012 of the ECB's Outright Monetary Transactions program. Likewise, conditional probabilities of distress (CoPoDs) for Portugal and Ireland have generally fallen over the same period. For Greece, the POD is still near unity (not in the chart). While the overall CoPoD declines reflect progress made in addressing the crisis in Europe, the realization that market sentiment and the risk of correlated shocks can change swiftly underlines the need for adequate precautionary balances to address these concentrated risks arising from the Fund's large individual exposures.



Source: Bloomberg and IMF Finance Department staff calculations

1/ January 13, 2014.

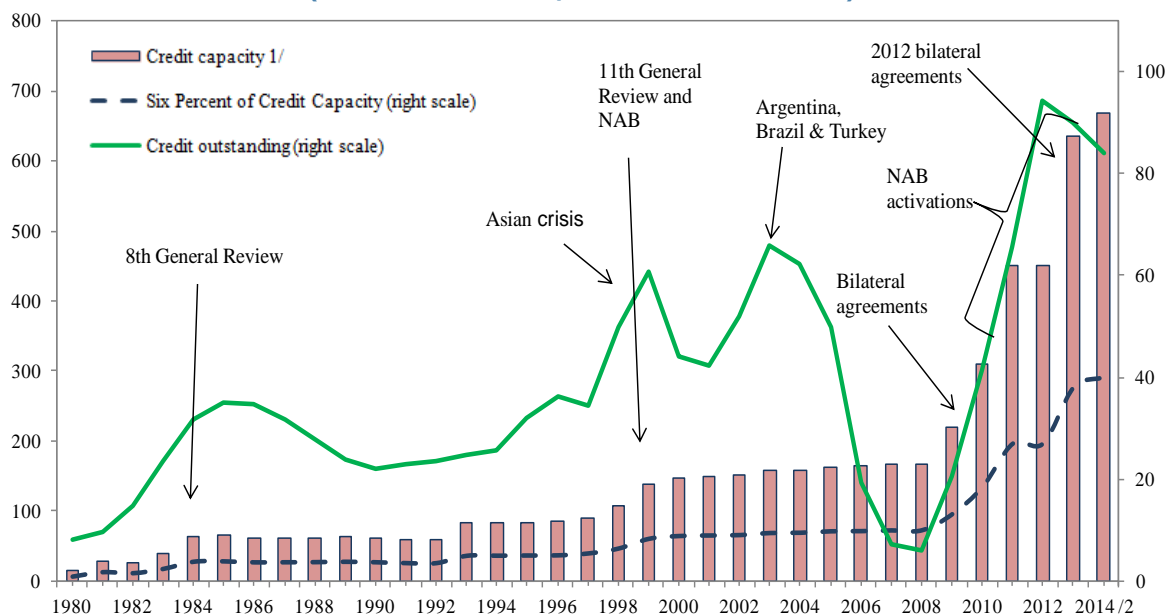
2/ Each line depicts the probability that the country mentioned first will get into distress conditional on distress in the second country mentioned.

24. **Directors agreed in 2012 to include credit capacity and previous lending peaks among the indicators for assessing where to set the target for precautionary balances.** The rationale for looking also at these indicators is that Fund lending can change rapidly with little advance notice, so that current credit outstanding could underestimate exposure to credit risk in the future. The practices of other financial institutions, including IFIs, do not provide guidance on an appropriate level of reserves relative to credit capacity. However, in the past, the Board has implicitly endorsed a ratio of reserves to credit capacity of 6 percent based on the target agreed in 2002 and reaffirmed on three occasions through 2008 when the Fund's credit capacity was broadly unchanged. Applying this ratio to the Fund's current credit capacity, including the 2012 bilateral borrowing agreements, would yield a target of over SDR 40 billion, roughly double the current target. This compares with SDR 27 billion at the time of the last review.

25. **Data on past credit peaks have not changed since the last review.** However, these data serve as a reminder that demand for Fund credit can expand rapidly, and with it the need for adequate precautionary balances. As evident from Figure 9, previous peaks in Fund credit have increased steadily over the last three decades, reflecting increased global capital and trade flows, which have the potential to lead in turn to large balance of payments needs in a crisis. Since these underlying forces are expected to continue, it is likely that future peaks will continue to rise over time, underscoring the potential for lending to exceed recent levels at some point in the future.

26. **Precautionary balances also provide a buffer against potential financial losses associated with operational and market risks.** These risks are currently assessed to be limited (see Annex II), and no explicit provision is made for them in the framework. Market risks associated with the Fund's investment activities will increase over time as the stock of reserves increases and with the phased investment of the endowment. Interest rate risk in the reserves portfolio is controlled by limiting the duration of the portfolio to a weighted average of 1–3 years. A review of the investment strategy for the reserves portfolio is planned for 2014. Market risks associated with the SDR 4.4 billion endowment portfolio will be somewhat larger, but will be controlled in the short term by the agreed strategy of phasing the investment of the endowment over three years. No change in the framework to explicitly incorporate these risks is proposed at this stage, but staff plans to keep these issues under review in light of developments in the Fund's investment portfolios and on-going broader work on the Fund's risk management framework.

**Figure 9. Credit Outstanding and Credit Capacity: 1980–2014**  
(In billions of SDRs, end of Financial Year)



Source: IMF Finance Department

1/ Credit capacity is approximated by the sum of the quotas of FTP members, resources under effective loan and note purchase agreements, and resources under NAB and GAB, excluding prudential balances.

2/ Data as of November 2013. Includes effective 2012 bilateral borrowing agreements of SDR 219 billion net of prudential balances.

27. **Balancing these various considerations, staff believes the current indicative target for precautionary balances of SDR 20 billion remains appropriate.** The framework seeks to avoid frequent target changes and, since the target was increased at both the 2010 and 2012 reviews, the existing target should be preserved unless there are compelling reasons for a further change. This does not appear to be the case. The mid-point of the indicative range, based on credit outstanding, is close to the current target. Although total credit outstanding is projected to decline gradually, these projections make no allowance for possible new arrangements, including in the event that the Fund needs to call upon its recently expanded credit capacity associated with the 2012 borrowing agreements. The Fund also continues to face several large concentrated exposures that are set to increase further, and will likely remain elevated for an extended period.

28. **Scenario analysis and stress tests highlight the critical role of precautionary balances, particularly given the Fund's current very limited burden sharing capacity** (see Annex III). The current low interest rate environment severely constrains burden sharing capacity. This would suggest that a moderate rise of charges in arrears could exhaust the current capacity and have possible ramifications for the carrying value of assets on the Fund's balance sheet (see Boxes 2 and 3). Under purely illustrative assumptions, stress tests suggest that charges in arrears associated with principal the size of the average large borrower could exhaust net income and result in a reduction

in precautionary balances, though still leaving a sizeable buffer to handle any additional financial shocks.

29. **Staff does not see a strong case for changing the minimum floor for precautionary balances of SDR 10 billion at this stage.** Reserves are now above the floor for the first time under the agreed framework and are projected to increase further in coming years. As long-term trends in credit outstanding become clearer and the implementation of the income model progresses, the level of the floor can be revisited alongside the related issue of the possible payment of dividends, as envisaged in the design of the new income model.

### **Pace of Reserve Accumulation**

30. **At the 2012 review, most Directors agreed that the pace of reserve accumulation was adequate but should be kept under close review.** Staff projections suggested that reserves could increase by an average of close to SDR 2 billion a year over the five years beginning in FY 2013, such that the SDR 20 billion target would be largely attained by end-FY 2017 and surpassed by end-FY 2018. A few Directors supported accelerating the pace of accumulation by increasing the margin for the rate of charge and changing the structure of surcharges, but a few other Directors cautioned against these options given borrowers' tight fiscal space and high debt.<sup>18</sup>

31. **Directors will have an opportunity to consider several policies affecting the pace of reserve accumulation in the coming months.** These are:

- *The structure of commitment fees.* Commitment fees have made an important contribution to Fund income and reserve accumulation in recent years in the context of large scale commitments under precautionary arrangements, particularly the FCL. The Board will have an initial opportunity to consider possible changes to the structure of commitment fees in the context of the forthcoming review of the FCL, PLL, and RFI, planned for February 2014.
- *The level and structure of surcharges.* A review of the policies on access and surcharges is planned for March 2014. This will be the first comprehensive review of surcharge policies since the current structure was put in place in 2009. It will include consideration of whether and how the level and thresholds for surcharges should be adjusted, including in light of the effectiveness of the quota increase under the 14<sup>th</sup> General Review of Quotas, and the possible implications for the time based surcharges of increased lending under the Extended Fund Facility (EFF) since the policies were last reviewed.
- *The basic margin for the rate of charge.* The current margin of 100 basis points has been in place since FY2009. In line with Rule I-6(4), the Board will review and set the margin for the two year period FY2015–16 in April 2014 as part of the annual review of the Fund's income.

<sup>18</sup> *The Acting Chair's Summing Up—Review of the Adequacy of the Fund's Precautionary Balances* (4/17/12), Press Release No. 12/132 April 12, 2012 <http://www.imf.org/external/np/sec/pr/2012/pr12132.htm>.

32. **Detailed analysis to support the above discussions will be presented in future papers and it would not be appropriate to prejudge the outcome of those reviews here.** Rather, this paper presents three purely hypothetical scenarios that seek to provide some sense for the sensitivity of the pace of reserve accumulation to future decisions on the structure of charges. Two scenarios update those presented previously in the context of the annual income and budget discussions in April 2013.<sup>19</sup> One assumes that there is no change in the margin for the basic rate of charge, the level, structure and thresholds for surcharges, or the structure and thresholds for commitment fees following the effectiveness of the 14<sup>th</sup> General Review quota increases (the latter is assumed to take place by March 1, 2014 purely for hypothetical and illustrative purposes). The second assumes that the thresholds for surcharges and commitment fees are halved following the effectiveness of the quota increases (this scenario is broadly equivalent to an alternative scenario with no change in quotas or surcharge thresholds). The third scenario illustrates the impact of extending the trigger for time-based surcharges<sup>20</sup> for EFFs—a scenario considered at the time of the 2009 access and surcharges review— combined with a halving of the thresholds as in the second scenario.<sup>21</sup> As noted, these scenarios are purely illustrative, and are not intended to prejudge the outcome of the upcoming reviews. A range of outcomes is possible and more detailed calculations will be presented in future papers.

33. **Under the scenarios presented in this paper, the SDR 20 billion target for precautionary balances would be reached in the period FY 2017-FY 2018** (see Figure 10, panel B and Figure 11).<sup>22</sup> In the scenario in which the thresholds are halved and no other changes are made, the pace of reserve accumulation would be very close to that projected at the time of the last review. Under this scenario, the target would be reached end-FY 2017 (see Table 5). In the scenario where no changes in charges or thresholds are made, the accumulation of precautionary balances would be about 17 percent slower with precautionary balances standing at 18.7 billion at end FY 2017 and the target reached in FY 2018. In the scenario that combines a halving of thresholds with adjustment in the trigger for the time-based surcharges on currency holdings from purchases under the EFF, the pace of reserve accumulation would be about 4 percent slower and the target would be met in early FY 2018.<sup>23</sup>

<sup>19</sup> *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13), Rev. 1 <http://www.imf.org/external/np/pp/eng/2012/041212.pdf>.

<sup>20</sup> The illustrative scenario included here applies time-based surcharges after 4¼ years for extended arrangements. This is consistent with the application of time-based surcharges in the credit tranches (e.g., stand-by arrangements), which apply three months before repurchases start. Purchases in the credit tranches are repurchased in eight equal installments from 3¼ to five years; repurchases for extended arrangements are made in twelve installments from 4½ to ten years.

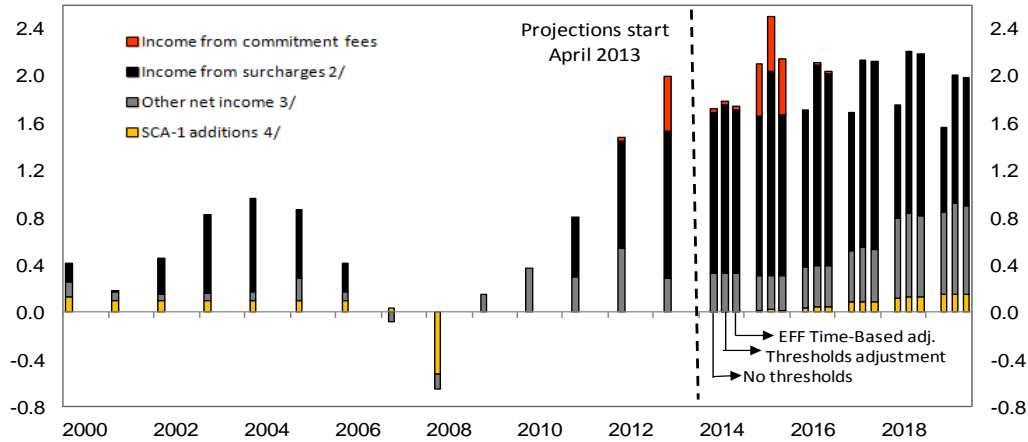
<sup>21</sup> See *Charges and Maturities—Proposals for Reform* (12/12/08) <http://www.imf.org/external/np/pp/eng/2008/121208a.pdf>. The role of high access extended arrangements was not envisaged at the time of that review, and so the issue of time-based surcharges was seen as essentially moot at the time. The situation has changed considerably since then, given the preponderance of high access extended arrangements.

<sup>22</sup> Due to varying quota increases by individual members—quotas are set to double on average but with some members seeing larger quota increases and others seeing smaller increases—some members paying surcharges and commitment fees are set to receive a quota increase of greater than 100 percent under the 14<sup>th</sup> Review of quotas, lowering projected surcharge and commitment fee income.

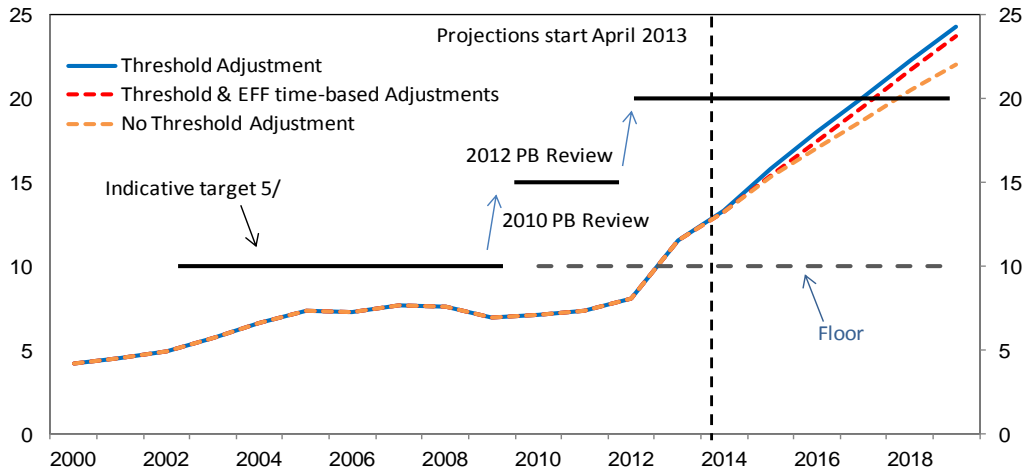
<sup>23</sup> Although the target would be nominally attained early in the year taking account of accrued net income to date, formally the target would be met only when reserves are increased following net income disposition decisions taken at the end of the fiscal year.

**Figure 10. The Fund's Precautionary Balances: FY 2000 – FY 2019**  
(In billions of SDRs, Financial Year)

A. Actual and Forecast Additions to Precautionary Balances, FY 2000 – FY 2019 1/



B. Actual and Forecast Precautionary Balances, FY 2000 – FY 2019 1/



Source: IMF Finance Department

1/ Excludes changes in SCA-2 balances in FY 2000. Illustrates projected accumulation of precautionary balances under current approved arrangements and assumes effectiveness of 14th Review quotas on March 1, 2014 purely for hypothetical and illustrative purposes. No threshold adjustment scenario reflects current pricing policies for surcharges and commitment fees. The threshold adjustment scenario assumes halving surcharge and commitment fee thresholds to partially offset the incentive and revenue effects of the quota increase. The threshold for level-based surcharges is reduced to 150 percent from 300 percent of quota upon effectiveness of the new quotas. Commitment fee thresholds are halved to 100 percent, 101-500 percent, and greater than 500 percent of quota for the charges of 15 basis points, 30 basis points, and 60 basis points, respectively. The level-based surcharge thresholds are adjusted as in the adjusted scenario, and in addition, the trigger for time-based surcharges for EFFs is extended to 51 months (4¼ years) from 36 months (3 years).

2/ Net of costs associated with administering PRGF-ESF operations for the period FY 1998 - FY 2006. In FY 2007-FY 2010 surcharges were used to help cover administrative expenses, rather than placed directly to general reserves.

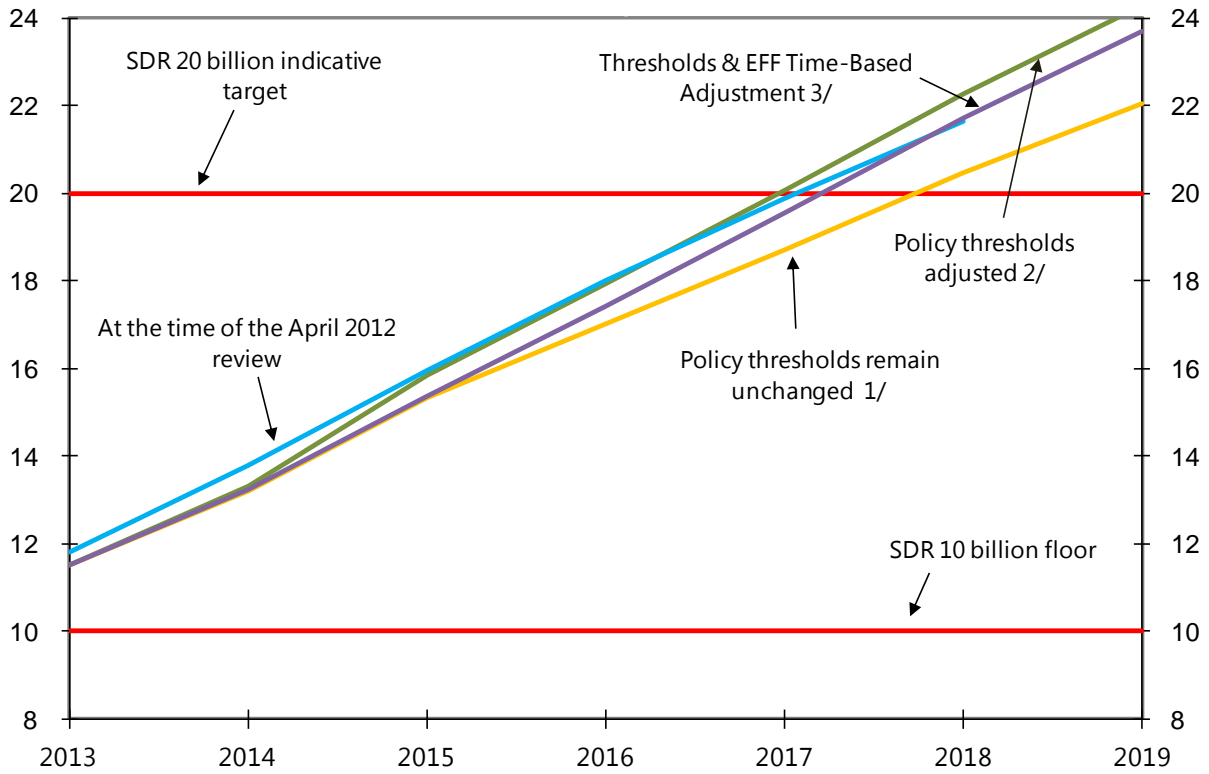
3/ In FY 2000-FY 2006, additions to Special Reserves were adjusted for IAS 19 related accounting gains; in FY 2010 addition to Special Reserves exclude profits from gold sales.

4/ SCA-1 accumulations were suspended from November 2007. In FY 2008, SDR 525 million was distributed to contributors.

5/ The initial application of the current framework in 2010 increased the target to SDR 15 bn from SDR 10 billion where it had been since 2002, and introduced the current floor (see Review of the Adequacy of the Fund's Precautionary Balances (8/25/10). In April 2012, the target was increased to the current level of SDR 20 billion.



**Figure 11. Precautionary Balances Under Different Policy Scenarios: FY 2013 – FY 2019**  
(In billions of SDRs)



Source: IMF Finance Department

1/ Illustrates projected accumulation of precautionary balances under current approved arrangements and pricing policies, assuming effectiveness of 14th Review quotas on March 1, 2014 purely for hypothetical and illustrative purposes.

2/ Illustrates projected accumulation of precautionary balances under current approved arrangements, assuming effectiveness of the 14<sup>th</sup> Review quota on March 1, 2014 purely for hypothetical and illustrative purposes and halving surcharge and commitment fee thresholds to partially offset the incentive and revenue effects of the quota increase. The threshold for level-based surcharges is reduced to 150 percent from 300 percent of quota upon effectiveness of the new quotas. Commitment fee threshold holds are halved to 100 percent, 101-500 percent, and greater than 500 percent of quota for the charges of 15 basis points, 30 basis points, and 60 basis points, respectively. The effect of commitment fees is minimal and no change is assumed in the current fiscal year. Due to the asymmetry of quota increases on a by-member level not all lost income is recouped.

3/ The level-based surcharge thresholds are adjusted. In addition, the trigger for time-based surcharges for EFFs is extended to 51 months (4¼ years) from 36 months (3 years).

**Table 5. Projected Accumulation of Precautionary Balances: FY 2013 – FY 2019**  
(In billions of SDRs)

	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
<b>At the time of the April 2012 review</b>							
Net operational income	1.1	0.7	0.7	0.7	0.7	0.8	...
Surcharge income	1.2	1.3	1.5	1.4	1.2	0.9	...
Increase in precautionary balances	2.3	2.0	2.2	2.1	1.9	1.7	...
End period precautionary balances	11.8	13.8	16.0	18.0	19.9	21.6	...
<b>Based on current surcharge thresholds</b>							
Net operational income 1/	0.8	0.4	0.7	0.4	0.5	0.8	0.8
Surcharge income	1.2	1.4	1.4	1.3	1.2	1.0	0.7
Increase in precautionary balances	2.0	1.7	2.1	1.7	1.7	1.7	1.6
End period precautionary balances	11.5	13.2	15.3	17.0	18.7	20.4	22.0
<b>Based on adjusted surcharge thresholds (150%)</b>							
Net operational income 1/	0.8	0.4	0.7	0.4	0.5	0.8	0.9
Surcharge income	1.2	1.4	1.7	1.7	1.6	1.4	1.1
Increase in precautionary balances	2.0	1.8	2.4	2.1	2.1	2.2	2.0
End period precautionary balances	11.6	13.3	15.8	17.9	20.0	22.2	24.2
<b>Based on adjusted surcharge thresholds (150%- EFF 4 years and 3 months)</b>							
Net operational income 1/	0.8	0.4	0.8	0.4	0.5	0.8	0.9
Surcharge income	1.2	1.4	1.4	1.6	1.6	1.4	1.1
Increase in precautionary balances	2.0	1.7	2.1	2.0	2.1	2.2	2.0
End period precautionary balances	11.5	13.2	15.4	17.4	19.5	21.7	23.7

Source: IMF Finance Department

1/ Adjusted for IAS 19 timing adjustment in FY13. Please see paragraph 3 of Review of the Fund's Income Position for FY 2013 and FY 2014 <http://www.imf.org/external/np/pp/eng/2013/043013a.pdf>.

## CONCLUSIONS AND ISSUES FOR DISCUSSION

34. **This paper has reviewed the adequacy of precautionary balances and proposes that the indicative medium-term target should be maintained unchanged at SDR 20 billion.** This proposal utilizes the rules-based framework adopted in 2010, and takes account of developments since the last review was concluded in 2012. The paper concludes that the overall balance of financial risks facing the Fund is largely unchanged since the last review. The paper also revisits aspects of the framework that have been considered in previous reviews, including the treatment of commitments under precautionary arrangements, and concludes that no changes are warranted at this time. The paper also updates earlier projections of the pace of reserve accumulation, which will be affected by several decisions in the coming months related to Fund charges. The paper proposes that the minimum floor for precautionary balances of SDR 10 billion remain unchanged.

35. **Directors may wish to comment on the following issues:**

- How do Directors assess the balance of financial risks facing the Fund since the last review of precautionary balances in 2012?
- Do Directors agree that the framework for assessing the adequacy of precautionary balances remains broadly appropriate?
- Do Directors agree that the medium-term indicative target for precautionary balances should be maintained unchanged at SDR 20 billion and that the floor should remain at SDR 10 billion?

## Annex I. Assessing the Potential for Drawings under Precautionary Arrangements

Using purely illustrative exercises, this annex assesses the potential use of the Fund resources by members with precautionary arrangements. It estimates the impact of global shocks on exports, foreign direct investment, and debt rollover rates, which in turn affects external financing and international reserves of affected countries, using the Fund's reserve adequacy metric (RAM) as a guide. The idea of this exercise is to get a sense of how large a shock would be needed to lead a member with a precautionary arrangement to draw on that arrangement.

### A. The Data

For the purposes of the exercise, we use univariate kernel distributions of key external variables from past crises, a key determinant of balance of payments need calculations in FCL and PLL Board documents.<sup>1</sup> The data underlying the kernel distributions identify moves in key external variables across emerging market economies in 1991, 2001, and 2009, years of large declines (more than one standard deviation) in aggregate demand for advanced economies. Univariate kernel distributions are calculated for exports, FDI, and short and medium and long term rollover rates.

Illustrative percentile values for the contraction of exports and FDI, as well as for rollover rates, are displayed in Table I. 1 for assumed shocks, with varying degrees of severity.<sup>2</sup> At the 25<sup>th</sup> percentile, exports fall by almost 4 percent relative to the baseline, FDI by 45 percent, rollover rates for short term debt are about 68 percent for public debt and 87 percent for private; rollover rates for medium and long term debt are lower, about 52 percent for public debt and 58 percent for private debt.<sup>3</sup> The shocks are, naturally, more extreme at the 5<sup>th</sup> and 10<sup>th</sup> percentiles.

### B. Potential Drawings under Precautionary Arrangements

The potential for drawing under precautionary arrangements is assessed by the magnitude of international reserves relative to the Fund's RAM, which is calculated by measuring reserves relative to the stock of risk weighted liabilities facing the country. The risk weighted liability stock is in turn a weighted average of short-term debt at remaining maturity, other portfolio liabilities, broad money, and exports of goods and services, with weight of 30/10/5/5 percent, respectively.<sup>4</sup> It is suggested

<sup>1</sup> For a detail discussion the kernel distributions and the underlying data, see *Review of the Flexible Credit and Precautionary Credit Line* (11/1/11) <http://www.imf.org/external/np/pp/eng/2011/110111.pdf>.

<sup>2</sup> Shocks to exports taken as shocks to exports of goods only.

<sup>3</sup> Countries with credit ratings similar to those of the FCL countries typically do not experience simultaneous shocks in key balance of payments categories associated with the 25<sup>th</sup> percentile of past shocks.

<sup>4</sup> For countries with no floating exchange rate weights are 30/15/10/10 for short-term debt at remaining maturity, other portfolio liabilities, broad money, and exports of goods and services, respectively.

that for prudential purposes countries' reserve coverage should be in the region of 100–150 percent of the risk weighted liabilities.

**Table I.1. Historical Shocks to Emerging Market Economies  
(Global crisis in 1991, 2001, and 2009)**

	Percentile		
	5	10	25
Percent change			
Exports	-18.6	-13.3	-3.8
FDI	-84.4	-67.0	-45.3
Rollover Rates, in percent			
Short Term Debt			
Public	16.6	21.2	67.8
Private	65.4	75.8	86.6
Medium and Long Term Debt			
Public	26.6	32.4	51.9
Private	0.0	12.2	58.2

Source: IMF Staff Calculations

The impact of simultaneous shocks on reserves and reserve coverage was calculated for members with FCLs, (Colombia, Mexico, and Poland), PLLs (Morocco), and SBAs treated as precautionary by the authorities (Romania). Simultaneous shocks were applied to data for 2012 on exports, FDI, short-term debt, and amortization of medium and long term debt. Shocks create an external financing shortfall, which could be fully or partially accommodated with reserves depending on how much the currency and/or the domestic interest rate are allowed to adjust. The calculated RAM after the shock incorporates the new lower export and debt numbers, which lower the denominator and increase the measured RAM. Summary results are displayed in Table I.2.

**Table I.2. Summary: External Financial Shortfall from Adverse Shocks and Reserve Adequacy Metric, Members with Precautionary Arrangements**

External Financial Shortfall (EFS) 1/	Shock at percentile			Shock at percentile		
	5	10	25	5	10	25
	Median External Financial Shortfall (billion of US dollars)			Median Reserve Adequacy Metric 2/ (percent of international reserves)		
EFS	-41.1	-33.8	-16.3	8.8	42.4	88.3
90 percent of EFS	-37.0	-30.4	-14.7	24.6	51.5	95.4
80 percent of EFS	-32.9	-27.0	-13.1	40.4	59.9	102.6
50 percent of EFS	-20.6	-16.9	-8.2	76.5	93.6	124.1

Source: IMF Staff Calculations

1/ Under the EFS row, reserves are drawn down to accommodate 100 percent of the assumed shocks. Under the three other rows, reserves accommodate 90 percent, 80 percent, and 50 percent respectively of the assumed shocks.

2/ Reserve adequacy metric after the EFS or part of it is accommodated through reserves.

Results indicate that at the 25<sup>th</sup> percentile of shocks, it is unlikely that most members under precautionary arrangements, particularly FCLs, would draw under the arrangement, unless they were

to rely on reserves to fully accommodate the shocks. At the 10<sup>th</sup> percentile of the kernel distribution, however, the loss of reserves would be far larger, leaving the median reserve cover under the RAM at just 42 and 94 percent, when reserves fully and partially (50 percent) accommodate the shock, respectively. Here, drawing would be very likely under the former scenario (full accommodation) and possible under the latter (accommodation at 50 percent). At the 5<sup>th</sup> percentile of shocks, the situation would be worse and drawing more likely for all members with precautionary arrangements, although it is debatable how relevant such an extreme shock assumption would be, particularly for FCL-qualifiers.

### **Other Considerations**

The exercise described provides an additional element for evaluating potential drawings under precautionary arrangements. The results, however, are merely illustrative; they are constrained by the nature of the statistical exercise and the characteristics of the database used.

It assumes univariate probability distributions, which may not capture aspects that help countries to better accommodate external shocks, i.e., not all countries are affected and respond equally to shocks. For instance, country differences in the degree of development of financial markets and integration to the global economy affects the way global shocks are transmitted into the domestic economies; furthermore, policy preferences could also affect the policy response regarding the mix of access under precautionary arrangements, the use of reserves, exchange rate flexibility, and interest rate adjustments to help cushion shocks.

## Annex II. Market Risk and the Investment Mandate

The Fund is exposed to market risk on its investments. Market risk refers to the risk that the future value of invested resources fluctuates because of changes in the value of underlying securities. Resources in the Investment Account amounted to SDR 14,803 million as of October 31, 2013. Investments held in the Fixed-Income (reserves portfolio) and Endowment subaccounts summed SDR 10,359 million and SDR 4,445 million, respectively.

### A. The Original Investment Mandate

The Executive Board established the Investment Account (IA) in April 2006.<sup>1</sup> The investment objective was to exceed the SDR interest rate, while minimizing the frequency and extent of negative returns and underperformance over a 12-month investment horizon.<sup>2</sup> The investment mandate under the Rules and Regulations adopted under the restricted investment authority of the Fund at that time, limits the portfolio to eligible obligations denominated in SDRs or in the currencies included in the SDR basket. Eligible investments comprise domestic government bonds issued by the governments of Fund members, international financial institutions, and certain national agencies. The mandate established a 1–3 year benchmark of government bond indices weighted to reflect the currency composition of the SDR basket. The investment mandate resulted in a portfolio of relatively low volatility and a concentrated exposure.

### B. The Expanded Investment Mandate

In January 2013, the Executive Board adopted new Rules and Regulations for the IA to implement the expanded investment authority of the Fund under the Fifth Amendment to the Articles of Agreement, which became effective in February 2011.<sup>3</sup> The new Rules and Regulations provide for the establishment of three sub-accounts within the Investment Account: the Fixed-Income, the Endowment, and the Temporary Windfall Profits subaccounts, each of which has its own investment objective and specific management provisions. The Temporary Windfall Profit Subaccount was terminated in October 2013 following the transfer of its resources to fund the distribution of amounts in the general reserve attributable to remaining windfall gold sales profits as part of the strategy to boost the capacity of the PRGT.

<sup>1</sup> The Fund's Articles of Agreement authorize the establishment of an Investment Account (IA) and specify the investment mandate in Article XII, Section (6)(f)(i) and (iii) of the Fund's Articles of Agreement, respectively. The mandate is implemented through a set of Rules and Regulations for managing the IA adopted by the Executive Board. See *Establishment of the Investment Account* (4/17/06), <http://www.imf.org/external/np/pp/eng/2006/041406i.pdf>.

<sup>2</sup> The working expectation, a return of 50 basis points over the SDR interest rate (the implied cost of funds), is the long-term premium between the SDR interest rate and the SDR-weighted 1–3 year government bonds. See the discussion on the income outlook in *Review of the Fund's Income Position for FY 2013 and FY 2014* (4/30/13), <http://www.imf.org/external/np/pp/eng/2013/043013a.pdf>.

<sup>3</sup> See IMF Approves New Rules and Regulations for Investment Account, PR No. 13/37, February 4, 2013.

- Pending a review of the investment strategy for the assets of the *Fixed-Income Subaccount*, the investment mandate under the new Rules and Regulations for this subaccount is the same as that under the 2006 Rules and Regulations. The investment objective is to produce returns in excess of the 3-month SDR interest rate over time, while minimizing the frequency and extent of negative returns and underperformance over a 12-month investment horizon.<sup>4</sup> Assets in this subaccount, which correspond to the Fund's general and special reserves that are counted towards precautionary balances, should be managed against a 1–3 year government bond benchmark weighted to reflect the currency composition of the SDR basket. Its assets may be invested in marketable obligations of IMF members and international financial institutions that are denominated either in SDR or in currencies included in the SDR basket. Hedging is prohibited, including the use of derivative instruments, short selling, or any form of financial leverage.
- The *Endowment Subaccount*, funded with assets attributed to profits equivalent to US\$850 per fine ounce from limited gold sales, has the investment objective of achieving a real U.S. dollar return of 3 percent a year over the long term. Its assets should be invested in a conservative, globally diversified portfolio consisting of fixed income assets and a limited portion of equities and real estate investment trusts. Short selling and any form of financial leverage, as well as direct investments in gold are not permitted; the use of derivative instruments is allowed for hedging specific exchange rate risk on fixed income instruments and for benchmark replication; currency hedging is not permitted for other assets in the passively-managed portion of the portfolio; for the actively-managed portion of the portfolio currency hedging is permitted, but not required.

No less than 90 percent of the assets will be passively managed by external managers, and no more than 10 percent of assets could be managed actively also by external managers, with an initial cap of 5 percent. The investment of the passively-managed portfolio will be phased over a three-year period expected to start in early 2014, in equal quarterly installments of about SDR 370 million. During the phasing period, assets not managed externally should be invested following the guidelines for the Fixed-Income subaccount. A further consultation with the Executive Board on the actively managed tranche of the endowment is expected in the spring of 2014.

### C. Assessment

The estimated potential losses for the IA portfolio, in each of its subaccounts, are currently small. With the phasing of the Endowment subaccount's assets to private managers, which is expected to last about three years once started, the risk profile of the investment account portfolio as a whole will increase, with potential losses increasing gradually as the phasing of assets progresses. As noted

<sup>4</sup> Going forward, under an expanded investment authority and the Fund's new income model, expectations are for the subaccount to gradually exceed over time the SDR return by 100 basis points by FY 2017 versus the current 50 basis point target (see *Consolidated Medium-Term Income and Expenditure Framework* (4/30/13), <http://www.imf.org/external/np/pp/eng/2013/043013.pdf>).

in previous papers, endowment-type portfolios differ from reserve portfolios: they typically have a much longer investment horizon (the endowment is intended to be perpetual) and can afford a greater variability of returns from year to year. This implies that the endowment can, and probably will, incur periods of losses, sometimes over consecutive years, but over time should preserve its capital and generate returns in real terms. With respect to the Fixed Income subaccount, as government bonds in the markets of the SDR basket are close to their historical lows, and those within the 1–3 year range are near the zero bound, the probability of losses should rates begin to normalize has increased, but the scale of losses will be relatively limited given the short duration of these assets.

### **Interest rate risk**

The interest rate risk in the Fixed-Income Subaccount is mitigated by limiting the duration of the portfolio to a weighted average of 1–3 years. An instantaneous 1 percentage point increase in market interest would result in a loss of about SDR 200 million, or approximately 1.9 percent of the portfolio. A 2 percentage point increase would double this loss. The Endowment Subaccount currently holds fixed-term deposits on which the interest risk is limited.

### **Exchange rate risk**

The portfolio exposure to exchange rate risk is currently negligible but will increase once the Endowment Subaccount is fully invested. The Fixed Income portfolio is currently managed by investing in financial instruments denominated in SDRs or in SDR basket currencies with relative amounts of each currency matching its weight in the SDR basket. In addition, the portfolio is regularly rebalanced to match the currency weights in the SDR basket. The net effect on the investment portfolio of a 10 percent increase (devaluation) in the market exchange rates of the basket currencies against the SDR would be a loss of SDR 0.4 million, SDR 0.09 million, and SDR 0.16 million for the variation against the euro, Japanese yen, and pound sterling, respectively. The net effect of 10 percent decrease (appreciation) in the market exchange rate of the basket currencies against the SDR would be a gain of SDR 0.4 million, SDR 0.09 million, and SDR 0.16 million, for the variation in the euro, Japanese yen, and pound sterling, respectively.

The Endowment Subaccount, once fully invested, is expected to be subject to moderate risks, particularly over the longer term. Whereas the SDR is the Fund's unit of account, the US dollar will be the Endowment Subaccount's base currency. US dollar-denominated assets are expected to account for about 40 percent of the portfolio, with almost two thirds of the portfolio exposed to foreign exchange rate risks vis-à-vis the base currency. The currency hedging alternatives under the expanded mandate are expected to remove a significant source of short-term portfolio volatility in



the base currency. Some of this volatility would, however, appear in the SDR denominated returns recorded in the Fund's financial statements.

### **Liquidity Risk**

Liquidity risk on investments is limited by investing a portion of the portfolios in readily marketable short- and medium-term financial instruments.

It is expected that liquidity risks will continue to be limited once the expanded investment mandate is fully implemented, including the completion of phasing of assets under the Endowment subaccount to private managers. While the endowment portfolio will include instruments that are less liquid, such as emerging market bonds and equities and REITs, particularly under a tail event scenario, the large share of developed market sovereign bonds (40 percent) and publicly-traded equities (25 percent) will limit the liquidity risk of the overall portfolio.

### **Market Risk under Fully Implemented Mandate for the Endowment Subaccount**

For the Endowment Subaccount, market risks would change once assets are phased into the Board-endorsed strategic asset allocation. The phasing period is expected to take approximately three years once it starts in early 2014. Once fully implemented, the endowment will be invested in a greater range of asset classes and therefore will have greater market and credit risk although mitigated somewhat by diversification of the portfolio. It will also be exposed to partial currency risk (about one third of the portfolio will be hedged back to U.S. dollars), and to residual counterparty risk, the latter mainly arising from the hedging of currency exposures through FX forwards and other derivatives. These new risks will be controlled and mitigated primarily through key investment decisions under the new Rules and Regulations, including the approved SAA, deviation bands around target allocations, and eligible asset classes, rebalancing requirements, and minimum credit thresholds. The controls embedded in the Rules and Regulations are supplemented by additional measures taken by the newly established Investment Oversight Committee. Finally, legal risk (the risk arising from contractual obligations) is given specific attention in light of the broader range of assets and countries in which the endowment will be invested, and to ensure compliance with the Board's guidance to avoid perceived or actual conflicts of interest.

As the endowment is not yet invested, accounting for financial risk is not yet feasible. Illustrative historical and model-based measures on broad benchmark indices were used in past papers to inform and guide the Executive Board in finalizing a strategic asset allocation. Such results indicated an expected standard deviation of returns of about 8-9 percent, depending on the horizon. This is significantly more than for funds invested in the short duration Fixed Income subaccount. Assessing potential losses on the endowment was carried out in several ways. Simulated returns showed that VaR returns, once the endowment portfolio was fully invested, could range from -14.4 percent over a one-year horizon to -7.4 percent over a three-year horizon, with a 99 percent confidence interval, with losses decreasing with time as the portfolio gradually recovered. In SDR terms, this would have implied a loss of SDR 634 million over a one-year horizon and SDR 324 million over a three-year

horizon. In addition to portfolio simulations, the strategy was tested against past large market corrections. Using as reference large equity and bond market corrections during 1970 – 2011, there would have been two episodes where the endowment value would have dropped by more than 20 percent in real terms (peak to trough): in the early part of the 1970s, where both bonds and equities endured losses, and during the recent global financial crisis, where losses would have been about 25 percent. In both cases, a strong recovery would have followed.

Overall, market risks from the IA portfolio continue to be currently limited, with modest estimated potential losses over the near term. Accordingly, it does not appear warranted for the framework for assessing precautionary balances to make explicit provision for market risks or for the Fund to set aside explicit amounts to address market risks.

## Annex III. Burden Sharing Capacity, Credit Scenario Analysis and Stress Testing of the Fund's Balance Sheet

Illustrations of burden sharing capacity and precautionary balances under alternative credit scenarios and stress tests are employed to help guide the assessment of reserve adequacy. Section A discusses the determinants of burden sharing capacity and highlights its current low capacity. In section B, illustrative scenarios compare the target for precautionary balances to an average large borrower under two different levels of peak credit outstanding—baseline and adverse scenarios. Section C introduces stress tests that illustrate the possible ramifications for precautionary balances and net income under a hypothetical situation where a member was unable to meet its obligations to the Fund on a timely basis.

### A. Burden Sharing Capacity

#### Background on burden-sharing of deferred charges

The burden-sharing mechanism was established in 1986 to compensate the Fund for any unpaid charges by members in arrears ("deferred charges"), and in so doing, to offset the impact of unpaid charges on Fund income. This has proven essential to protecting the Fund's income position and to complying with International Financial Reporting Standards with respect to the valuation of assets on the Fund's financial statements (see Boxes 2 and 3). The Fund's creditor and debtor members contribute equally to covering the amount of unpaid charges, which is achieved through increases in the rate of charge paid by debtor members and reductions in the rate of remuneration to creditor members.<sup>1</sup>

#### Limits on the capacity of the mechanism

The total capacity of the burden sharing mechanism to cover unpaid charges is the sum of the maximum feasible reduction in remuneration expenses and the maximum feasible increase in income from charges:

Article V, Section 9 (a) of the Fund's Articles of Agreement states that the rate of remuneration shall be no less than four-fifths (80 percent) of the SDR interest rate, limiting the maximum reduction in remuneration expenses to:<sup>2</sup>

$$0.2 * \text{SDR Interest Rate} * \text{Remunerated Reserve Tranche Positions}$$

<sup>1</sup> These adjustments are currently set to match charges in arrears but could also include the possible accumulation of precautionary balances in the SCA-1.

<sup>2</sup> Decision No. 12189-(00/45) (April 28, 2000) sets the current floor for remuneration at 85% of the SDR interest rate. Changes in rate of remuneration require a Board decision with a seventy percent majority of the total voting power.

In the absence of arrears, the maximum burden sharing capacity would simply be twice the above amount, because debtors and creditors generally contribute equally. However, the debtor base contributing to burden sharing and thus the capacity of the mechanism declines in the event of arrears.

**Overall, the burden-sharing capacity depends on the following factors:**

- **Outstanding credit:** as credit rises, the base for higher charges increases. Where such increase in credit is financed fully from quota resources, reserve tranche positions broadly move in tandem with credit fluctuations, increasing burden sharing capacity.
- **Borrowing by the Fund:** where Fund credit is funded with borrowed resources, the resulting creditor positions (NAB and bilateral loan or note purchase agreements) do not increase burden sharing capacity, as no burden sharing adjustment is made to the interest paid to creditors on borrowed resources. As a result, use of borrowed resources reduces burden sharing capacity relative to credit outstanding.
- **SDR interest rate:** at a higher nominal SDR interest rate, the rate of remuneration can be reduced by a larger amount in terms of basis points, increasing burden-sharing capacity in nominal terms.
- **Share of credit in arrears:** as noted, a higher share of credit in arrears shrinks the base of debtors who make burden sharing contributions, thus reducing the burden sharing capacity.

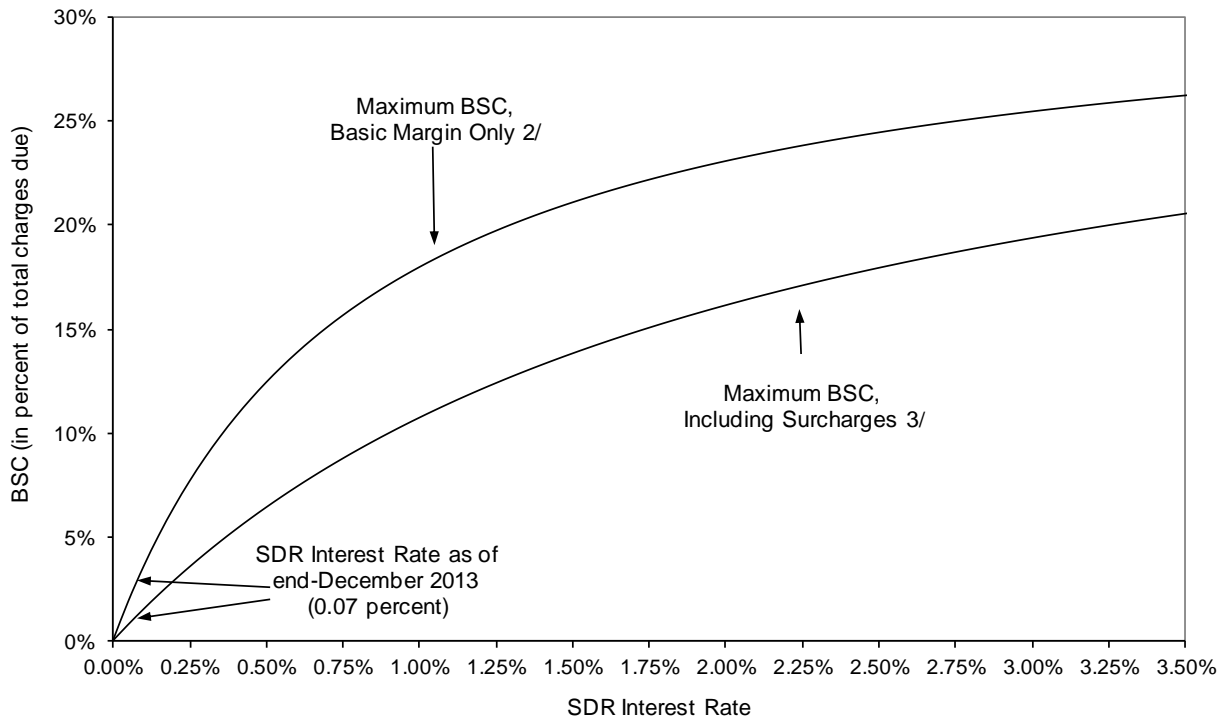
**Given the composition of Fund charges, the low SDR interest rate exacerbates the limitations of burden sharing capacity.** Since the burden sharing capacity is a function of the SDR interest rate while unpaid charges are a functions of the SDR interest rate as well as the basic margin and, in a number of cases, surcharges which are not directly linked to the SDR interest rate, burden sharing capacity falls more rapidly than unpaid charges as the SDR interest rate declines (see Figure III.1).

**At the moment burden sharing capacity is severely constrained.** Specifically, using recent SDR interest rates of under 10 basis points, and remunerated reserve tranche positions of SDR 45 billion, the total burden sharing capacity is currently about SDR 13 million a year and the residual capacity after taking into account deferred charges by Sudan and Somalia is about SDR 10 million. This capacity, which represents less than 1 percent of the Fund's estimated annual lending income, is a small fraction of the burden sharing capacity that applied at the time of previous peak lending period. For example, the capacity of the burden sharing mechanism stood at around one fifth of annual lending income in 2003 and around one third of annual lending income in 1998 (the previous two lending peaks).

**Burden sharing capacity may increase over the medium term, but the timing of any such increase is uncertain.** SDR interest rates currently stand near historic lows of less than 0.1 percent, and some reversion to the historical average of more than 2 percent since 2000 should be expected

over the medium term. The doubling of quotas under the 14<sup>th</sup> General Review would also ease the current reliance on borrowings, increasing burden sharing capacity. However, the timing of any increase in burden sharing capacity remains uncertain. This situation further underlines the importance of maintaining an adequate level of precautionary balances.

**Figure III.1. Burden Sharing Capacity (BSC) in Percent of Total Charges at Different Levels of the SDR Interest Rate 1/**



Source: IMF Finance Department

1/ The floor for remuneration is 80 percent of the SDR interest rate. Assuming that remunerated reserve tranche positions equal credit outstanding, i.e., no borrowing by the Fund.

2/ A basic margin for the rate of charge of 100 basis points, abstracting from surcharges.

3/ A basic margin of 100 basis points, plus average surcharges of about 150 basis points for the credit outstanding (based on FY2013-FY2015 projected average).

### B. Credit Scenario Analysis

The credit scenarios provide a simple stock illustration of the size of precautionary balances relative to various levels of credit outstanding and implied size of the Fund's average large exposure (Table III.1).

- Under the **baseline scenario** credit peaks at around SDR 90 billion in FY2013 (line A), implying that the current precautionary balances target of SDR 20 billion would represent about

22 percent of credit outstanding, at the lower end of the reserve coverage range suggested by the framework (line B), but would more than cover the average large exposure (line D). This assumes that precautionary arrangements are not drawn on.

- In an **adverse scenario**, global economic and financial conditions are assumed to deteriorate further, leading to significant additional demand for Fund credit, including drawing on precautionary arrangements. In this scenario, credit outstanding is projected to peak at SDR 280 billion, much higher than the baseline level but substantially short of recent tail-risk estimates. Here, the current target of precautionary balances of SDR 20 billion would amount to only 7 percent of credit (line B) and be considerably smaller than the estimated average exposure of the largest borrowers (line D).

**Table III.1. Illustrative Scenarios: Implications for Precautionary Balances Coverage 1/**

	Scenario A "Baseline"	Scenario B "Adverse"
<b>Implications for reserve coverage at various levels of precautionary balances</b>		
A. Peak credit outstanding (SDR billions)	90	280
B. Precautionary balances as percent of credit outstanding, assuming precautionary balances of:		
SDR 15 billion	17	5
SDR 20 billion	22	7
SDR 25 billion	28	9
C. Average large exposure (SDR billion) 2/	16	50
D. Precautionary balances as percent of average large exposure, assuming precautionary balances of:		
SDR 15 billion	94	30
SDR 20 billion	125	40
SDR 25 billion	156	50

Source: IMF Finance Department

1/ The baseline scenario is consistent with current peak credit as in Table 4. Credit outstanding under the adverse scenario is based on the additional financing need in a tail risk scenario outlined in the recent NAB activation plus current credit outstanding, which shocks MT debt rollover rates, FDI and equity flows and includes deposit flight. However, this financing need is reduced by half as the scenario is not intended to reflect a severe tail risk event and current credit outstanding is added.

2/ Based on illustrative assumptions for the average size of the five largest borrowers. As of end-2013, the actual average credit outstanding and undrawn balances for the five largest non-precautionary arrangements was slightly over SDR 16 billion.

### C. Stress Testing the Fund's Balance Sheet

The stress tests below provide an illustration of the possible dynamic effects on the Fund's income and precautionary balances of charges in arrears and a reduction in the carrying value of the asset associated with the charges in arrears across periods. The logic followed here is that charges in arrears could create an income loss which would first be absorbed by burden sharing (see Boxes 2

and 3). If these losses exceeded burden sharing capacity, an assessment of the carrying value of the asset associated with the arrears would need to be made. Any income and stock impairment loss net of burden sharing that resulted from this assessment would need to be absorbed by net income in the current period. Depending on the residual level of net income, precautionary balances or the pace of their accumulation could fall. It should be emphasized that assessments of the carrying value of assets would require considerable judgment, taking into account the full range of circumstances, including other aspects of the Fund's multilayered financial risk management framework and the circumstances in which arrears had occur.

*Methodology and assumptions:* The projections in the medium term framework<sup>3</sup> provide the foundation for the stress tests. For illustrative purposes, the amount of principal giving rise to charges in arrears is assumed to be the average of large borrowers from the baseline credit scenario. In the periods under stress, income falls vis-à-vis the medium-term projections due to a decline in income from the basic margin and surcharges as credit in good standing falls. Income from the service charge and commitment fee is assumed to be unchanged throughout. There is also an additional effect on net income as slower accumulation of precautionary balances leads to lower investment income vis-à-vis the medium term projection in the following period. As noted in section A, maximum burden sharing capacity also declines as credit in good standing declines.

For purely illustrative purposes, the reduction in the carrying value of the asset, should income losses exceed burden sharing capacity, is hypothetically assumed at 25 percent (other assumptions are also presented). It is important to note that the current accounting standard does not provide a specific methodology for assessing impairment losses as the difference between the asset's carrying amount and the present value of estimated future cash flows using the effective interest rate.

*The stress tests:* Table III.2 illustrates the effect on the Fund's income from charges in arrears associated with principal of SDR 16.5 billion starting in FY 2015. The burden sharing capacity is exceeded and the carrying value of the asset is assumed to fall 25 percent creating net negative income in that period, which reduces precautionary balances. The continuing effects on net income via lending and investment income are carried forward through FY 2019 resulting in 30 percent lower stock of precautionary balances relative to the medium term projections. Under these assumptions, the stock of precautionary balances does not reach its FY 2014, pre-stress, level until FY 2018. Importantly, however, precautionary balances would remain over SDR 10 billion, providing a sizeable buffer to handle any additional financial shocks.

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<sup>3</sup> See *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13), <http://www.imf.org/external/np/pp/eng/2013/043013.pdf>.

**Table III.2. Dynamic Stress Test of IMF Portfolio: Illustrative Cash Flow and Stock Ramifications FY 2014 – FY 2019 1/**  
(billions of SDRs)

		Stressed Periods					
		FY14	FY15	FY16	FY17	FY18	FY19
Net Income under current medium term projections 2/		1.62	2.07	1.75	1.72	1.61	1.40
Adjusted Flow	Net income after charges in arrears 3/	1.62	1.64	1.25	1.20	1.06	0.84
	<i>plus</i>	-	-	-	-	-	-
	Maximum burden sharing 4/	0.01	0.02	0.05	0.09	0.12	0.15
	<i>equals</i>	-	-	-	-	-	-
Total net income on cash flow basis		1.64	1.64	1.23	1.16	0.97	0.70
Adjusted Stock	<i>minus</i>						
	Illustrative reduction in carrying value of asset	-	4.13	-	-	-	-
	<i>equals</i>	-	-	-	-	-	-
	Total net income after accounting for stock reduction	1.64	(2.49)	1.23	1.16	0.97	0.70
<i>resulting</i>	-	-	-	-	-	-	
Precautionary Balances		13.16	10.61	11.70	12.64	13.51	14.11
<i>Memorandum Items:</i>							
Precautionary balances under medium term projections 2/		13.2	15.2	16.8	18.3	19.8	21.1
SDR interest rate 2/		0.10	0.20	0.60	1.00	1.50	2.00

Source: Finance Department and staff calculations.

1/ Based on current medium-term assumptions. Principal in arrears is set to the average large borrower of SDR 16.5 billion, calculated as the average peak exposure to the five largest borrowers. The effect of principal and charges in arrears on precautionary balances works through lending income (margin and surcharges), burden sharing capacity, investment income, and remuneration on principal in arrears. Further, when the loss of income exceeds the burden sharing capacity, a one-time reduction in the carrying value of the assets in arrears is assumed at 25 percent for illustrative purposes. Figures may not add up due to rounding.

2/ As implied by forecasts in *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13).

3/ Implied by calculated principal giving rise to charges in arrears and forecasted investment income, commitment fees, service fee income, and expenses as in *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13), and including shortfalls in SDR interest income due to charges in arrears. Income from surcharges and the basic margin are variable depending on the calculated amount of credit in good standing, based on the current margin and implied surcharge rate in *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13).

4/ Forecast SDR interest rate as in *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13) and the remunerated reserve tranche position implied by the calculated principal in arrears and borrowing assumptions.

Table III.3 illustrates the effects on net income and precautionary balances of different assumptions for the reduction in carrying value, the stock of principal in arrears, and interest rates over a two-year horizon. An assumed reduction in the carrying value of the asset of 15 percent, rather than 25 percent, would result in negative net income in the year of the shock and reduce the trend level of precautionary balances by SDR 3-4 billion. In the event of a fifty percent reduction in carrying value, the impact on net income would be very large and precautionary balances would decline to half their current level. The immediate impact would be broadly similar in the event of a larger affected principal giving rise to charges in arrears (assumed hypothetically to be double the size of the average large borrower). In the latter case, precautionary balances would recover less quickly because net income continues to be constrained by higher charges in arrears. Doubling the SDR interest rate in FY 2015-FY 2016 compared to the medium-term framework has only a marginally worse affect on net income versus the 25 percent reduction scenario.



**Table III.3. Dynamic, Comparative Stress Testing: Illustrative Cash Flow  
and Stock Ramifications FY 2015 – FY 2016 1/  
(In billions of SDR)**

		Stock value reduction at 15%		Stock value reduction at 25%		Stock value reduction at 50%		Principal in arrears at twice avg large borrower 6/		Double SDR interest rate assumptions 7/	
		FY15	FY16	FY15	FY16	FY15	FY16	FY15	FY16	FY15	FY16
Net Income under current medium term projections 2/		2.07	1.75	2.07	1.75	2.07	1.75	2.07	1.75	2.07	1.75
Adjusted Flow	Net income after charges in arrears 3/ <i>plus</i>	1.64	1.27	1.64	1.25	1.64	1.20	1.29	0.83	1.64	1.25
	Remuneration gap due to non-collection of SDR interest on principal arrears 5/ <i>equals</i>	0.02	0.07	0.02	0.07	0.02	0.07	0.05	0.13	0.04	0.13
	Total net income on cash flow basis	1.64	1.25	1.64	1.23	1.64	1.18	1.26	0.75	1.63	1.21
Adjusted Stock	<i>minus</i>										
	Illustrative reduction in carrying value of asset <i>equals</i>	2.48	-	4.13	-	8.26	-	8.26	-	4.13	-
	Total net income after accounting for stock reduction <i>resulting</i>	(0.84)	1.25	(2.49)	1.23	(6.62)	1.18	(6.99)	0.75	(2.50)	1.21
Precautionary Balances		12.3	13.4	10.6	11.7	6.5	7.5	6.1	6.7	10.6	11.7

Source: Finance Department and staff calculations.

1/ Based on current medium-term assumptions. Principal in arrears is set to the average large borrower of SDR 16.5 billion, calculated as the average peak exposure to the five largest borrowers. The effect of principal and charges in arrears on precautionary balances works through lending income (margin and surcharges), burden sharing capacity, investment income, and remuneration on principal in arrears. Further, when the loss of income exceeds the burden sharing capacity, a one-time reduction in the carrying value of the assets in arrears is assumed at varying levels. Figures may not add up due to rounding.

2/ See *Consolidated Medium-Term Income and Expenditure Framework* (4/30/13).

3/ Implied by calculated principal in arrears and forecasted investment income, commitment fees, service fee income, and expenses as in *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13). Income from surcharges and the basic margin are variable depending on the calculated amount of credit in good standing, based on the current margin and implied surcharge rate in *The Consolidated Medium-Term Income and Expenditure Framework* (4/30/13).

4/ Forecasted SDR interest rate, and the remunerated reserve tranche position implied by the calculated principal in arrears and borrowing assumptions.

5/ Implied by projected SDR interest rate as in *Consolidated Medium-Term Income and Expenditure Framework* (4/30/13) and illustrated principal in arrears.

6/ SDR 33 billion instead of SDR 16.5 billion and assuming 25% stock reduction.

7/ SDR interest rate in FY15 and FY16 increases to 40 bps and 120 bps from 20 bps and 60 bps, respectively.