INTERNATIONAL MONETARY FUND

IMF POLICY PAPER

REVIEW OF THE ADEQUACY OF THE FUND'S PRECAUTIONARY BALANCES

April 2016

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- A **Press Release** that provides some background and summarizes the views of the Executive Board as expressed during its February 19, 2016 discussion of the staff report.
- The **Staff Report**, prepared by IMF staff and completed on January 22, 2016 for the Executive Board's consideration on February 19, 2016.

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International Monetary Fund
Washington, D.C.

INTERNATIONAL MONETARY FUND

REVIEW OF THE ADEQUACY OF THE FUND'S PRECAUTIONARY BALANCES

January 22, 2016

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 the standard two-year cycle. The paper discusses developments since the last review in 2014 and revisits several issues discussed at that time.

The framework provides an indicative range for the target for precautionary balances linked to credit outstanding, and allows for judgment in setting this target. A reserve coverage ratio of 20-30 percent draws on approaches in other IFIs, adapted to the circumstances of the Fund, and is a guide for determining the target. At the same time, Directors have emphasized the continued importance of judgment and Board discretion in light of a broad assessment of financial risks facing the Fund.

Staff proposes retaining the medium-term target of SDR 20 billion. The updated indicative range is now below the target set by the Board at the 2014 review, mainly due to early repurchases and delays in disbursements under some existing arrangements. However, other considerations suggest that lowering the target on this basis would be premature at this stage. The Fund's lending portfolio remains highly concentrated, including in on-going programs with high risks, and has recently experienced substantial, albeit temporary, new arrears. At the same time, existing loan commitments, including under precautionary arrangements, remain large, and the uncertain global outlook means there is potential for significant new demand for Fund lending. A further important consideration is the very limited capacity of the burden sharing mechanism, which increases the potential reliance on precautionary balances in the event of significant new arrears.

Staff proposes raising the minimum floor for precautionary balances to SDR 15 billion, from SDR 10 billion. This higher level would be more consistent with the maintenance of a sustainable income position in the medium term. It would also provide for a larger buffer to protect against risks associated with any unexpected rise in credit, especially in light of elevated global economic uncertainty and increased economic and financial interconnectedness.

Despite a sharp slowdown in the projected pace of reserve accumulation, staff does not see a compelling case for taking additional steps at this point to reach the SDR 20 billion target. Revised projections, which are sensitive to policy decisions

and developments in the Fund's credit, suggest that precautionary balances will not reach the SDR 20 billion target over the medium term. However, significant further reserve buildup is projected in the next 2–3 years and this will allow time for greater clarity to emerge on the future path of loan demand and the evolution of credit risks.

The paper also revisits the methodology for allocating annual income between the special and the general reserve. It proposes that instead of the current practice of allocating surcharge income to the general reserve and net operational income to the special reserve, all future net income should be divided between the special and the general reserve without distinguishing between the sources of income that generate reserves. In the near term, an allocation of one-half to two-thirds of total income to the special reserve would seem appropriate. The allocation share could be reviewed periodically, including in the event special reserves begin to approach the precautionary balance floor.

Approved By
Andrew Tweedie

Prepared by the Finance Department

CONTENTS

TABLES

ANNEXES

INTRODUCTION[1]

1. This paper reviews the adequacy of the Fund's precautionary balances. It uses the transparent and rules-based framework that has been employed since 2010 to guide the assessment of reserve adequacy. It also responds to Directors' requests at the last review to revisit a number of issues and refine the framework as more experience is gained in its application.

2. This review takes place on the standard two-year cycle.[2] The paper also serves as background for the review of access and surcharges in February 2016 and the review of the Fund's income in April 2016, including the decision on the margin for the basic rate of charge that will apply for the two year period FY 2017–18. Decisions on surcharges and the margin for the basic rate of charge are the main policy instruments affecting the accumulation of precautionary balances.

3. The paper is organized as follows. The first section reviews the role of precautionary balances in the Fund's multi-layered framework for mitigating financial risks and the framework used to guide the assessment of reserve adequacy. The second section takes stock of developments since the last review in 2014, while the third section assesses the adequacy of the current indicative target of SDR 20 billion and the projected pace of accumulation of precautionary balances in light of these developments. This section also revisits the treatment of precautionary arrangements in the current framework. The fourth section proposes an increase in the minimum floor for precautionary balances from SDR 10 billion to SDR 15 billion and revisits the allocation of net income between the special and general reserves. The last section concludes.

PRECAUTIONARY BALANCES AND THE FRAMEWORK FOR ASSESSING RESERVE ADEQUACY

A. The 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.

[1] Prepared by a team led by Maria Albino-War and Lukas Kohler comprising Dannah Al-Jarbou, Alex Attie, Sonja Davidovic, Janne Hukka, Ishita Lamba, Diana Mikhail, Diviesh Nana, Amadou Ndiaye, Jean Guillaume Poulain, Yan Sun-Wang, and Barry Yuen under the guidance of David Andrews and Donal McGettigan (all FIN).

[2] 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.

- 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 prior to the global crisis. The implementation of the Fund's new income model which broadens the sources of sustainable non-lending income will, over time, help mitigate these risks. Precautionary balances—which generate investment income for the Fund as well as being a critical part of the risk mitigation framework—are an important element of this model.

- The Fund faces *market risks* on assets held in the investment account. These risks have increased somewhat with the phased implementation of the endowment (EA) subaccount, but remain moderate given the short duration of fixed income investments in the fixed-income (FI) subaccount and the relatively conservative investment strategy for the EA.[3] The Fund does not face market risks on its lending or holdings of members' currencies since the same floating rate determines the rate of charge and remuneration and the Fund's balance sheet is denominated in SDRs.

- The Fund faces *liquidity risk*—the risk that the Fund's resources will be insufficient to meet members' needs and for the Fund to repay its obligations as they fall due, in particular under Fund borrowing agreements. 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 global crisis. In addition, the Fund retains a prudential balance of quota resources to help manage liquidity risks and provide a buffer to support the encashability of members' reserve tranche positions.[4]

- The Fund self-insures for certain risks (for example, to cover losses of a capital nature) and has strong internal controls to address *operational risks*.

[3] Amounts in the Fixed Income subaccount currently correspond to the Fund's reserves that are treated as precautionary balances, except for currencies retained in the GRA over the past two years. Article XII, section 6(f)(ii) provides that the amounts of transfers currency from the GRA to the Investment Account shall not at the time of the decision to transfer exceed the total amount of the general and special reserve. Amounts available for transfer at the end of FY 2014 and FY 2015 were retained in the GRA as an interim measure pending the review of the strategic asset allocation for this subaccount. GRA currencies equivalent to the increase in reserves in FY 2014 and FY 2015 are expected to be transferred from the GRA to the IA in the first half of FY2017. See *Review of the Fund's Income Position for FY 2015 and FY 2016*, (4/6/15).

[4] The prudential balance is currently set at 20 percent of the quotas of members participating in the financing of IMF transactions (Financial Transaction Plan).

Table 1. Financial Risk Management in the Fund

Financial Risk	Risk Management Measures
Credit risk: The risk that a borrower could fail to meet its financial obligations to the Fund	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 *Precautionary balances*
Income risk: The risk that the Fund's annual income may not be sufficient to cover its annual expenditures.	Margin on the basic rate of charge Surcharges Burden sharing mechanism Investment Account and investment mandate *Precautionary balances*
Interest rate risk: The risk that future cash flows will fluctuate because of changes in market interest rates	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. Interest rate risk in the Fixed Income subaccount is managed with a low average duration (of up to 2 ½ years). The EA is exposed to higher interest rate risk given the higher duration (7½-8 years) of currently invested strategic asset allocation (SAA), approved by the Board in early 2013.
Exchange rate risk: The exposure to the effects of fluctuations in foreign currency exchange rates on the Fund's financial position and cash flows	The Fund has no exposure on its holding of member currencies, including those representing Fund credit, or borrowings which are all denominated in SDRs, the Fund's unit of account. (Regarding Fund holding of members' currencies, the de facto SDR denomination results from the fact that members are required to maintain the SDR value of the Fund's holdings of their currencies). Exchange rate risk on investments in the IA-FI 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. In the EA, limited exchange rate risk exists vis-à-vis the SDR, which is the unit of account of the Fund. For performance management purposes, the US dollar is the benchmark currency and developed country currencies are hedged into the US dollar.
Liquidity risk: The risk that available resources will not be sufficient to meet financing needs of members and the Fund's obligations under borrowing agreements	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 *Precautionary balances play a small role in managing this risk, given their small size relative to the FCC.*
Operational risk in financial matters: The risk of loss attributable to errors or omissions, process failures, inadequate controls, human factors, and/or failures in underlying support systems	Internal control procedures and processes Executive Board approved new Rules and Regulations for the IA while the IOC (by delegation from management) is charged with defining key risk parameters and investment guidelines for external asset managers and for related operations. Audit arrangements: independent external audit, oversight of controls and financial processes by an independent external audit committee, and an internal audit function *Precautionary balances*

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 co-financing, and the Fund's de facto preferred creditor status. In the event that arrears arise, the Fund has an agreed strategy for addressing them. The burden sharing mechanism is designed to protect the Fund's income in the event of arrears (see Box 2 and Annex III). The Fund's cooperative nature is also of crucial importance when credit risks materialize.

6. Maintaining an adequate level of precautionary balances is a key element of the Fund's overall strategy for managing financial risks and ensuring balance sheet strength. Fund lending is based on an exchange of reserve assets. 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.[5] In this way, they play an important role in seeking to protect 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.[6] Together, these risk mitigation elements allow the Fund to carry financial risks on its balance sheet and provide a buffer to members from residual risk.

7. Reserves generated as retained earnings comprise the bulk of the Fund's precautionary balances. These reserves are accumulated when annual operational income and surcharge income less administrative expenses (which correspond to the Fund's budgetary expenses) and other accounting-related adjustments is positive. Precautionary balances at end-FY 2015, which also include the balance in the Special Contingent Account (see Text Table and Box 1) amounted to SDR 14.2 billion and reached SDR 14.5 billion by end-October 2015.

Text Table. Accumulation of Precautionary Balances
(In billions of SDRs)

		FY 2015 (Year)	FY 2016 1/ (6 months)
I	Precautionary balances - beginning of period 2/	12.7	14.2
II	Operational income	1.4	0.3
	Lending income	1.3	0.3
	Non-lending income	0.1	0.0 *
III	Administrative expenses	-0.8	-0.5
IV	Net operational income (II-III)	0.7	-0.2
V	Surcharges	1.5	0.4
VI	IAS 19 adjustment	-0.7	0.1
VII	Precautionary balances - end of period (I+IV+V+VI	14.2	14.5

Amounts may not add due to rounding.
Source: IMF Finance Department.
*-represents an amount less than SDR 50 million.
1/ To end-October 2015.
2/ Includes SCA-1 of SDR 1.2 billion.

[5] Most recently, the Fund drew on its precautionary balances during FY 2007-08 to cover income losses.

[6] Although the Fund's gold holdings are an important factor of strength in the Fund's balance sheet, they are not included in the Fund's precautionary balances given the limitations on their use. 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 of the total voting power.

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

Precautionary balances are an essential component of the balance sheet of the General Department. On the liabilities side, precautionary balances, (SDR 14.2 billion, as of April 30, 2015), are a key element of the Fund's framework to absorb financial losses, thereby helping to protect the value of reserve assets that members place with the Fund. On the asset side, the Fund's reserves treated as precautionary balances are either invested in the fixed-income subaccount (SDR 10.4 billion) or held in currencies (SDR 2.6 billion). The latter represents the GRA net income for FY2014 and FY2015 not transferred to the fixed-income subaccount.

General Department—Balance Sheet
(In billions of SDRs; as of April 30, 2015)

Assets		Liabilities	
Credit outstanding	55.2	Reserve tranche position	31.0
Usable currencies	169.8	Subscription payments	207.1
Other currencies	37.3	*Total quotas*	238.2
Total currencies	*262.4*		
		Borrowing	36.8
SDR holdings	13.6		
Investments	15.1	Reserves and retained earnings	
Endowment	4.6	Retained earnings of the Endowment	0.2
Fixed Income	10.4	Reserves of the GRA	17.4
		Special reserves - Gold profits	4.4
		Special reserves - Excl. gold profits	4.0
		General reserves	9.0
		Special Contingent Account	1.2
Gold holdings	3.2		
Other	1.2	Other	1.6
Total Assets	**295.4**	**Liabilities and Total Resources**	**295.4**

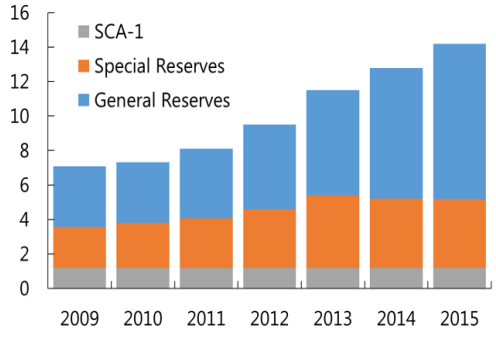
PBs

Note: Amounts may not add due to rounding.
Source: IMF Finance Department

Precautionary balance comprise retained earnings held in the Fund's general and special reserves and the Special Contingent Account (SCA-1):[1]

- **Special reserve.** This reserve–established in 1957–was initially funded by the proceeds from a gold investment program set up to address the deficits accumulated from annual losses the Fund suffered from its inception to April 1956. Income from the investment program was placed to the special reserve when the program was terminated in 1972. The Board also agreed in 1957 when the reserve was established that any administrative losses would first be written off against the special reserve. The special reserve is therefore the first line of defense against income losses. In symmetric fashion, the Fund's annual net operational income has been placed to the special reserve since the termination of the gold investment program. Under the Fund's Articles, no distributions (dividends) can be made from the special reserve.
- **General reserve.** In 1958, it was decided that the reserve contemplated in Article XII, Section 6(a) of the Articles, prior to the Second Amendment, would be referred to as the general reserve to distinguish it from the special reserve. Net operational income was placed to this reserve while the gold investment program was active, i.e., during FY 1958–72, as the Fund had returned to profitability from its operations. The purpose of the general reserve is to absorb capital losses and to meet administrative losses.

PB Composition, 2009-2015
(In billions of SDRs, end of financial year)



Source: IMF Finance Department.

Box 1. The Composition of the Fund's Precautionary Balances (concluded)

Further placements of resources were made to the general reserve in FY 1998 to FY 2006 as follows: net operational income generated under the Supplemental Reserve Facility (SRF), after meeting the cost of administering the PRGF Trust (FY 1998–2001); and surcharges on purchases under the SRF, credit tranches and EFF (FY 2002 to FY 2006). During FY 2007–2008, the Fund experienced net income shortfalls and subsequently, the Board agreed to resume the practice of placing surcharge income in the General Reserve in FY 2011. Reserves accumulated in the general reserve may be distributed to members, in proportion to their quota, if the Board approves such decision by a 70 percent majority of the total voting power.

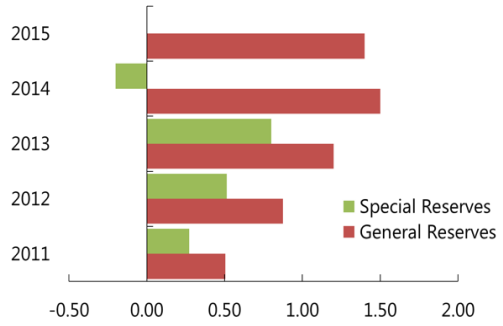
- **Special Contingent Account (SCA-1).** This account was set up in 1987 with the specific purpose of protecting the Fund against the risk of a loss resulting from the ultimate failure of a member to repay its overdue charges and repurchases in the GRA. The SCA-1 has been funded under the burden sharing mechanism through equal contributions from borrowing and creditor member countries through adjustments to the rates of charge and remuneration, respectively.[2] SCA-1 accumulations were suspended effective November 1, 2006. Under the Executive Board's current SCA-1 decision, the Fund is required to distribute the balances in SCA-1 to contributing members when there are no outstanding overdue charges or repurchases. Any earlier distribution of the SCA-1 requires a Board decision by a 70 percent majority.

Net income equivalent to surcharge income (which has been placed to the general reserve) has been the main source of precautionary balances accumulation over FY 2011-15 (see text chart):

- The accumulation of the general reserve was SDR 5.5 billion, about four times the accumulation of the special reserve (SDR 1.4 billion). The fall in the special reserve in FY 2014 reflects the Fund's implementation of the amended international accounting standard for employee benefits (IAS 19) See details on the IFRS implementation in Annex I.

- The balance of the SCA-1 has remained unchanged at SDR 1.2 billion since 2008. After Liberia cleared its protracted arrears to the Fund, SDR 0.5 billion of the SCA-1 was distributed to contributing members, to facilitate contributions for debt relief for Liberia.

Reserves Accumulation, 2011-2015 1/
(In billions of SDRs, end of financial year)



Source: IMF Finance Department.
1/ In FY 2014, the special reserve reflects an allocation of net income of SDR 1.2 billion and a charge of SDR 1.4 billion associated with the amended IAS 19 retroactive adjustment.

[1] In setting up the endowment, the Board recognized that its sole purpose would be to generate income. Hence, precautionary balances do not include the portion of special reserves attributed to the gold profits and invested in the endowment.

[2] In FY 1987, the SCA-1 was initially funded from GRA income in excess of the target for the financial year.

8. The Fund conducts regular, biennial, reviews of the adequacy of precautionary balances. The Board adopted an SDR 10 billion target for precautionary balances 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.

9. A transparent rules-based framework for assessing precautionary balances was endorsed by the Board during the 2010 Review.[7] 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 increases in individual exposures, and the limited capacity of the burden sharing mechanism. The target was further increased to SDR 20 billion in 2012, and reaffirmed in 2014, given the continued increase in lending and commitments since the 2010 review. A minimum floor of SDR 10 billion for precautionary balances was also agreed in 2010 and reaffirmed in the 2012 and 2014 reviews.

B. Framework for Assessing Precautionary Balances

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 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. In this context, the Board has repeatedly stressed the importance of judgment, and that the framework should not be applied in a mechanistic way.

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 measure of credit outstanding. This element draws on approaches in other IFIs (Box 3), adapted to the specific circumstances of the Fund (in particular the highly concentrated needs-driven nature of its lending portfolio),[8] (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,[9] (iii) commitments under *precautionary arrangements*, which are excluded from the credit measure used to derive the indicative range, but are considered by the

[7] See *The Acting Chair's Summing Up—Review of the Adequacy of the Fund's Precautionary Balances* (9/22/10), , *The Acting Chair's Summing Up—Review of the Adequacy of the Fund's Precautionary Balances* (2/07/14).

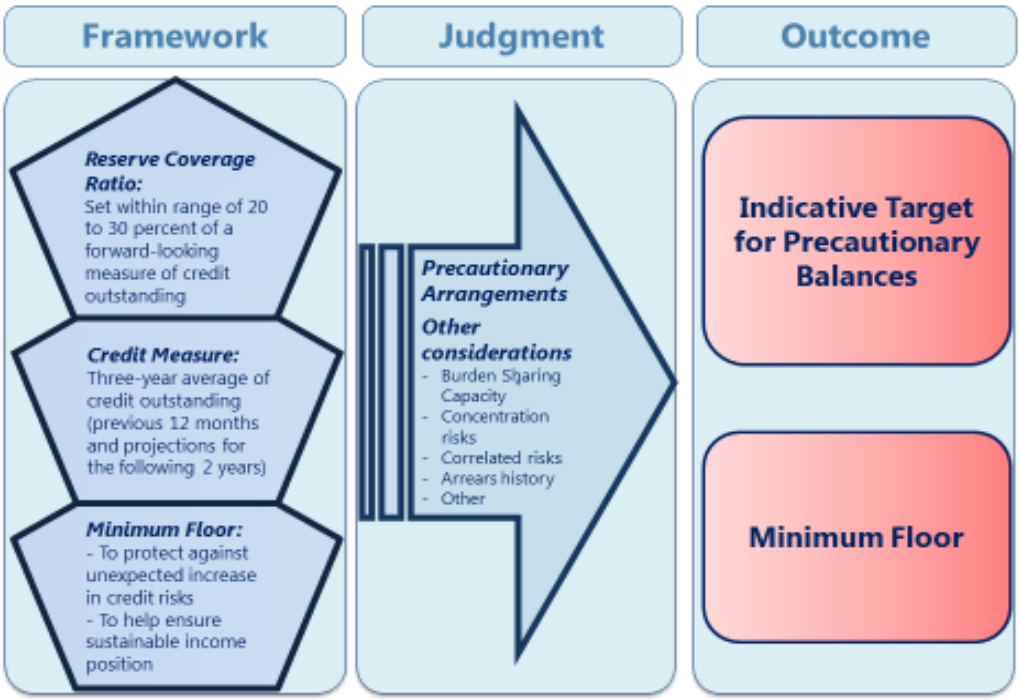
[8] The framework also has elements in common with the methodologies used by rating agencies in assessing capital adequacy in supranational lending institutions (see Annex II).

[9] The two-year projection is based on scheduled net disbursements under non-precautionary arrangements. While the methodology makes no provision for possible 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).

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.[10]

12. At the most recent review in 2014, Directors generally agreed that the current rules-based framework remains broadly appropriate. At the same time, they reiterated the continued importance of judgment and Board discretion in light of a broad assessment of financial risks facing the Fund. They saw a need to keep the framework under review and refine it as warranted by experience in its application.

Figure 1. Framework to Determine the Indicative Target and the Minimum Floor for Precautionary Balances



Source: IMF Finance Department.

[10] 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 floor is kept under review in light of changing conditions and longer-term trends in Fund lending.

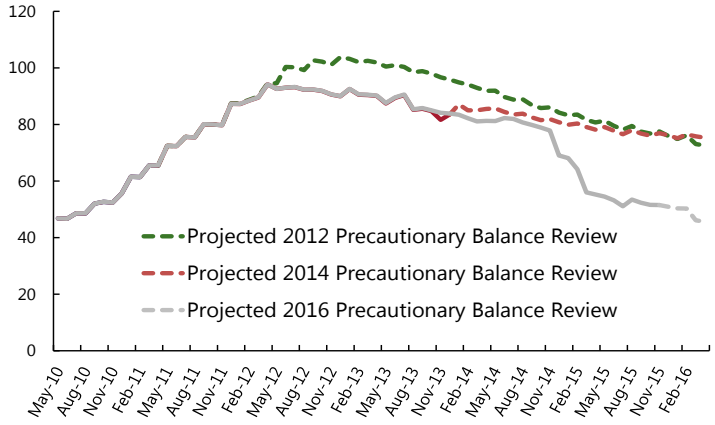
DEVELOPMENTS SINCE THE LAST REVIEW

This section reviews key developments since the last review. Credit outstanding has fallen (mainly due to early repurchases and delays in disbursements under some existing arrangements) but remains high by historical standards, as do total commitments. At the same time, the Fund's lending portfolio remains highly concentrated and subject to substantial risks, as highlighted by the recent temporary emergence of large new arrears. Near-term income risks remain low, although medium-term risks have risen somewhat. Precautionary balances have increased further, though by less than expected at the time of the last review, and are still well short of the indicative medium-term target.

A. Credit Risks

13. Credit outstanding has fallen since the last review, but remains high by historical standards (Table 2 and Figure 2, Panel A). Sizeable early repurchases and delays in the timing of disbursements under some large programs have led to a steeper decline in credit outstanding than projected at the time of the last review (text figure).[11] At the same time, while well below its recent peak, total credit remains close to the peak levels during the two previous lending cycles (Figure 2, Panel A and Figure 3, Panel B).

Text Figure. Projected Credit Outstanding at Precautionary Balance Reviews in 2012, 2014 and 2016 1/
(In SDR billions)



Source: IMF Finance Department.
1/ This figure shows actual credit outstanding until the date of the Precautionary Balance Review and projected credit outstanding thereafter.

14. Total outstanding commitments under GRA arrangements have also declined but remain very high (Figure 2, panel A). Mirroring the fall in credit outstanding, total commitments including undrawn balances under existing arrangements have declined from their recent peak but remain very high in historical terms. Total commitments include those under precautionary arrangements, notably the three FCLs for Mexico, Poland, and Colombia, as well as the PLL with Morocco, and SBAs with Honduras, Kenya and Serbia. In total, seventeen new arrangements have been approved since the last review.[12]

[11] Total early repurchases in FY2014–15 and so far in FY2016 amount to over SDR 25 billion, mostly attributable to Ireland and Portugal.

[12] New non-FCL arrangements approved since November 2013 through end-November, 2015, provided total access of about SDR 30 billion.

15. The Fund's portfolio remains highly concentrated. The five largest borrowers represent close to 90 percent of credit outstanding (Figure 2, panel C), while the three largest borrowers continue to account for almost three-quarters of credit outstanding, which is high by historical standards. Lending to euro area members has declined significantly in SDR terms to about SDR 35 billion, compared with about SDR 65 billion at the time of the last review, though it still accounts for over two-thirds of total exposures (Figure 3). In addition to the high loan concentration, the risks associated with two of the Fund's three largest individual exposures—Greece and Ukraine—have been recognized as being exceptionally high.[13]

Table 2. Current versus Past Reviews, 2008-2015

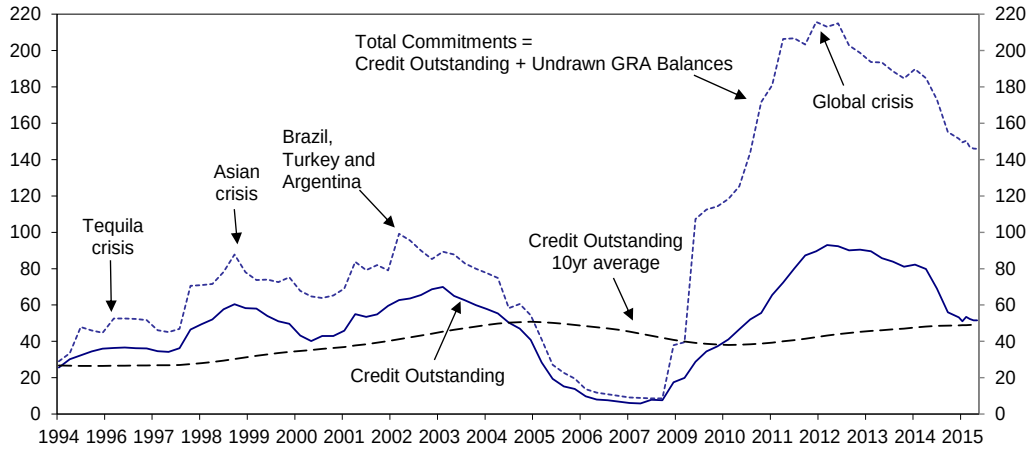
	Oct-08 [1/]	Jul-10 [1/]	Feb-12 [1/]	Nov-13 [1/]	Nov-15
			(In billions of SDRs)		
Precautionary balances	6.9	7.3	9.2	11.5	14.5 [3/]
Arrears [2/]	1.1	1.1	1.1	1.1	1.1
Largest individual exposure					
Actual	5.7	9.0	17.5	22.2	16.4
Projected	11.0	26.4	28.1	27.6	16.4
Credit outstanding					
Actual	17.2	48.6	88.5	84.1	51.5
Projected peak	30.0	78.2	100.6	87.1	51.5
Total commitments [4/]	36.5	144.0	201.6	189.9	146.0
Credit capacity	165.9	310.1	451.4	668.7	665.2
Precautionary balances			(In percent of)		
Credit outstanding	40.5	15.1	10.4	13.7	28.1
Total commitments	19.0	5.1	4.6	6.1	9.9
Credit capacity	4.2	2.4	2.0	1.7	2.2

Source: IMF Finance Department.
1/ Review of the Adequacy of the Fund's Precautionary Balances; (12/08/2008), (8/25/2010), and (1/15/2014).
2/ Includes charges and principal.
3/ As of end-October 2015, end second quarter of financial year 2016.
4/ Total commitments equal GRA credit outstanding plus undrawn balances.

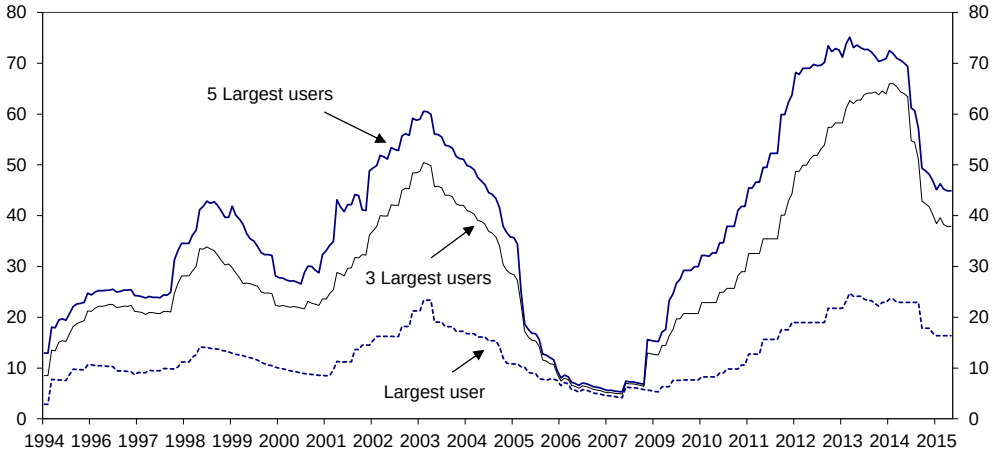
[13] See *Greece—Assessment of the Risks to the Fund and the Fund's Liquidity Position* (3/9/12) and *Ukraine—Assessment of the Risks to the Fund and the Fund's Liquidity Position* (3/6/15).

Figure 2. Total Commitments, Credit Outstanding and Credit Concentration: 1994–2015

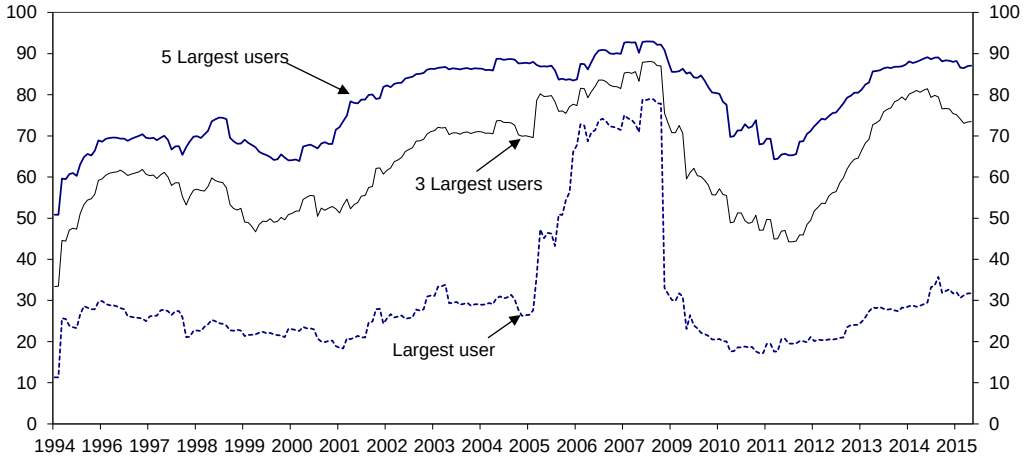
A. GRA Total Commitments and Credit Outstanding, 1994 - Nov 2015 (in billions of SDR)



B. Largest Borrowers, 1994 - Nov 2015 (in billions of SDRs)



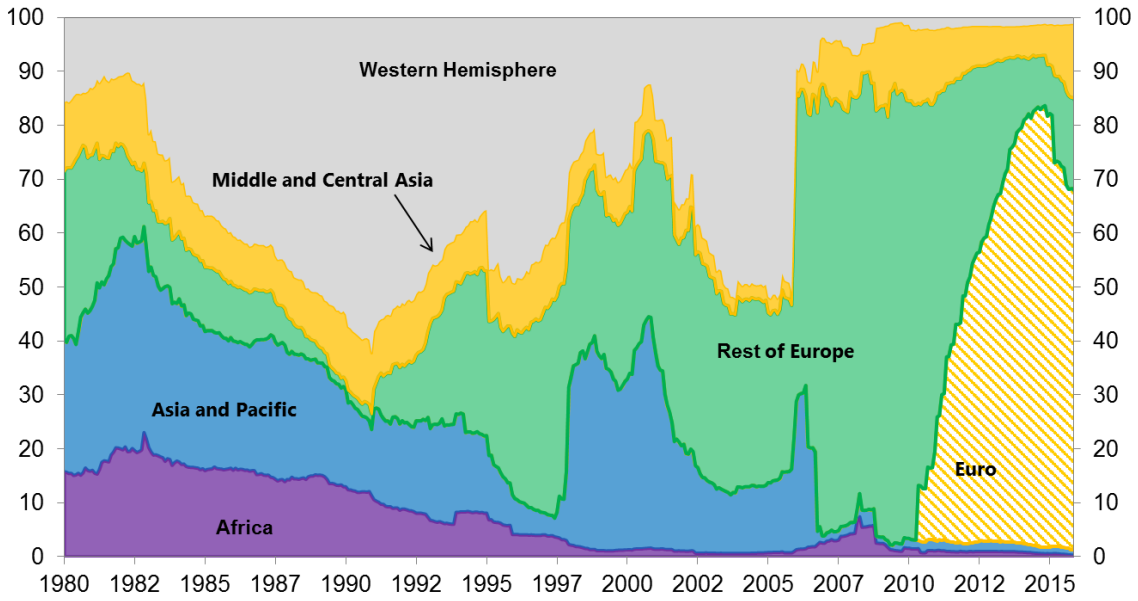
C. Largest Borrowers, 1994 - Nov 2015 (in percent of credit outstanding)



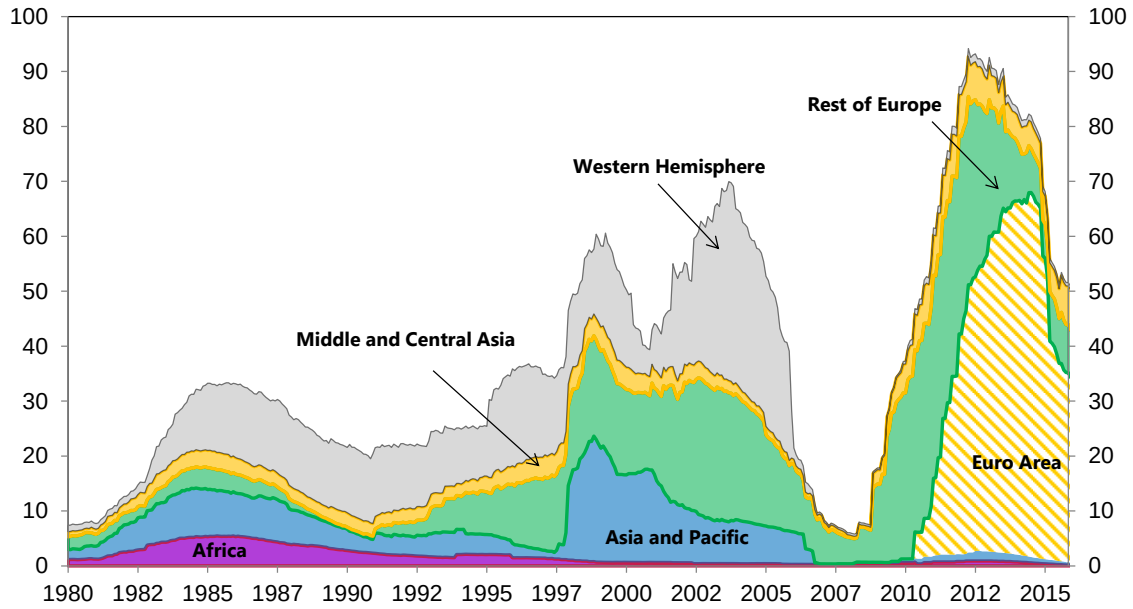
Source: IMF Finance Department.

Figure 3. Credit Concentration by Region, 1980–2015

A. In Percent of Total Fund Credit



B. In Billions of SDRs



Source: IMF Finance Department.

16. Risks to the Fund's portfolio recently materialized when Greece fell temporarily into arrears to the Fund. In June and July 2015, Greece failed to make SDR 1.6 billion in repurchases falling due, representing the first case of significant new arrears since 2001. At the time, Greece was the Fund's largest single exposure at nearly SDR 16.9 billion, representing almost one third of total credit outstanding and exceeding the Fund's precautionary balances of SDR 14.2 billion. The arrears were cleared promptly in mid-July with financing from Greece's European partners. However, this experience underlines the potential risks associated with the Fund's large scale support for members facing deep and protracted balance of payments problems.

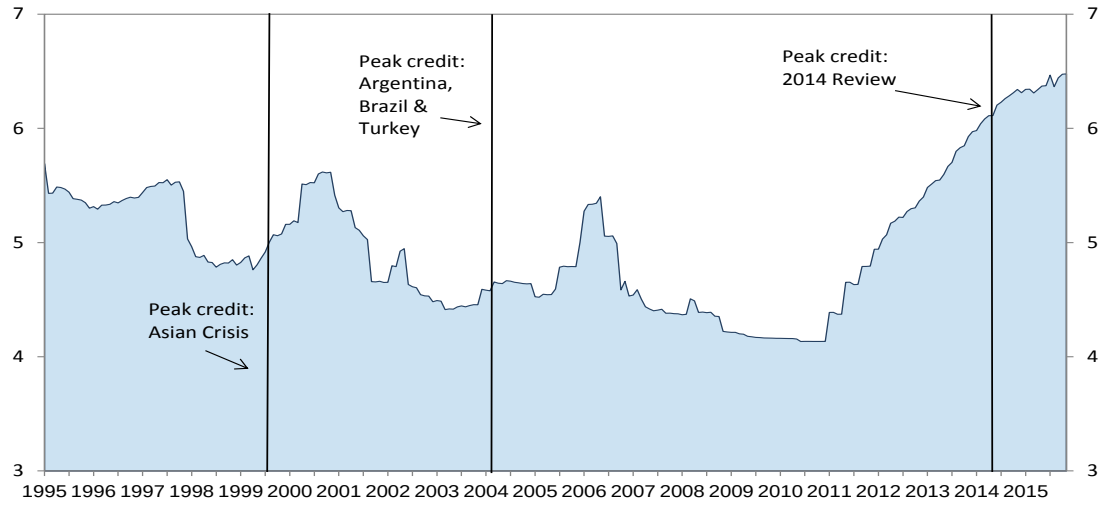
17. The average maturity of Fund credit has continued to increase and reached new historic highs (Figure 4). While the average maturity had already risen sharply at the time of the 2014 review, this included substantial exposures to Ireland and Portugal, which have since made large early repurchases. The remaining long-maturity loans are now more concentrated in higher risk credits. In addition, scheduled repurchases are expected to increase rapidly over the medium term, heightening the risks that a member could have difficulty meeting its Fund obligations if its adjustment and reform program is not successful in addressing the underlying weaknesses (Figure 5).

18. The Fund's credit capacity remains near its historic peak (Table 2). Total credit capacity, which includes quotas, the NAB, and the 2012 bilateral borrowing agreements, remains broadly unchanged since last review at about SDR 665 billion as of end-November 2015.[14] This reflects the extension of the terms of virtually all of the 2012 Borrowing Agreements for a fourth year.[15] The effectiveness of the 14th Review quota increases is expected to leave the Fund's total credit capacity broadly unchanged, as it will be accompanied by a corresponding roll-back of the NAB.

[14] This excludes the prudential balance. Credit capacity, excluding the 2012 agreements which have not been activated, stands at SDR 450 billion.

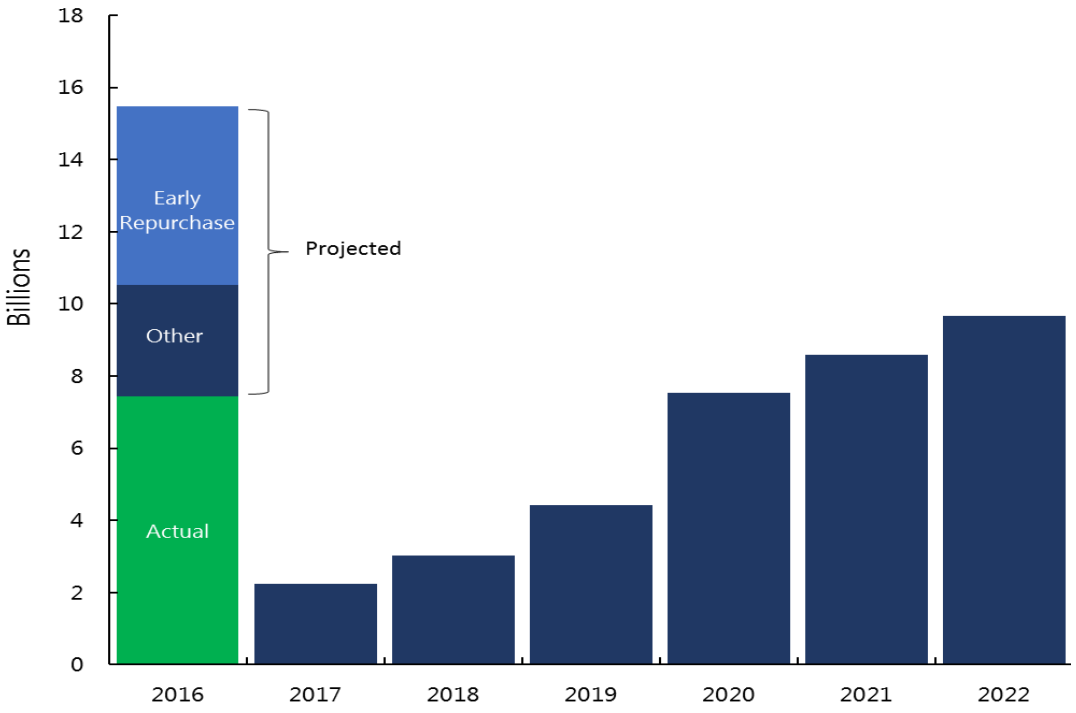
[15] The NAB has been activated continuously since April 2011. The 2012 bilateral agreements, which amount to SDR 269 billion, will be activated only if the modified FCC falls below SDR 100 billion and either the NAB is activated or there are no available NAB resources.

Figure 4. Average Maturity of GRA Credit Outstanding: 1995-2015
(In years)



Source: IMF Finance Department.

Figure 5. Projected IMF Repurchases, 2016-2022 1/ 2/
(In billions of SDRs, end of financial year)



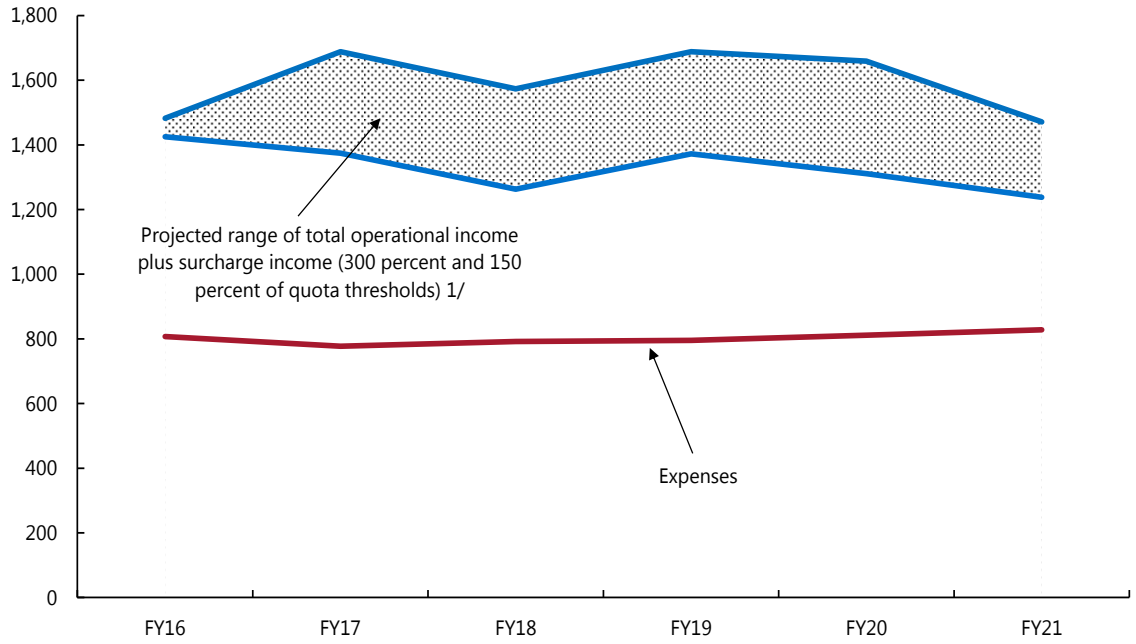
Source: IMF Finance Department.

1/ FY 2016 reflects actual data as of end-November 2015 and projections for December 2015-April 2016.
2/ Scheduled repurchases in 2017 and 2018 are lower due to early repurchases by Ireland and Portugal in 2015 and 2016.

B. Income Risks

19. Near-term income risks remain low. The latest income projections suggest that total annual income, including surcharges, is likely to exceed annual expenditures by about SDR 400-900 million through FY 2016-21 (Figure 6).[16] These projections are sensitive to a number of assumptions, including on surcharge policy, which will be discussed by the Board shortly, and the margin on the basic rate of charge, which will be considered by the Board in April. Also, the Fund's burden sharing capacity remains severely constrained by the low SDR interest rate and the high level of Fund borrowing (to which burden sharing does not apply), offering only a nominal buffer for the Fund's income position should new arrears arise (see below and Annex III). The recent implementation of the amended accounting standard for the reporting of employee benefits (IAS19) has also added volatility to the income path by eliminating the option to defer recognition of actuarial gains and losses over time (Figure 7) (see also Annex I).

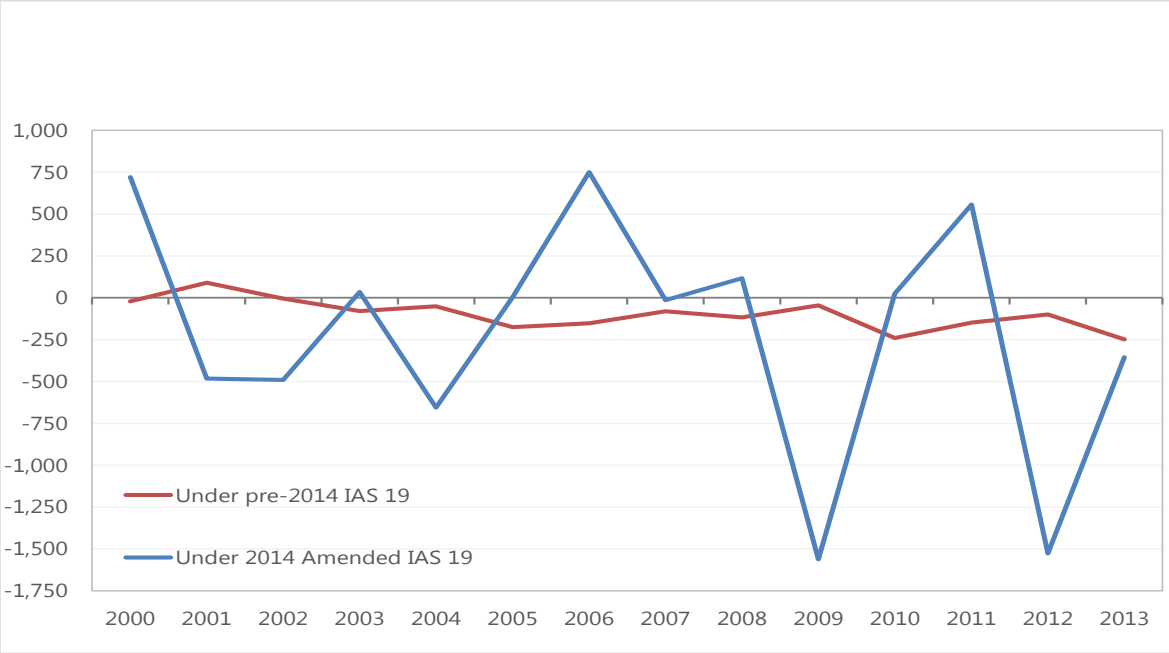
Figure 6. Medium Term Projected Income and Expenses, 2016-2021
(In millions of SDRs, end of financial year)



Source: IMF Finance Department.
1/ Assuming effectiveness of the 14th Review quota increases on February 1, 2016. Under the 150 percent scenario, 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.

[16] See *The Consolidated Medium-Term Income and Expenditure Framework* (4/10/15).

Figure 7. Effect of IAS 19 on Income: Pre-2014 and Retrospective Application of Amended IAS 19, 2000-2013
(In millions of SDRs, in financial year)



Source: IMF Finance Department and Staff calculations.

20. While projected income remains well in excess of expenditures in the coming years, the expected pace of reserve accumulation has slowed significantly since the last review and medium-term income risks have risen somewhat. As discussed in the last review of Fund income in April 2015, the projected pace of reserve accumulation has slowed as a result of the decline in Fund credit and the lower interest rate outlook, which affects investment returns and implicit returns on the Fund's interest-free resources.[17] The most recent projections, which have been updated to reflect arrangements approved through end-November 2015, suggest that precautionary balances remain below the indicative SDR 20 billion, rather than reaching the target by FY2017-18 as expected at the time of the last review. (The pace of reserve accumulation is discussed further in Section III below.) In addition, assuming precautionary balances at the current SDR 10 billion floor and under a conservative assumption for interest rates and investment income over the medium term, the illustrative steady state income position would be modestly negative. (The appropriate level of the floor is discussed in Section IV below.)

[17] Ibid.

C. Market Risks

21. Market risks have increased somewhat since the last review, mainly as a result of the phased investment of the Fund's endowment subaccount, but remain moderate. As noted earlier, the Fund does not face market risks on its lending or holdings of members' currencies since the same floating rate determines the rate of charge and remuneration and the Fund's balance sheet is denominated in SDRs. The Fund does, however, face market risks on its investments, which comprise the endowment account (EA) and fixed income subaccount (FI), and these are discussed in detail in Annex IV.

- **Endowment account.** The phased implementation of the EA started in Q4 FY 2014 and is scheduled to be completed by Q4 FY 2017. As a result, the risk profile of the EA is increasing, with potential losses increasing gradually as the phasing of the investment program progresses. As noted in Annex IV, however, endowment-type portfolios typically have a long investment horizon (the EA is intended to be perpetual) and can, therefore, afford variable annual returns. This also implies that the EA can, and probably will, incur periods of losses, sometimes over consecutive years, but over time it should generate positive real returns. That said, marked-to-market losses on the EA, even if reversible, will directly affect the Fund's income and level of the Fund's reserves (even though assets in the EA are not counted towards precautionary balances).

- **Fixed income subaccount.** The rules and regulations governing the FI, which were amended in August 2015, allow wider investment powers, while maintaining the original investment objective of exceeding the 3-month SDR interest rate. FI resources remain subject to a relatively conservative investment strategy, which seeks to preserve nominal capital and limits the risk of permanent losses. In particular, the short duration of FI investments and the high quality of assets invested minimizes the risk of crystallizing capital losses.

D. Precautionary Balances

22. Precautionary balances have increased since the last review, but remain well short of the indicative medium-term target (Table 3, Figure 8):

- **Precautionary balances have increased though by significantly less than projected at the last review** (Table 3). At the end of FY 2015, precautionary balances increased to SDR 14.2 billion comprising retained earnings in the special and general reserves of SDR 13 billion and SDR 1.2 billion in the Special Contingent Account (SCA-1, see Box 1). This compares with a projected level of SDR 16 billion at the time of the last review.

- **The coverage of precautionary balances has also improved somewhat relative to key metrics** (Figure 8). Given the declines in credit outstanding and total commitments, the coverage of precautionary balances has increased to 26 percent of *credit outstanding* and 9 percent of *total commitments*. These are the highest levels since 2009 and 2010, respectively. Relative to the Fund's total *credit capacity*, precautionary balances stood at 2.1 percent, a

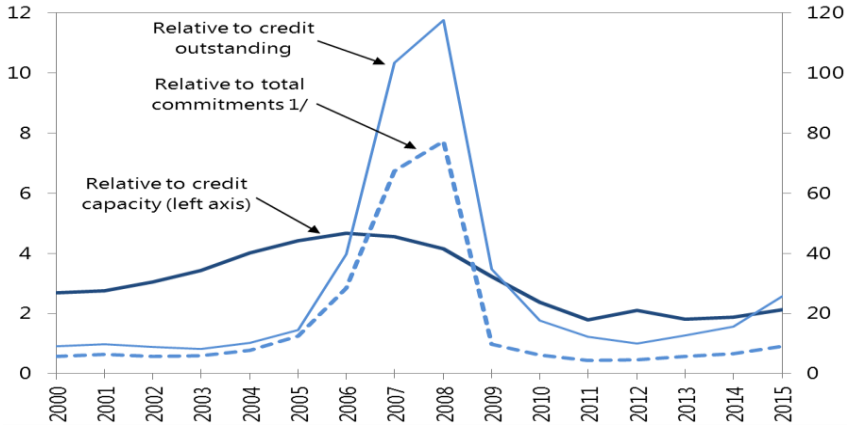
modest increase from 1.8 percent at the time of the last review. Overall, however, these coverage ratios remain well below those prevailing prior to the start of the latest credit cycle.

Table 3. Precautionary Balances, 2007–2015
(End of Financial Year)

	2007	2008	2009	2010	2011	2012	2013	2014	2015
					(In billions of SDRs)				
Precautionary balances 1/	7.6	6.9	7.1	7.3	8.1	9.5	11.5	12.7	14.2
Memorandum items:									
Credit capacity 2/	166.3	166.7	219.5	309.2	451.2	451.6	635.2	671.5	667.1
Total commitments 3/	11.2	9.0	72.2	117.5	181.5	201.6	198.2	194.6	154.3
Credit outstanding	7.3	5.9	20.4	41.2	65.5	94.2	90.2	81.2	55.2
Arrears 4/	1.6	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
					(In percent)				
Precautionary balances to									
Credit capacity	4.6	4.2	3.2	2.4	1.8	2.1	1.8	1.9	2.1
Total commitments	67.5	77.2	9.8	6.2	4.5	4.7	5.8	6.5	9.2
Credit outstanding	103.5	117.7	34.7	17.8	12.4	10.1	12.8	15.6	25.7

Source: IMF Finance Department.
1/ Precautionary balances exclude that part of the Special Reserve that is attributed to gold sale profits from the 2009/2010 gold sales (SDR 4.4 billion) (see Review of the Fund's Income Position for FY 2010 and FY 2011).
2/ 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. Amounts available in SDRs under the bilateral loan and note purchase agreements are subject to variations due to exchange rate movements.
3/ Total commitments equal credit outstanding plus undrawn balances under GRA arrangements.
4/ Obligations to the GRA that are overdue for six months or more, excludes arrears for Structural Adjustment Facility loans.

Figure 8. Precautionary Balance Ratios, 2000-2015
(In percent, end of financial year)



Source: IMF Finance Department.
1/ Total commitments equal credit outstanding plus undrawn balances under GRA arrangements.

ASSESSMENT OF THE ADEQUACY OF PRECAUTIONARY BALANCES

This section assesses the adequacy of precautionary balances in light of the above developments and concludes that, on balance, the target should be kept at SDR 20 billion. The section also revisits the treatment of commitments under precautionary arrangements, which Directors asked to keep under review in light of experience.

A. Indicative Precautionary Balance Target

23. Under the agreed framework, the starting point for assessing precautionary balances is the forward-looking measure of credit outstanding. This measure stood at SDR 51 billion as of end-November 2015 (Table 4) down sharply from SDR 84 billion at the time of the 2014 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 except early intended repurchases communicated to the Fund by borrowing members. The program with Greece was cancelled in mid-January. If a new successor arrangement is agreed, it would increase the above measure.

24. The calculated range under the framework has fallen sharply since the last review (Table 4). The range now stands at SDR 10 to 15 billion, and the new midpoint at about SDR 13 billion, down sharply from the midpoint of around SDR 21 billion calculated at the time of the last review. The fall, which is deeper than assumed in 2014, reflects both early repurchases (mainly Ireland and Portugal) and delayed purchases (notably Greece and Ukraine).

Table 4. Calculated Range for Precautionary Balances, 2009-2018 [1/]
(In billions of SDRs, end of financial year)

	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-2009	13.1	34.4	6.9	10.3	10.0	7.1	
Jul. 2010	***48.6***	***59.5***	***11.9***	***17.8***	***14.9***	***7.3***	
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	
Feb. 2012	***77.5***	***91.8***	***18.4***	***27.6***	***23.0***	***9.2***	
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	
Nov. 2013	***88.4***	***83.6***	***16.7***	***25.1***	***20.9***	***11.5***	
FY-2014	85.0	69.6	13.9	20.9	17.4	13.2	
FY-2015	72.9	56.9	11.4	17.1	14.2	14.2	
Nov. 2015	***56.7***	***51.4***	***10.3***	***15.4***	***12.9***	***14.5***	5/
FY-2016	50.9	48.4	9.7	14.5	12.1	14.5	5/
FY-2017	47.0	46.4	9.3	13.9	11.6	-	
FY-2018	47.2	-	-	-	-	-	

Source: IMF Finance Department.
1/ Italicized figures reflect calculations at the time of the respective 2010, 2012, and 2014 reviews (see Review of the Adequacy of the Fund's Precautionary Balances, 8/25/10 and Review of the Adequacy of the Fund's Precautionary Balances, 1/15/14) and as of November 2015. Figures shown between FY 2002 and FY 2015 are actual outturns, not projections, and hence differ from the figures in the equivalent tables from previous review papers. Figures for FY 2016 - FY 2018 are based on projections.
2/ For July 2010, February 2012, November 2013 and November 2015, the figure shown reflects the average credit during the previous twelve months (August 2009 - July 2010, March 2011 - February 2012, December 2012 - November 2013, and December 2014 - November 2015, 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.
5/ As of end-October 2015, end second quarter of financial year 2016.

25. However, in staff's view, lowering the indicative target from SDR 20 billion at this stage would be premature. The Fund's lending portfolio remains heavily concentrated in a few large exposures, including on-going programs with high risks, and has only recently experienced the emergence of substantial, albeit temporary, new arrears. Also, the global outlook remains highly uncertain, with the potential for significant new demands for Fund lending against a backdrop of several major transitions, including the expected asynchronous normalization of monetary conditions in major advanced economies, with potential spillover effects on capital flows and exchange rates, the end of the commodity cycle, and the rebalancing of growth in China. A further important consideration is the very limited capacity of the burden sharing mechanism in the current low interest rate environment, which would imply a greater role for precautionary balances in the event of significant new arrears. These considerations are elaborated below.

26. The Fund's lending portfolio remains heavily concentrated, with several large individual exposures. As noted, the three largest exposures account for about three-quarters of total credit. Two of these—Greece and Ukraine—involve exceptional challenges and high risks for the Fund. These risks have already materialized in the case of Greece, and both programs have been subject to lengthy delays in completing reviews, highlighting the challenges in securing broad political support for needed reforms. While prospects for a new program with Greece remain uncertain, the Fund's exposure to Ukraine alone is projected to peak at about SDR 13 billion, and the Fund's combined exposure to these two countries could peak at more than SDR 22 billion. Moreover, Greece and Ukraine combined face substantial repurchases to the Fund in the next five years amounting to about SDR 14 billion. This suggests that, while total credit outstanding has declined significantly, the risks associated with the Fund's lending portfolio remain elevated.

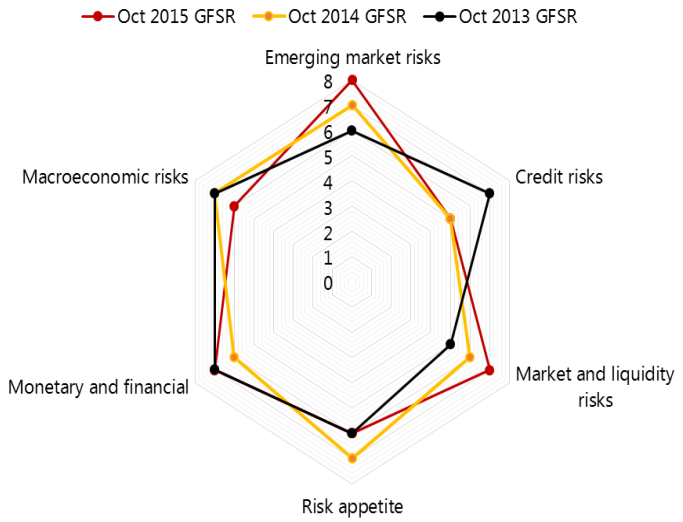
Text Table. Greece and Ukraine Exposures 1/
(In SDR billions)

Fiscal Year	Combined Credit Outstanding	Combined Scheduled Repurchases
2016	20.0	2.5
2017	22.2	1.3
2018	22.0	2.0
2019	20.4	2.9
2020	17.5	2.9
2021	14.7	2.8

Source: IMF Staff calculations.
1/ FY2016 includes only projected repurchases as of end-November 2015.

27. Moreover, it is too early to be confident that the Fund's lending cycle has peaked. As discussed in the fall 2015 *World Economic Outlook* and *Global Financial Stability Report*, the global outlook remains highly uncertain and subject to substantial downside risks associated with several major transitions (text figure). These include the potential spillovers on global financial conditions and exchange rates from monetary policy developments in major advanced economies, including higher interest rates in the United States, spillovers from the rebalancing of growth in China, and the adverse impact on commodity producers of the end of a long cycle of high commodity prices. In this challenging environment, there are already signs that a number of countries that weathered the earlier global financial crisis are now facing increased strains, and new loan demand could emerge in the period ahead either on a preventive basis or to help address these strains. For example, a moderate stress scenario, affecting emerging market economies with low reserve adequacy (ARA metrics) and other BOP vulnerabilities that gives rise to average access

Text Figure. GFSR Global Financial Stability Map



Source: IMF Global Financial Stability Reports, IMF Finance Department.

of 400 percent of quota (in line with the average non-precautionary access over the last 15 years), points to additional credit needs in the range of SDR 20 to 30 billion (see Annex III). The observed pattern of credit cycles over the past three decades (see Figure 9) also suggests that, should a further upturn in lending emerge, the new peak Fund credit outstanding may again be higher than the last peak. (A fuller discussion of these trends in credit peaks is provided later in the section on the minimum floor for precautionary balances).

28. As noted, the Fund has maintained a substantial lending capacity to address these risks. Through the expansion of the NAB and the 2012 bilateral borrowing agreements, the Fund's total lending capacity has increased to a record high (SDR 665 billion, Table 2, Figure 9), roughly four times the level prevailing prior to the global crisis. While not formally part of the framework for setting the indicative target, Directors agreed in 2012 to include credit capacity among the indicators for assessing where to set the target for precautionary balances. The rationale is that Fund lending can change rapidly with little advance notice, so that current credit outstanding may not fully capture future exposure to credit risk. The Executive Board has in the past discussed a precautionary balances target to credit capacity ratio of 6 percent.[18] Applying this ratio to the Fund's current credit capacity would yield an indicative target of over SDR 40 billion, roughly double the current target.[19]

29. Commitments under precautionary arrangements also remain large and have declined only modestly since the last review. The outstanding stock of precautionary commitments currently stands at SDR 71 billion, compared with SDR 77 billion at the 2014 review.[20] Under the current framework, these commitments are taken into account judgmentally when setting the target for precautionary balances rather than explicitly in calculating the indicative range. While most Directors supported this approach at the last review, a number remained of the view that these commitments should be included in the calculation of the credit measure or taken into account more explicitly, and staff was urged to continue to monitor this issue in light of experience.

30. The incidence of drawings under precautionary arrangements remains low and there have been no drawings to date under the FCL, which accounts for the bulk of precautionary arrangements. Staff has noted in the past that applying the historical drawing rate under precautionary arrangements to the stock of such commitments would have only a modest impact on the calculated mid-point.[21] Also, updated stress scenarios of varying severity on member countries'

[18] See *Review of the Adequacy of the Fund's Precautionary Balances* (1/15/14).

[19] The expiration of the 2012 Borrowing Agreements in October 2016 would reduce the Fund's lending capacity by a third. Six percent of this reduced lending capacity is about SDR 27 billion. The Board will consider the future of the 2012 Borrowing Agreements later this year.

[20] The stock of precautionary arrangements includes FCL and PLL arrangements and SBAs treated as precautionary by the authorities.

[21] Since 2000, 59 GRA arrangements have been treated as precautionary at the time of approval and drawings were made under only four of these arrangements. Purchases under these four arrangements amounted to (continued)

less than 1 percent of the total precautionary commitments since 2000 (less than 3 percent when adjusting for consecutive FCL and PLL arrangements).

reserve adequacy, although only illustrative, suggest that members with precautionary arrangements are only likely to draw in the most extreme stress scenarios (global shocks at the 10th and 5th percentile) (see Annex V).[22] One possible approach to modifying the framework would be to include commitments under precautionary arrangements explicitly but with a lower coverage ratio, say 10 percent rather than 20-30 percent for credit outstanding. This approach would add about SDR 7 billion to the current mid-point, but it would also be somewhat arbitrary and may need to be revisited in the event that the Fund's precautionary lending role were to change in the future. Alternatively, the current approach of taking these commitments into account judgmentally could be continued, providing an additional argument for maintaining a target significantly above the mid-point of the indicative range. On balance, and given that the incidence of drawing under precautionary arrangements remains very low, staff proposes to follow the latter approach, with the understanding that this issue should be kept under review in light of future developments.

31. A further important consideration in assessing the target for precautionary balances is the continued very low capacity of the Fund's burden-sharing mechanism. This mechanism has played a key role in the past in protecting the Fund's income position in the face of unpaid charges by members in arrears and thus supporting the Fund's ability to avoid recognition of an impairment loss under IFRS (Box 2). However, as discussed in more detail in Annex III, the residual capacity of the burden sharing mechanism is currently very low—roughly SDR 0.3 million after taking account of existing arrears by Somalia and Sudan—and only a small fraction of the potential unpaid charges for an illustrative large borrower.[23] Even assuming a rise in the SDR interest rate to 1 percent in two years, residual burden sharing capacity would still be only about SDR 60 million (assuming current levels of credit and remunerated reserve tranche positions), substantially less than annual charges from the Fund's largest borrowers. In these circumstances, a greater burden of any new arrears would fall on precautionary balances. Specifically, the direct financial impact of new unpaid charges would be a loss of Fund income, which could be amplified if the Fund was also required to record an impairment loss, for example associated with arrears on repurchases. By way of illustration, prolonged arrears by an average large borrower could imply cumulative net income losses of nearly SDR 10 billion between FY 2017-21, which would reduce precautionary balances to about one third of their current level and leave a much diminished buffer to handle additional difficulties (Annex III). Thus, the very limited capacity of the burden sharing mechanism provides an additional argument for maintaining the SDR 20 billion indicative target for precautionary balances in current circumstances.

[22] The analysis employs univariate kernel distributions of changes in key external variables in past crisis episodes across a sample of emerging market economies. The distributions are then used to shock simultaneously 2014 data on exports, FDI, short-term debt and amortization of medium- and long-term debt of members with a current FCL arrangement (Colombia, Mexico, and Poland). Adequacy of the implied remaining level of reserves is then assessed against each country's stock of external liabilities as determined by the Fund's Reserve Adequacy Metric (RAM).

[23] Assuming credit in arrears of SDR 15 billion and an implied surcharge rate of 1.5 percent (the projected average over the next three years), the potential reduction in lending income could exceed SDR 375 million a year.

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. 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 SCA-1 balances, which are part of precautionary balances, against possible credit default (both overdue charges and repurchases) in a contingent account (the SCA-1).[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 Annex I). 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.

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 or if principal in arrears exceeds SCA-1, 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.[2] 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.[3] 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.[4]

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. The SCA-1 balance allows the Fund to uphold an equivalent amount of impaired credit at full face 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 and stress tests of the Fund's balance sheet that illustrate the critical role of precautionary balances.

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

[1] 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.

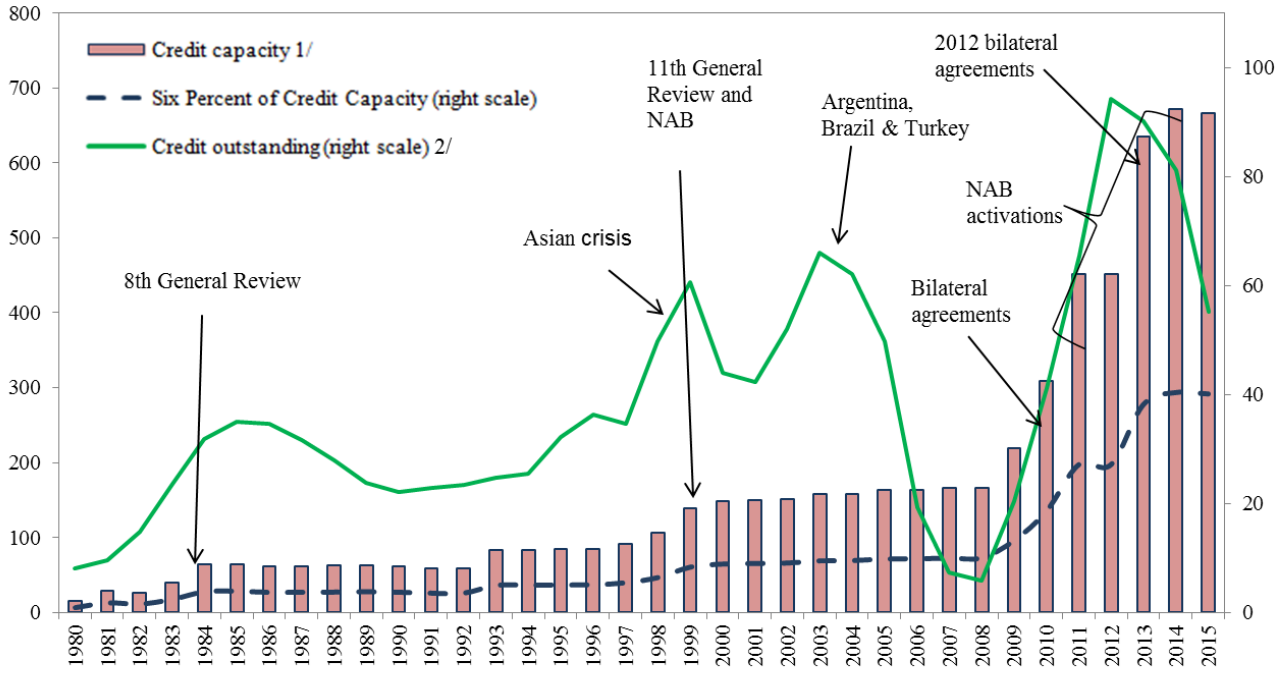
[2] Under IFRS, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows.

[3] 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 is reversed.

[4] 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; hence these limitations would need to be taken into account in addressing impairment losses in the context of arrears.

32. On balance, staff believes that the SDR 20 billion indicative target should be maintained for the time being. While this would be above the upper end of the calculated range under the framework, maintaining the current target would seem prudent to help protect the Fund's balance sheet given the substantial on-going credit risks, large existing commitments under precautionary arrangements, potential for significant new loan demand, and the current very low capacity of the burden sharing mechanism.

Figure 9: Credit outstanding and Credit Capacity, 1980-2015
(in billions of SDRs, end of financial year)



Source: IMF Finance Department.
1/ Credit capacity is approximated as the sum of the quotas of FTP members, resources under the NAB, and resources under the effective 2012 loan and note purchase agreements, and excluding prudential balances. At end-November 2015, credit capacity under the NAB and the 2012 agreements stood at SDR 291.7 billion and SDR 214.8 billion, respectively, both net of prudential balances.
2/ As of end-November 2015.

B. The Pace of Accumulation

33. The projected pace of accumulation of precautionary balances has declined sharply since the 2014 review (Figure 10). The previous projections suggested that the SDR 20 billion target would be reached by FY 2017-2018. However, updated projections now suggest that the indicative target is unlikely to be reached in the medium term given the markedly lower path now projected for Fund credit as well as the continued low interest rate environment (which affects investment returns and the implicit returns on the Fund's interest-free resources). The pace of reserve accumulation will also be affected by upcoming decisions on the level and thresholds for surcharges and on the basic margin for the rate of charge. For example, if the current surcharge threshold of 300 percent of quota were to be adjusted to 150-200 percent following the effectiveness of the 14th Review quota increases, precautionary balances could still reach close to SDR 19 billion by FY 2021. This scenario assumes that the margin for the basic rate of charge remains at 100 basis points. However, if the surcharge threshold was kept unchanged

(at 300 percent) following the quota increases, the projected pace of accumulation of precautionary balances would slow further, reaching only about SDR 17.5 billion by FY 2021.[24]

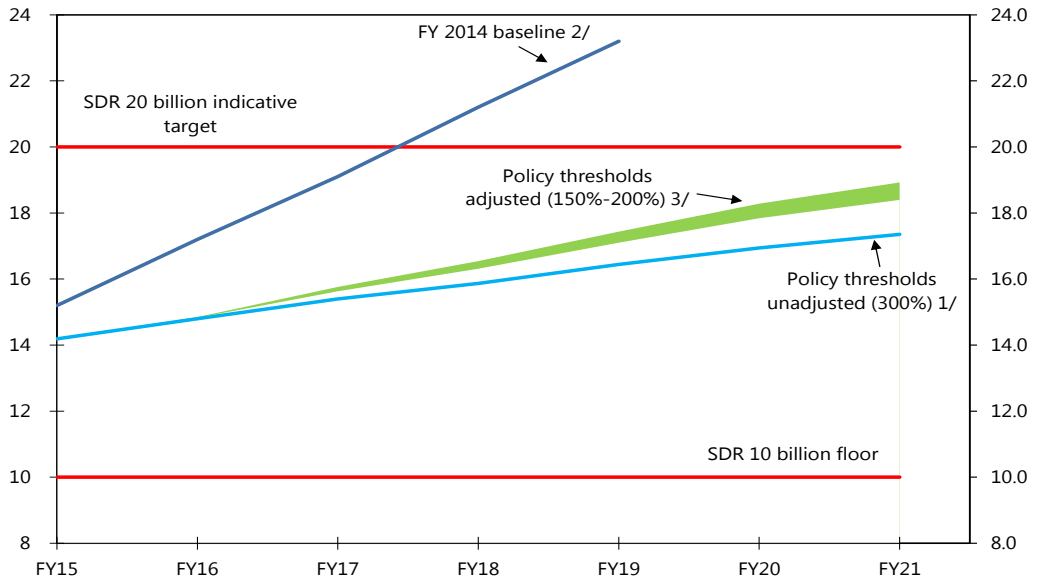
34. Despite the slower pace of reserve accumulation now projected, staff does not believe it would be appropriate to take additional steps to achieve the SDR 20 billion target at this point. Further significant reserve build up is still projected in the next 2-3 years and this will allow time for greater clarity to emerge on the future path of loan demand and the evolution of credit risks. Also should global economic risks lead to an upturn in Fund credit, the pace of precautionary balance accumulation should itself pick up, as a result of higher credit and associated income flows.[25]

35. Directors will have a further opportunity to review the pace of accumulation of precautionary balances at the FY 2017-18 income review expected in April 2016. In addition, given increased risks associated with the lower pace of accumulation, developments will be carefully monitored between reviews.

[24] This projection again assumes that the margin for the rate of charge is unchanged at 100 basis points. The margin would need to be increased by about 75 basis points to offset the loss of income through FY 2021 if the surcharge threshold were kept unchanged, or by about 25 basis points if the surcharge threshold were lowered from 300 to 200 percent of quota. Conversely, a reduction in the margin of 25 basis points would reduce income in FY2017-21 and lower projected precautionary balances by over SDR 0.5 billion.

[25] In addition, the projections in Figure 9 do not include commitment fees for undrawn balances, particularly for current FCLs, which are only recognized as income once these arrangements expire. To give a sense of how large commitment fees can be, such fee income was about SDR 500 million in FY 2015.

Figure 10. Precautionary Balances Under Different Policy Scenarios, 2015-2021
(In billions of SDRs, end of financial year)



Source: IMF Finance Department.

1/ Illustrates projected accumulation of precautionary balances under current approved arrangements, assuming effectiveness of the 14th Review quota on February 1, 2016 and unchanged policy thresholds for surcharges and commitment fees.
2/ As in The Consolidated Medium -Term Income and Expenditure Framework (4/22/14).
3/ Illustrates projected accumulation of precautionary balances under current approved arrangements, assuming effectiveness of the 14th Review quota increases on February 1, 2016 with adjustments to the policy thresholds for surcharges and commitment fees to partially offset the incentive and revenue effects of the quota increase. At the upper bound of the range, the threshold for level-based surcharges is reduced to 150 percent from 300 percent of quota after the general conditions for the effectiveness of the 14th Review quota increases have been met. 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. At the lower bound of the range, the threshold for level-based surcharges is reduced to 200 percent from 300 percent of quota after the general conditions for the effectiveness of the 14th Review quota increases have been met.

MINIMUM FLOOR

This section assesses the adequacy of the current level of the floor and proposes that it be increased from SDR 10 billion to SDR 15 billion. It also revisits the allocation of income between the general and special reserves.

A. History and Role of Precautionary Balances Floor

36. As noted above, the framework established in 2010 includes a minimum floor for precautionary balances which has so far been set at SDR 10 billion. There were two broad reasons for including a floor in the framework. One is that precautionary balances represent an important source of Fund income, and the assumption of a certain minimum level of precautionary balances is consistent with the maintenance of a sustainable income position under the new income model. The second reason is that Fund credit is highly volatile and can increase sharply with little notice, whereas it can take considerable time to build precautionary balances. Thus, the Fund needs

to maintain an adequate buffer to protect against an unexpected rise in credit and credit risks.[26] The initial floor of SDR 10 billion was broadly in line with the historical 10-year average of credit outstanding in 2010, and also consistent with the Fund's practices over the previous decade, when a target of SDR 10 billion had been maintained despite substantial fluctuations in actual credit outstanding. Staff proposed at the time that the floor be kept under review and possibly adjusted in light of longer-term trends in Fund lending.[27]

B. Reassessing the Floor

37. Based on its twin objectives, the floor should be assessed based on both income and credit risk considerations. While the floor has remained unchanged since 2010, the Board has reiterated at each review that it should be kept under review in light of changing conditions and longer-term trends in Fund lending.

38. When the current floor was established in 2010, at SDR 10 billion, it was seen as broadly consistent with maintaining a sustainable medium term income position. At the time, it was assumed that the SDR interest rate would, in a "steady state," low credit, environment (SDR 10 billion) revert to its historic average of 3.5 percent. However, as noted in the April 2015 update of the medium-term income projections, a higher level of precautionary balances of about SDR 15-16 billion could be needed to maintain a sustainable income position in the event that SDR interest rate stabilized at 2.5 percent and that the premium earned in the FI account was 50 rather than 100 basis points, which is more plausible given the investment strategy for the FI that been subsequently agreed.[28]

39. Staff has updated its analysis of the steady state income position based on revised assumptions. The revised assessment is also more forward looking and now builds in an annual income buffer designed to ensure that in a sustained low credit environment the income position could absorb the impact of moderate inflation on fixed real expenses. As in the past, the steady state low credit environment is assumed to be reached in 2025. However, reflecting analysis of the gradual upward trend—and the higher long-term average—of Fund credit outstanding, a higher steady state credit level of SDR 20-30 billion is assumed.[29] As in the past, it is assumed that no surcharge income would accrue in the steady state and the margin for the rate of charge would

[26] A key lesson from the recent global crisis is that periods of stability can sow the seeds for subsequent periods of instability through investment, asset price bubbles, and increased financial sector fragility. See *The Shifts and the Shocks, What We've Learned—And Have Still to Learn—from the Financial Crisis*, by Martin Wolf, 2014.

[27] See *Review of the Adequacy of the Fund's Precautionary Balances* (8/25/10).

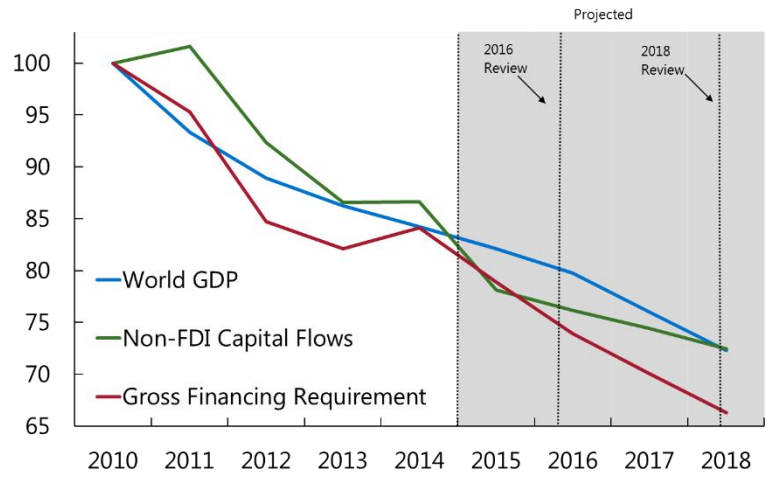
[28] See *The Consolidated Medium Term income and Expenditure Framework* (4/10/15). SDR interest rate basket component forwards reflected a 2025 rate of 2.35 percent on December 21, 2015.

[29] The previously used steady state credit of SDR 10 billion is close to historic lows. A conservative, but reasonable, way to evaluate the steady state is to set it at one standard deviation below its long-term average. Using the annual time series of GRA real credit outstanding over 1960-2015 in real SDRs would suggest a steady state credit outstanding of SDR 20 billion over the period. Since 1990, credit outstanding has been higher on average: using this shorter timeframe would lead to a higher steady state of SDR 29.5 billion.

remain at its current level of 100 basis points. In this steady state, the SDR interest rate is assumed to stabilize at around 3 percent, moderately lower than in the previous projections, and the excess return over the SDR rate attained in the FI subaccount is also assumed to be lower at 50 basis points. As in earlier projections, a payout of 3 percent a year from the endowment account is assumed, together with a constant real value of the IA, credit outstanding, and Fund expenses. Under this updated assessment, the Fund's budget would be balanced by the income generated by precautionary balances of SDR 14.5-21.2 billion (at credit outstanding at the low and high ends, respectively, of the SDR 20-30 billion range).[30] This suggests that a floor of SDR 15 billion would be more appropriate to maintain a sustainable income position in the steady state.

40. Staff analysis suggests that the current floor is also low relative to credit levels that may reasonably be expected to arise during the next credit cycle. Fund credit cycles have increased steadily over time. This is consistent with increased openness, increases in the level and volatility of capital flows, and the increased complexity of economic interactions, all of which give rise to larger credit cycles (Figures 2 and 9). As the floor has remained unchanged since its adoption in 2010, it has declined significantly relative to a range of simple global metrics and would be expected to continue to decline going forward (see text figure). Given this upward trend in Fund credit cycles, a floor of SDR 15 billion seems more appropriate than SDR 10 billion from a credit risk perspective, especially in light of the experience since the crisis.[31]

Text Figure. Precautionary Balance Floor Relative to Economic Variables (Index 2010=100, 2010-2018)



Source: IMF Finance Department.

41. Based on these twin considerations, staff proposes that the minimum floor be raised to SDR 15 billion. This higher floor would be more consistent with a sustainable medium-term income position and with longer term trends in Fund credit, thereby providing an additional buffer to protect against unexpected increases in credit risks.

[30] In gauging the size of the floor, consideration should also be given to the significantly higher volatility of income associated with IAS 19 (see Figure 6).

[31] Applying the underlying trend to the average Fund credit outstanding since 1960 also suggests a floor of about SDR 15 billion.

C. Allocation of Income

This section revisits the allocation of Fund income between the special and general reserves, and proposes an approach that would ensure on-going allocations to the special reserve, which is the first line of defense against net income losses.[32]

42. The Articles permit the GRA net income to be distributed to members or placed to the general or special reserve.[33] The Fund has two reserves, the general reserve and the special reserve. Both reserves can be used for the same purposes, except that the special reserve cannot be distributed to members (for the details on both reserves see Box 1). Under a policy decision from 1957, the Fund uses the special reserve as the first line of defense in the event of income losses.

43. The Fund has a long-standing practice of allocating part of its net income to the special reserve (Figure 11).

- From 1958 to 1971 (prior to the Second Amendment), the special reserve was exclusively funded with the income from the gold investment program (independent income), while net income from operations was allocated to the general reserve (See Box 1).
- By the late 1970s, the special reserve had been depleted following six years of administrative losses. When the Fund again had net income in the following years, the Board decided to place it to the special reserve.
- From 1982 onwards, a net income target was set each year as a certain percentage of reserves (initially 3 percent, raised to 5 percent in FY 1986), and all net income so generated was placed to the special reserve. The net income target was temporarily raised to 7.5 percent of reserves in FY 1987-88 as part of the burden sharing agreement for the emergence of arrears.[34]
- Following the introduction of the surcharge policy in 1998, the practice of placing net income from operations (other than surcharges) to the special reserve (in line with the net income target of 5 percent of reserves) was maintained, while an amount of net income equivalent to surcharge income was placed to the general reserve. This approach has been broadly maintained until the present day.

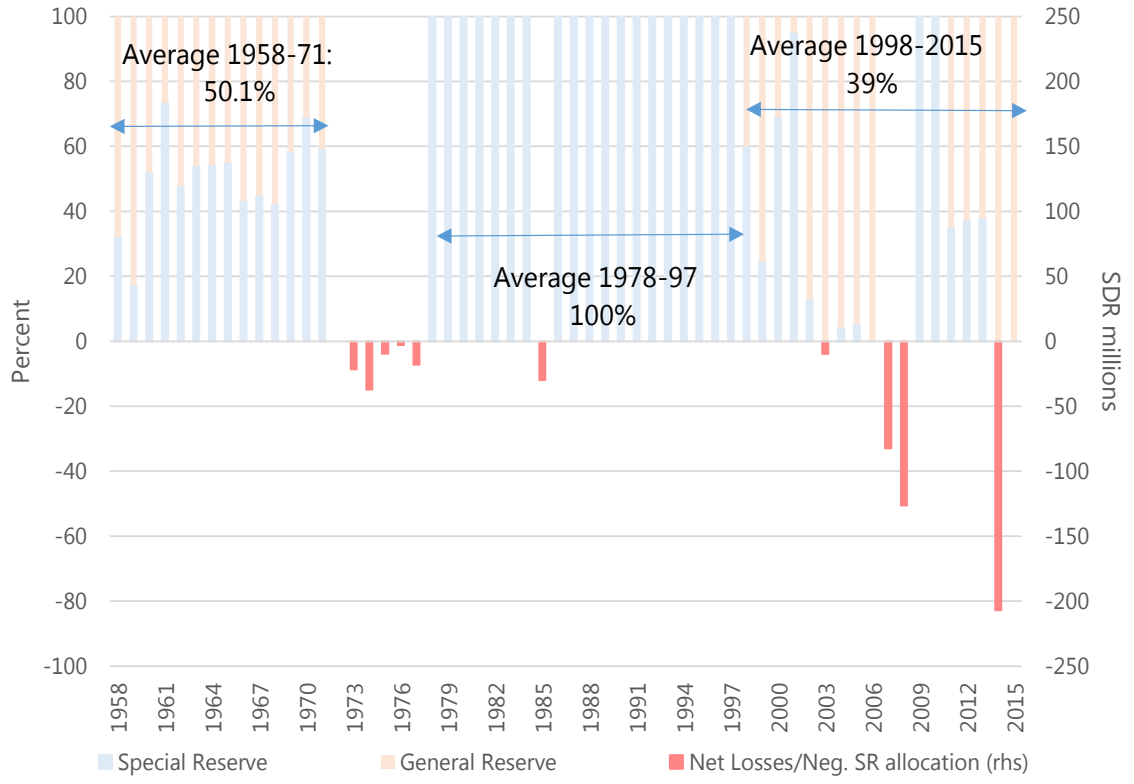
[32] This issue was raised in the context of the annual income discussion in April 2015. Staff initially proposed placing all GRA net income for FY 2015, including surcharges, to the special reserve to help bring the special reserve closer to the precautionary balance floor. While some Directors agreed with this proposal, other Directors noted that more time was needed to consider the issue. It was agreed to continue the current income allocation practice and revisit the issue in the context of the current review of the adequacy of the Fund's precautionary balances.

[33] Article XII, Section 6(a).

[34] To further mitigate the impact of potential losses due to overdue obligations, the Board established the burden sharing mechanism and began accumulating balances in the SCA-1 Account in 1987.

- In the period FY 2007-08, there was no net income that could be placed to reserves and shortfalls that were charged against the special reserve.
- During FY 2009-10, surcharge income was used to fund administrative expenses and all net income was placed to the special reserve, including net income attributed to surcharges.
- From FY 2011 onwards, the current practice of allocating net income from sources other than surcharges to the special reserve and income attributable to surcharges to the general reserve was resumed.

Figure 11. Reserve Allocation and Net Income Losses, 1958-2015 1/
(End of financial year)



Source: IMF Finance Department.
1/ In FY 2014, the special reserve reflects an allocation of net income of SDR 1.2 billion and a charge of SDR 1.4 billion associated with the amended IAS 19 retroactive adjustment.

44. The current income allocation practice reflects the distinction between operational income and surcharge income that was relevant under the old system for setting the margin for the rate of charge. Under that system, the margin for the rate of charge was set annually to achieve a net income target that would cover the Fund's expenses and allow for an increase in reserves of 5 percent, which would be placed to the special reserve to ensure a steady build up over time. When the surcharges policy was introduced in the late 1990s, surcharge income was not taken

into account in deriving the net income target, as it was expected to be both temporary and volatile. It was recognized that inclusion of income of such unpredictable nature could significantly distort the rate of charge and result in large fluctuations in any given year. Hence, it was not considered to be part of the Fund's "regular" income and was placed to the general reserve.

45. However, the distinction between regular and surcharge income underpinning the current allocation practice no longer seems fully relevant under the new system for setting the rate of charge. The margin for the rate of charge is now set for a two-year period to cover the intermediation costs of lending operations in the GRA and contribute to reserve accumulation without setting a specific target for reserve accumulation (Box 4). The assessment of the adequacy of reserve accumulation that is called for in setting the margin already takes into account accumulation from surcharges as well as the margin itself. It is therefore timely to revisit the issue of how income is allocated between the special and general reserve, taking account of the fact also that surcharge income has become a more permanent feature of the Fund's financing arrangements than was envisaged originally.

46. Ideally, the allocation mechanism should ensure adequate additions to the special reserve when Fund income is positive, recognizing that the special reserve serves as the first line of defense in the event of income losses. The current approach does not ensure this, however, as net operational income (not attributed to surcharges) could be low or even negative, while the Fund's overall net income (including surcharge income) remains positive. Indeed, since 2003, there have been four occasions in which additions to the special reserve have been zero or negative, while the Fund's overall net income has been positive.[35] The likelihood of such an outcome has increased with the greater volatility of year-to-year income as a result of IAS 19 timing adjustments, as discussed above.[36]

47. Several possible approaches could be considered going forward. One is to maintain the current distinction between regular and surcharge income, and continue to place income equivalent to the latter to the general reserve. While consistent with practices over the past 2½ decades, this approach does not seem consistent with the new rule for the margin for the rate of charge set for a two-year period, which does not distinguish between regular and surcharge income. Moreover, this approach could result in periods with little or no accumulation in the special reserve, even when the overall level of reserves continues to grow. If the special reserve remains the first line of defense against income losses, it could also lead to a gradual depletion of the special reserve over time. Such an approach could raise questions about the Fund's broader commitment to maintaining an adequate level of reserves if an ever growing share is held in the general reserve, which could at any point be distributed to members based on a Board decision with the requisite 70 percent majority.

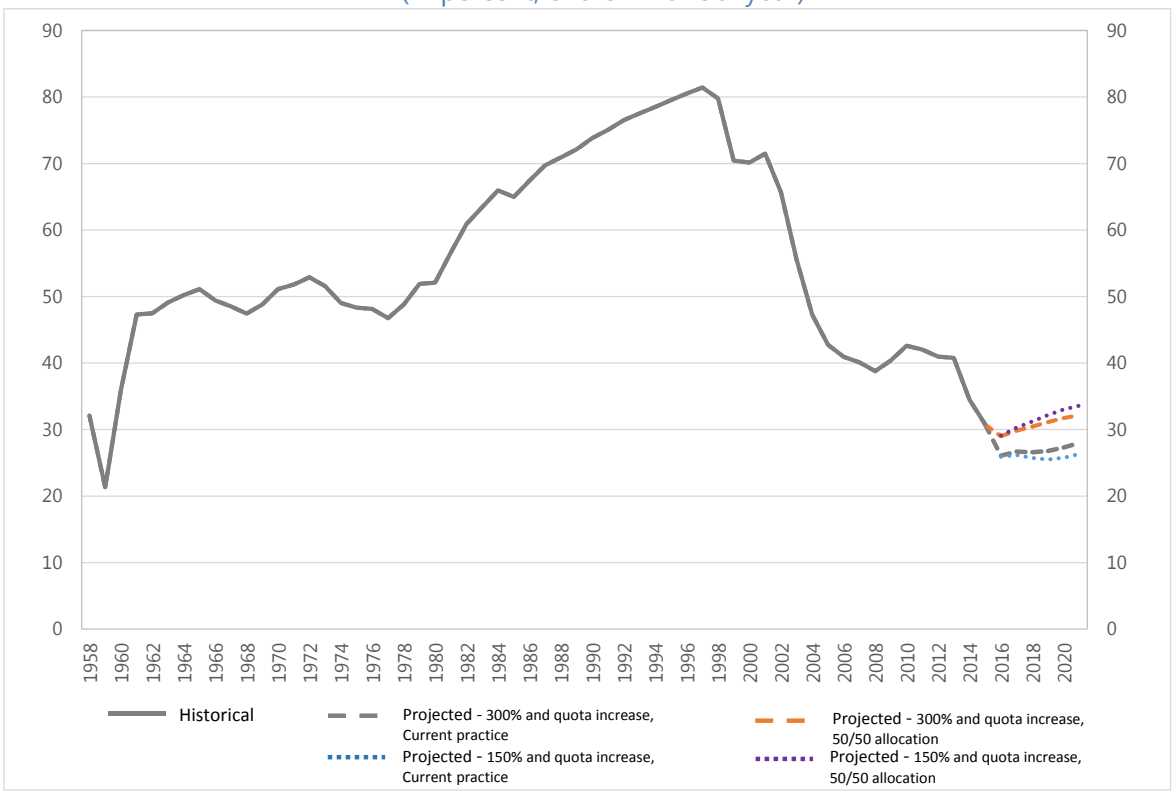
[35] These are financial years 2003, 2006, 2014, and 2015. In financial years 2007 and 2008, the special reserve was also reduced but the Fund suffered an overall loss.

[36] In FY 2015, the Fund's net income including surcharge income was placed to the general reserve which had the effect of the surcharge income absorbing the slight income shortfall from operations (after the IAS 19 timing adjustment).

48. A second alternative, proposed by staff in April 2015, would be to place all GRA net income to the special reserve for a period to restore the pace of accumulation of the special reserve relative to the precautionary balances floor. This approach would be consistent with the concept of the floor in the current precautionary balances framework, which is intended to signal a minimum level below which reserves would not be considered available for future distribution. Allocating reserves up to the floor to the special reserve would send a strong message reinforcing this signal. However, as some Directors noted at the time of the April 2015 discussion, it would also introduce an element of rigidity in that placements to the special reserve may not be distributed to members and could not be changed by a future Board decision, whereas the Board could at any point revisit the level of the floor and decide to raise or lower it.

49. Balancing these considerations, staff proposes a third approach, which would allocate a share of total net income in future to both the special and the general reserve. Instead of being based on a distinction between "regular" income and surcharge income, future allocations would be based on a ratio of total net income set with a view to providing a meaningful accumulation to the special reserve consistent with its role as the first line of defense against income losses. The precise ratio could be revisited over time in light of the overall level and mix of precautionary balances. For example, if the level of the special reserve was to ever approach the minimum floor, consideration could be given to suspending further accumulations and adding all net income to the general reserve.

Figure 12. Special Reserve as a percentage of Precautionary Balances, 1958-2021
(In percent, end of financial year)



Source: IMF Finance Department.

50. The impact on reserve accumulation over the medium term of allocating different shares of total net income to special and general reserves is illustrated in Figure 13. As noted earlier, these accumulations are sensitive to policy decisions by the Board in the context of the expected 14th Review quota increase and the next review of Fund income. Based on current projections and policy options:

- Equal allocations of projected net income to the two reserves would result in the special and general reserves increasing by a range of about SDR 1.6-2.4 billion to a total of about SDR 5.6–6.4 and 10.6–11.4 billion, respectively, by FY 2021. The special reserve would then account for about a third of precautionary balances.

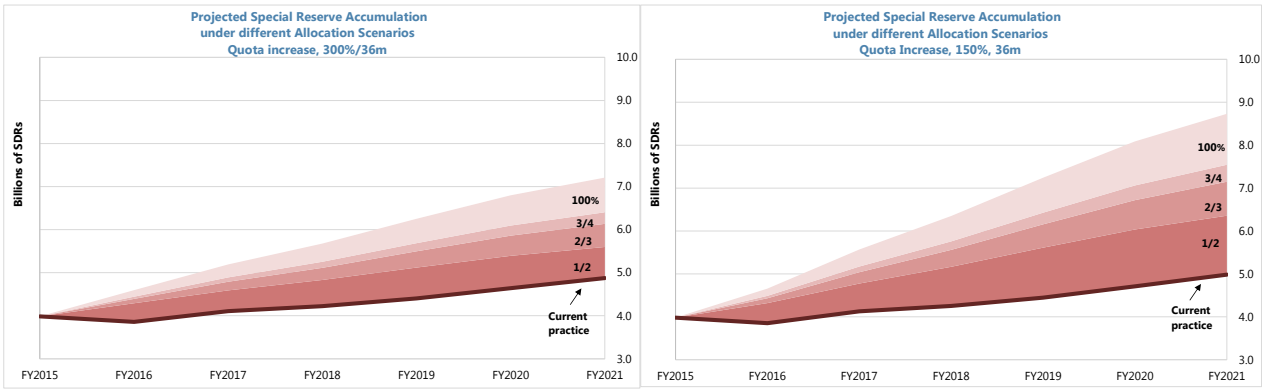
- Allocating two-thirds of projected net income to the special reserve would result in the special and general reserves increasing by a range of about SDR 2.1–3.1 and SDR 1.1–1.6 billion to a total of about SDR 6.1–7.1 and 10.1–10.6 billion, respectively, by FY 2021. At the end of the period, the special reserve would account for 35–38 percent of precautionary balances.

- Allocating three-quarters of net income to the special reserve would result in the special and general reserves increasing by a range of about SDR 2.4–3.5 and SDR 0.8–1.2 billion to a total of

about SDR 6.4–7.5 and 9.8–10.2 billion, respectively, by FY 2021. At the end of the period, the special reserve would account for 36–40 percent of precautionary balances.

- By way of comparison, allocating all income to the special reserve would bring the special and general reserve to about SDR 7.2–8.7 billion and SDR 9 billion, respectively. As noted, these projections are sensitive to developments in credit outstanding and to future decisions regarding the level and thresholds for surcharges and the margin for the basic rate of charge.

Figure 13: Projected Special Reserve Income Allocation Scenarios, 2015-2021 1/
(In billions of SDRs, end of financial year)



Source: IMF Finance Department.

1/ Placement of annual GRA net income to the special reserve assuming: current allocation practice, 50 percent, 66 percent, 75 percent, or 100 percent allocation.

51. Staff sees merit in adopting an approach that initially places one-half to two-thirds of net income (including surcharge income) to the special reserve. This would better ensure an adequate accumulation of balances in the special reserve over time. While the precise ratio could be revisited periodically, staff considers that such an approach could strike a reasonable balance between the need to bolster this first line of defense and the risk that such allocations could constrain future distribution decisions.

CONCLUSIONS AND ISSUES FOR DISCUSSION

52. This paper has reviewed the adequacy of precautionary balances and proposes that the medium-term target should remain unchanged at SDR 20 billion. The review follows the rules-based framework adopted in 2010, and takes account of developments since the last review in 2014. The paper concludes that, while credit outstanding has fallen sharply, financial risks facing the Fund remain high. The Fund's lending portfolio is heavily concentrated, including in on-going programs with high risks, and has recently experienced substantial, albeit temporary, new arrears. At the same time, existing loan commitments remain large, and the uncertain global outlook means there is potential for significant new demand for Fund lending. A further important consideration is the very limited capacity of the burden sharing mechanism, which increases the potential reliance on precautionary balances in the event of large new arrears.

53. The paper also proposes that the minimum floor for precautionary balances be raised from SDR 10 billion to SDR 15 billion. This higher level would be more consistent with the maintenance of a sustainable income position in the medium term. It would also provide a larger buffer to protect against an unexpected rise in credit risks, especially in light of the transitions mentioned above and secular increases in global economic interconnectedness.

54. While the projected pace of reserve accumulation has slowed sharply, staff does not see a compelling case for taking additional steps at this point to reach the SDR 20 billion target. Significant further reserve buildup is projected in the next 2-3 years and this will allow time for greater clarity to emerge on the future path of loan demand and the evolution of credit risks. In addition, should global economic risks lead to an upturn in Fund credit, the pace of precautionary balance accumulation should itself pick up, as a result of higher credit and associated income flows.

55. The paper also revisits the methodology for allocating annual income between the special and the general reserve. It proposes that instead of the current practice of allocating surcharge income to the general reserve and net operational income to the special reserve, total future net income should be divided between the special and the general reserve without distinguishing between the sources of income that generate reserves. In the near term, an allocation of one-half to two-thirds of total income to the special reserve would seem appropriate. The allocation share could be reviewed periodically, including in the event that special reserves were to begin to approach the precautionary balances floor.

56. Directors may wish to comment on the following issues:

- Do Directors agree that the indicative medium-term target for precautionary balances should be kept unchanged at SDR 20 billion?
- Do Directors agree that the minimum floor should be increased from SDR 10 billion to SDR 15 billion based on income and credit risk considerations?

- Do Directors agree that it would not appear necessary at this point to take additional steps to accelerate the pace of precautionary balance accumulation?

- Do Directors agree that, instead of the current practice of allocating net income not attributed to surcharge income to the special reserve and net income attributed to surcharges to the general reserve, it would be appropriate in future to allocate part of overall net income to both reserves? What are Directors' views on the staff proposal that initially one-half to two-thirds of net income should be allocated to the special reserve given its role as the first line of defense against income losses?

Box 3. Overview of Other IFIs' Capital Adequacy Frameworks

This box updates the summary of capital adequacy frameworks in selected International Financial Institutions (IFIs) presented during the 2010, 2012 and 2014 reviews.[1,2] In determining their approaches, most other IFIs which, unlike the Fund, borrow from capital markets, seek to preserve a strong financial footing and maintain high foreign currency long-term credit rating (AAA).

Credit risk. The IBRD, the IDB, and the ADB employ, or employed until recently, an explicit target for equity to loan types of measures. Since the global crisis, these IFIs have gradually moved towards a more comprehensive approach to assess capital adequacy though credit risks still accounts for the major component of required capital. In the same direction, the EBRD, AfDB, and the BIS have similar frameworks built on risk-based capital measures, where the economic capital available to support risk taking is based on an assessment of the institution's loss absorbing capacity. Available capital typically comprises paid-in capital and reserves but excludes callable capital. While definitions vary according to the institutions, in general, economic capital consumption is calculated by taking into account unexpected financial losses that the institution may incur subject to a targeted solvency level:

- The 2008 **IBRD** set a target for the equity-to-loans ratio in the range of 23-27 percent. The minimum equity-to-loans ratio was reduced to 20 percent from 23 percent in FY 2014, in light of improvements in portfolio credit risk; the ratio at end-June 2015 stood at 25.1 percent. The minimum 20 percent equity-to-loans ratio is based on an internal income-based stress test sufficient to ensure that income remains positive following a large nonaccrual shock.
- The **IDB** had until 2009 employed a formal target for its equity-to-loans ratio of 32-38 percent. In 2010, it introduced the capital utilization ratio (CUR) as the main indicator of capital adequacy and in 2015 concluded a comprehensive review of its capital adequacy policy framework. The policy refers to Capital Coverage Ratio (CCR) as the main indicator of capital adequacy. The IDB continues to publish the equity-to-loans ratio (32.4 percent at end-2014) in its information statements to investors. The CCR is the ratio of adjusted equity to base capital requirements, which covers financial risks, including credit, market, defined benefit pension plan, and operational risks. The CCR includes also a buffer zone placed on top of the minimum capital.
- The **ADB** had an equity-to-loans ratio target of 35 percent until 2008; under its current framework, the ADB uses the ratio in assessing the impact of stress scenarios. The equity–to–loan ratio (ELR) was 30.3 percent as of end-2014. ADB currently measures capital adequacy by stress testing the current operations, portfolio, and a ten-year income projection. For financial planning purposes, ADB has stipulated a minimum ELR of 25 percent to ensure capital adequacy over the long-term and providing capital for credit risk as well as all other material risk exposures. The capital adequacy framework is currently under review in light of merger of the Asian Development Fund lending operations with ADB's Ordinary Capital Resources.
- The **EBRD**'s capital adequacy framework aims at maintaining the ratio of required capital (aimed at covering potential capital losses based on credit, market and operational risks) to available capital below 90 percent. Required capital varies by product and counterparty rating in the banking book. Overall internal capital requirements are calibrated relative to external benchmarks: the Basel capital framework and rating agency frameworks.

Box 3. Overview of Other IFIs' Risk Management Practices (continued)

- The **AfDB's** economic capital framework aims at maintaining the ratio of required capital (for covering potential capital losses based on credit, market and operational risks) to available capital below 100 percent. Its economic capital ratio was about 61 percent at end-June 2015, of which the bulk was reserved for credit risks.
- The **BIS**'s economic capital framework which covers credit risk, market risk and operational risks, is geared to a higher solvency level than the minimum Pillar 1 capital level required by Basel II. Economic capital for credit risk is determined on the basis of a portfolio value-at risk model. The ratio of economic capital allocated for credit risks to overall equity was almost 50 percent at end-March 2015. In addition, the BIS maintains an "economic capital cushion" (based on stress tests) with a view to sustaining a potential material loss without the need to reduce other capital allocations or liquidate assets. At end-March 2015, the economic capital cushion was about 12 percent of equity.

Market risks. Treatment of market risks in the IFIs' capital adequacy frameworks varies. Several IFIs have integrated market risks in their capital frameworks, although the specific risks covered and the amount of allocated capital vary considerably.

- The **IBRD** minimum equity-to-loans ratio of 20 percent includes a buffer for market risks.
- After the adoption of the new capital adequacy framework in 2012, the **ADB** allocates capital for all material risks, including market and Treasury Risk and Derivative Counterparty Risk.
- The **IDB** sets the risk appetite of its investment portfolio at 4 percent of volume. In addition, the CCR quantifies capital requirements for interest rate risk on the remaining bank balance sheet (including its pension plans) and for FX risk. Capital requirements for market risk are aggregated with those of other financial risks through the use of a correlation matrix.
- The **AfDB** sets the maximum economic capital for all non-core risks (market and operational) at 10 percent of total available capital. At end-June 2015, about 9 percent of the AfDB's economic capital was reserved for non-core risks including interest rate, currency, liquidity and counterparty credit risks as well as residual exposure to its staff retirement plan.
- The **EBRD** operates within Board-approved limits for market risk on treasury and banking debt assets based on value-at risk approach. Minimum capital requirements for treasury activities (credit and market risk) are set at five percent of the investment portfolio.
- The **BIS** determines the economic capital for market risk on the basis of a value-at risk modelling based on stressed market data (since July 2014). The ratio of economic capital allocated for market risks to equity was near 21 percent at end-March 2015.

Operational risks. All IFIs give priority to the management of operational risk through strong internal controls. With regard to capital adequacy, the treatment of operational risks varies across IFIs.

- For the **IBRD,** the minimum equity-to-loans ratio of 20 percent includes a buffer for operational risks.
- After the adoption of the new capital adequacy framework in 2012, the **ADB** allocates capital for all material risks, including operational risk. The capital charge for operational risk is equal to 15 percent of the three-year average gross income.

Box 3. Overview of Other IFIs' Risk Management Practices (concluded)

- The **IDB** allocates capital of one percent of total assets to operational risks. Capital requirements for operational risk are aggregated with those of other financial risks through the use of a correlation matrix.
- The **AfDB's** capital adequacy framework provides for an operational risk capital charge based on Basel II of 15 percent of the average operating income for the preceding three years. This methodology is under review. At end-June 2015, about 1 percent of the AfDB's economic capital was reserved for operational risks.
- The **EBRD's** required capital takes operational risks into account consistent with Basel II, using a capital charge of 15 percent of the average operating income for the preceding three years.
- The **BIS** allocates some economic capital to operational risks on the basis of a value-at risk approach that is consistent with the methodology set out in the Basel II advanced measurement approach. The ratio of economic capital allocated for operational risks to equity was about 7 percent at end-March 2015.

[1] The International Bank for Reconstruction and Development (IBRD), the Inter-American Development Bank (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). Based on the latest publicly available information and Fund staff estimates.

[2] The 2010 precautionary balances paper reviewed the capital adequacy practices of the IBRD, the IDB, and the ADB. The 2014 paper summarized the overall risk management approach (capital adequacy as well as market and operational risks) adding EBRD and AfDB to the group of IFIs under review.

Box 4. The Rule for Setting the Margin for the Basic Rate of Charge[1]

Effective May 1, 2012, Rule I-6(4) reads as follows:

"(4) The rate of charge on holdings (i) acquired as a result of a purchase under a policy that has been the subject of an exclusion under Article XXX(c), or (ii) that exceed the amount of the member's quota after excluding any balances referred to in (i), shall be determined in accordance with (a) and (b) below.

(a) The rate of charge shall be determined as the SDR interest rate under Rule T-1 plus a margin expressed in basis points. The margin shall be set at a level that is adequate (i) to cover the estimated intermediation expense of the Fund for the period under; (b) below, taking into account income from service charges; and (ii) to generate an amount of net income for placement to reserves. The appropriate amount for reserve contribution shall be assessed taking into account, in particular, the current level of precautionary balances, any floor or target for precautionary balances, and the expected contribution from surcharges and commitment fees to precautionary balances; provided, however, that the margin shall not be set at a level at which the basic rate of charge would result in the cost of Fund credit becoming too high or too low in relation to long-term credit market conditions as measured by appropriate benchmarks. Notwithstanding the above, in exceptional circumstances, the margin may be set at a level other than that which is adequate to cover estimated intermediation expenses of the Fund and to generate an amount of net income for placement to reserves.

(b) The margin shall be set for a period of two financial years. A comprehensive review of the Fund's income position shall be held before the end of the first year of each such two-year period and the margin may be adjusted in the context of such a review, but only if this is warranted in view of fundamental changes in the underlying factors relevant for the establishment of the margin at the start of the two-year period."

[1] Decision No. 15044–(11/119) adopted December 9, 2011; see also SM/11/318.

Annex I. International Financial Reporting Standards

While not specified under the Articles, the Fund prepares its annual financial statements in accordance with International Financial Reporting Standards (IFRS). This annex covers two aspects of the IFRS relevant to the discussion of precautionary balances.

Valuation of Financial assets. 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, outstanding Fund credit is carried at its amortized cost, i.e., outstanding principal obligations, while investments are carried at their fair value.[1] When the carrying (or book) value of an asset (either a loan or investment) exceeds its net realizable value, adjustments are required to record such an asset at its net recoverable or realizable amount.

- *The incurred loss model.* Under current accounting rules to assess impairment, an entity shall determine at the end of each reporting period whether there is objective evidence that assets carried at amortized cost are impaired as a result of an event or events occurring after the initial recognition of the asset (a "loss event"). Under this incurred loss model, loss events could include, but are not limited to a default or delinquency in interest or principal payments, or significant financial difficulty of the borrower. Any impairment loss is measured as the difference between the asset's carrying amount and the present value of expected future cash flows.[2] The accounting treatment would be to reduce the asset value carried on the balance sheet via an allowance for non-performing credit, i.e., a provision.[3] At the Fund, such provision would affect income if this provision cannot be absorbed by 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).

- *The expected loss model.* New accounting rules, effective in FY 2019, will require the impairment analysis to be performed under the expected loss model, which is more forward-looking than the current incurred loss model. Under this model, a loss event would no longer need to occur before an impairment loss is recognized. The guiding principal of the expected loss model is that an entity should calculate its annual impairment loss, if any, to reflect the pattern of deterioration or improvement in the credit risk of the underlying asset since the initial recognition. The loss allowance should be updated for changes in those expected credit losses at the end of each reporting period to reflect changes in credit risk since the initial recognition.

[1] 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.

[2] Currently, given its nature, the Fund has no reliable basis for measuring the NPV of all expected future cash inflows for the purpose of conducting an impairment test under IAS 39 – so the accumulated impairment loss provision at any point is simply equal to the total amount of overdue repurchases.

[3] 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.

The expected credit loss model would likely result in earlier recognition of credit losses compared with the current incurred loss model. 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 implications***.** 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 the assets are not fairly stated and, when such amounts are significant, this could result in a modified audit opinion.[4] 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.

Accounting for Employee Benefits (IAS 19).[5] Precautionary balances are 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 (which change from year to year, thereby giving rise to actuarial gains and losses):

- *Deferred recognition under the previous IAS 19 standard*. Up until FY 2013, the Fund had deferred the recognition of a portion of such gains and losses, as permitted under the previous IAS 19 standard, and recognized into income over time (i.e., the corridor method).

- *The amended IAS 19 standard.* Effective in FY 2014, IAS 19 was amended and disallowed the deferral of actuarial gains and losses.[6] As a result, since FY 2014, the full impact of actuarial gains and losses incurred during the financial year is reflected in the annual IAS 19 expense.

- *The effect of the amended IAS 19 on income*. Since the implementation of the revised IAS 19 standard, actuarial gains and losses have fluctuated significantly thus giving rise to additional volatility in the Fund's income and reserves. Actuarial gains of SDR 1.1 billion in FY 2014 and actuarial losses of SDR 545 million in FY 2015 were recorded in the Fund's income. While gains and losses can be attributed to a broad range of actuarial assumptions, two factors have been dominant. An increase (decrease) in the annual discount rate and positive (negative) excess Plan

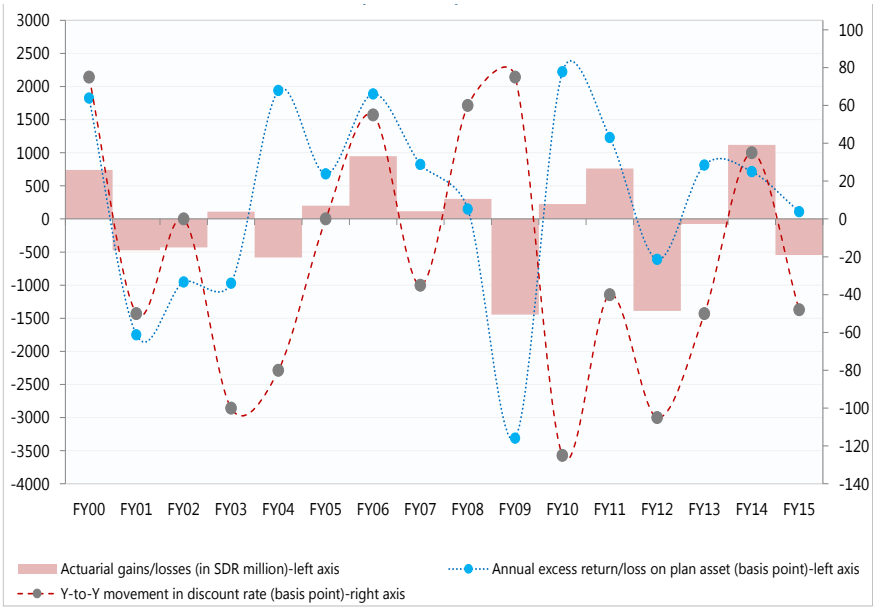
[4] A modified opinion is issued when auditors disagree with the treatment or disclosure of a material matter in the financial statements.

[5] For additional information see Box 1 IAS 19 Accounting for Employee Benefits of *Review of the Fund's Income Position for FY 2015 and FY 2016* (4/6/15).

[6] The adoption of the amended IAS 19 required retrospective application and a one-time adjustment for the cumulative unrecognized actuarial losses (SDR 1.4 billion) was charged against reserves at the beginning of FY 2014, bringing the Fund's net asset (or liability) related to employee benefits and reserves to the same level as if the Fund had never chosen to apply the "corridor method."

asset returns will each result in the recognition of an actuarial gain (loss) (see Figure I.1).[7] These two factors do not necessarily rise and fall in tandem and therefore the effect of the change in the annual discount rate and excess Plan asset returns can have either an offsetting or a cumulative effect on each other, further affecting the year-on-year volatility of the actuarial gains and losses. Given the degree of unpredictability, no allowance for possible IAS 19 adjustment has been included in the projections shown in this paper.

Figure I.1. Key Factors affecting Amended IAS19 Actuarial Gains/Losses (FY 2000-15)



Source: IMF Finance Department.

[7] Excess return is the difference between actual and expected Plan asset value returns and can be negative if actual returns fall below the actuarial expectations.

Annex II. Rating Agencies' Assessment of Creditworthiness of Supranational Lending Institutions

Rating agencies (RAs) periodically assess the creditworthiness of Supranational Lending Institutions (SLIs).[1] SLIs are chartered by international treaties to fulfill a global or regional public-policy mandate, mainly through lending to their member countries. Moody's, Fitch, and Standard and Poor's (S&P) revised their methodologies for assessing SLIs during 2012-14, with a view to incorporating lessons from the global crisis and feedback from market participants.

Capital adequacy (CA) is a primary factor in the RA assessments of the financial strength of an SLI. The assessments–with a strong forward-looking view–center on the *capital position* or the loss-absorption capacity of the SLI. S&P includes *earnings* in its assessment of capital adequacy on the grounds that retained earnings are a major source of new capital for SLIs. *Credit quality* of the loan portfolio plays a key role given that shifts in average borrower credit quality could signal potential changes in loan performance. *Portfolio concentration* and *correlated risks* are also taken into account given that adverse developments among borrowers with close linkages could strain an SLI's capital buffers. RAs thus factor in portfolio concentration as an adjustment to the overall capital adequacy. The approach used by S&P is the more stringent in that it applies a penalty factor for risky individual large exposures rather than focusing on the concentration of the portfolio as a whole. *Loan performance and loss experience* are also key considerations in the risk position and the assessment of capital adequacy.

[1] RAs periodically assess between 28-30 SLIs. This group include mostly multilateral development banks at global (namely IBRD, IFC); regional (e.g., AfDB, ADB, IADB, IsDB, EBRD); and subregional levels (e.g., Caribbean Development Bank, Eurasian Development Bank, North American Development Bank). The SLIs though also include other supranational institutions that have two or more sovereigns and a public-policy mandate but typically follow a much narrower mandate than MDBs, one that does not necessarily target development. (e.g., EUROFIMA, EU, FLAR, ECB, EFSF, and multilateral insurance companies).

Table on Core Factors in Assessing the Financial Strength of SLIs

Factors	Moody's			Fitch		Standard and Poor's [2/]	
	Weight in FS (percent)	Indicator	Sub-Weight (percent)	Weight (percent)	Indicator	Matrix	Indicator
Capital adequacy						From extremely strong to very weak	
- Capital position and credit quality	60	Usable equity/total assets	60	15	Equity/total assets		Capital+earnings/assets
		Weighted-borrower rating		10	Average rating of loans		
		Debt/usable equity	20	13	Outstanding debt/equity		
- Loan performance		Impaired loans/gross loans	20	5	Impaired loans/gross loans	Adjustor	Past due/impaired exposures
- Portfolio concentration	Adjustor	Ten top borrowers/ loans		5	Five top borrowers/loans	Adjustor	Concentration
- Profitability				5	Net income/equity		(combined with capital)
- Other	Adjustor	Return on average assets		9	Other N/A indicators [1/]	Adjustor	Other risks (e.g. pensions)
Liquidity and Funding	40	Various indicators		14	Various indicators	Descriptors	Various indicators
Operational and other risks				24	Qualitative assessments		Risk weights on highest annual revenue of the past three years

Source: Rating Agency methodologies (S&P, Moody's, and Fitch) for SLIs and IMF Staff analysis.

1/ Include indicators on equity participations, non-sovereign exposure, and paid-in capital, not applicable to the Fund.
2/ The matrix combines assessment for (i) capital adequacy and (ii) liquidity and funding.

The benchmarks used to allocate high ratings for capital adequacy are in general demanding. For example, under Moody's framework, the capital adequacy rating is deemed high only when the asset coverage ratio is between 25 and 50 percent, the weighted average borrower rating is high, the debt to usable equity is between 150 and 300 percent, and the NPLs are not greater than 3 percent. The score is improved if the share of the top 10 borrowers accounts for less than 33 percent of the total loan portfolio. For S&P, capital adequacy is gauged as very strong if the risk-adjusted capital ratio is between 15 and 23 percent, after factoring in adjustments determined by the risk position assessment, including concentration, preferred creditor treatment, loan performance and loss experience.

The current Fund framework for reserve adequacy endorsed by the Board in 2010 has many common elements with the rating methodologies used by RAs. The reserve coverage ratio is guided by a range of 20 to 30 percent of a forward-looking measure of credit outstanding subject to a minimum floor. The Board though retains flexibility to set the target based on a comprehensive assessment of the risks facing the Fund. Credit risks are a key consideration when assessing reserve adequacy although other risks are also taken into account. At the same time, the unique character of the Fund renders any comparison incomplete. For example, the Fund does not borrow from the market nor would profitability be an appropriate metric for the Fund, two key differences from other SLIs.

Notwithstanding the general acceptance of the principles used in RA methodologies, some caveats are worth noting. The RAs evaluate the SLIs with similar methodologies applied to commercial banks. As such the methodology does not fully account for the unique characteristics of SLIs (e.g., S&P formula used for assessing sovereign concentration penalty may not be appropriate for supranational lending institutions with low size sovereign portfolios).

Annex III. Burden Sharing, Credit Scenario Analysis, and Stress Testing 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 Annex I). 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.[1]

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:[2] *0.2 * SDR Interest Rate * Remunerated Reserve Tranche Positions*

- 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

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

[2] 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.

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 (nearly 70 percent of total credit outstanding currently) 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. The current SDR interest rate is at the floor of 5 basis points.
- **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.

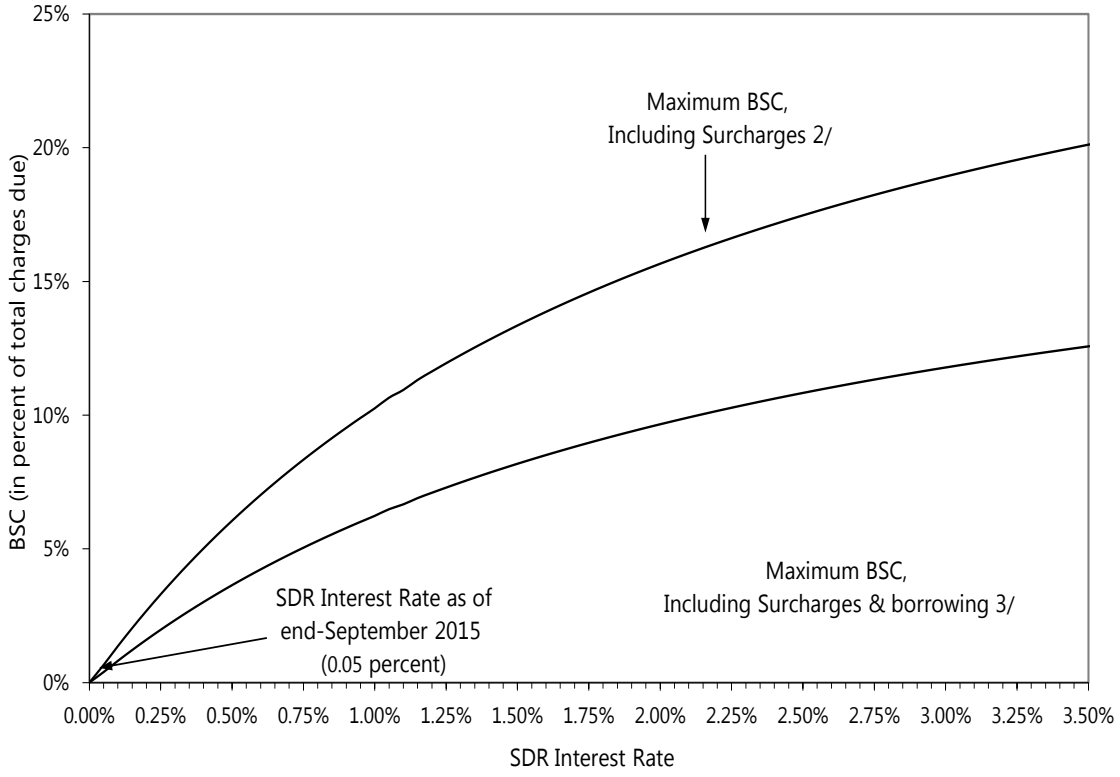
The composition of Fund charges further exacerbates the limitations of burden sharing capacity at low SDR interest rates. Burden sharing capacity is solely a function of the SDR interest rate. Unpaid charges, however, are functions of the SDR interest rate as well as the basic margin and, in some cases, surcharges which are not directly linked to the SDR interest rate. Hence, as SDR interest rate charges fall as a proportion of total Fund charges, burden sharing capacity falls more rapidly than unpaid charges as the SDR interest rate declines (see Figure III.1). Furthermore, at high levels of Fund borrowing, this capacity in terms of total charges is even lower.

Currently, burden sharing capacity is severely constrained by both the low SDR interest rate and the high level of Fund borrowing, as is illustrated by recent albeit temporary Greek arrears. Specifically, using recent SDR interest rates at the floor of 5 bps, and remunerated reserve tranche positions of SDR 22 billion, the total burden sharing capacity is currently around SDR 3 million a year and the residual capacity after taking into account deferred charges by Sudan and Somalia is under SDR 0.3 million. This capacity is a small fraction of the burden sharing capacity in terms of annual income that applied at the time of previous peak lending periods in 2003 and 1998. In comparison, Greece's annual charges at the time of the arrears in late summer 2015 were well over SDR 600 million. Less Fund borrowing (a higher remunerated reserve tranche position) and interest rate normalization would not materially change the assessment. For example, an increase in the SDR interest rate to 1 percent would increase burden sharing capacity substantially (to about SDR 60 million annually) but this would still be substantially short of annual charges from the Fund's largest borrowers. On the roll-back of the NAB, a rebalancing of liabilities used to finance Fund credit towards quotas from borrowed resources would require (1) purchases in the post roll-back

period and the rebalancing of the NAB/quota financing share in the FTP from 1:3 to, for example, 1:1 and (2) purchases of new commitments made after the NAB is de-activated. Hence, this rebalancing and the commensurate increase of the remunerated reserve tranche position would take some time.

In the steady state, however, the normalization of interest rates and the absence of Fund borrowing are expected to increase the burden sharing capacity. Assuming credit and SDR interest rate levels at SDR 30 billion and 3 percent, respectively, and no Fund borrowing in the steady state, burden sharing capacity is over SDR 250 million per year and can cover about 35 percent of total Fund income from lending.

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.
2/ A basic margin of 100 basis points plus average surcharges of about 170 basis points for the credit outstanding (based on FY2015-17 projected average). Assuming that remunerated reserve tranche positions (RRTP) equals credit outstanding, i.e., no borrowing by the Fund.

B. Credit Scenario Analysis

Two 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 IV.1).

- Under the **baseline scenario** credit is SDR 50 billion, which is broadly consistent with projected credit in FY16-18 (line A), implying that the current precautionary balances target of SDR 20 billion would represent about 40 percent of credit outstanding (line B) and would be sufficient to cover the largest single borrower (line D).

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

	Scenario A "Baseline"	Scenario B "Moderate"	Scenario C "Adverse"
Implications for reserve coverage at various levels of precautionary balances			
A. Peak credit outstanding (SDR billions)	50	75	230
B. Precautionary balances as percent of credit outstanding, assuming precautionary balances of:			
SDR 15 billion	30	20	7
SDR 20 billion	40	27	9
SDR 25 billion	50	33	11
C. Illustratrive largest sinlge exposure (SDR billion)	15	23	69
D. Precautionary balances as percent of large exposure, assuming precautionary balances of:			
SDR 15 billion	100	67	22
SDR 20 billion	133	89	29
SDR 25 billion	167	111	36

Source: IMF Finance Department.

1/ The baseline scenario is broadly consistent with projected average credit in FY16-18. The moderate scenario identifies possible EM borrowers based on balance of payments vulnerabilities (low ARA metric, commodity export concentration, and exposure to China) and assumes access at a long-term average of 400% of quota (average non-precautionary access by emerging market economies over the last 15 years). Credit outstanding under the adverse scenario is based on but substantially less than the additional financing need in a tail risk outlined in the recent proposed extension of the 2012 borrowing agreements.

- In an **adverse scenario**, credit outstanding is projected to peak at SDR 230 billion, much higher than the baseline level but substantially short of recent tail-risk estimates. In this scenario, global economic and financial conditions are assumed to deteriorate further, leading to significant additional demand for Fund credit, including drawing on precautionary arrangements. The current target of precautionary balances of SDR 20 billion then would amount to only 9 percent of credit (line B) and be considerably smaller than the estimated average exposure of the largest borrowers (line D).

C. Stress Testing the Fund's Balance Sheet

The stress tests below illustrate 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 sequence of events begins with charges in arrears that could create an income loss which would first be absorbed by burden sharing (see Annex I). However, since residual burden sharing capacity is only around SDR 0.3 million a year and the assumed principle in arrears exceeds SCA-1 balances, 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 resulting 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 occurred.

Methodology and assumptions: The projections in the medium term framework[3] 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 remain 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. Finally, repurchases are carried through income since, as noted in annex I, an NPV assessment in response to a credit loss is currently no reliable basis for measuring the NPV of all expected future cash inflows for the purpose of conducting an impairment test under IAS 39. For illustrative purposes, the maturity of the credit in arrears is assumed to match average Fund maturity (see Figure 4) and arrears are assumed to occur as the repurchase period starts.

The stress tests

Table III.2 illustrates the effect on the Fund's income from charges in arrears associated with principal of SDR 15 billion starting in FY 2017. The burden sharing capacity and SCA-1 balances are exceeded and the repurchases in arrears flow thought income. In addition, the effects of arrears on lending and investment income are carried forward through FY 2021 resulting in precautionary balances that are lower than baseline medium-term projections. Under these assumptions, the cumulative losses over five years near SDR 10 billion and precautionary balances decline to around SDR 5 billion. These adverse effect are large but precautionary balances remain positive due largely to lending income from credit in good standing, which averages about SDR 36 billion.

[3] See *The Consolidated Medium-Term Income and Expenditure Framework* (4/10/15).

Table III.2. Dynamic Stress Test of IMF Portfolio: Illustrative Cash Flow and Stock Ramifications FY 2016 – FY 2021 1/

(In billions of SDRs)

			Stressed Periods				
		FY16	FY17	FY18	FY19	FY20	FY21
Net Income under current medium term projections 2/		0.81	1.16	0.88	1.01	0.92	0.76
Charges in Arrears	Net income after charges in arrears 3/	0.81	0.84	0.50	0.51	0.32	0.04
	plus	-	-	-	-	-	-
	Maximum burden sharing 4/	0.01	0.02	0.06	0.07	0.09	0.09
	minus	-	-	-	-	-	-
	Remuneration gap due to non-collection of SDR interest on principal arrears 5/	-	0.05	0.12	0.17	0.21	0.26
	equals	-	-	-	-	-	-
	Total net income on cash flow basis	0.82	0.82	0.44	0.42	0.20	(0.13)
Repurchase in Arrears	*minus*						
	Estimated annual repurchases in arrears	-	2.32	2.32	2.32	2.32	2.32
	equals	-	-	-	-	-	-
	Total net income under stress	0.82	(1.50)	(1.88)	(1.90)	(2.12)	(2.45)
	resulting	-	-	-	-	-	-
	Precautionary Balances	14.87	13.36	11.48	9.58	7.47	5.02
Memorandum Items:							
Principal in arrears are (SDR, bn):		-	15.0	15.0	15.0	15.0	15.0
Non-performing Loan Rate (in percent)		-	30.5	30.3	31.7	35.7	44.2
Total credit outstanding 2/		51.3	49.2	49.5	47.3	42.0	33.9
Precautionary balances under medium term projections 2/		14.8	15.7	16.5	17.4	18.1	18.7
SDR interest rate 2/		0.10	0.60	1.00	1.20	1.60	1.80

Source: IMF Finance Department and staff calculations.

1/ Based on current medium-term assumptions. Principal in arrears is set to the illustrative large borrower of SDR 15 billion. 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 and the stock of credit in arrears exceeds SCA-1, missed repurchases based on average Fund maturity and arrears starting as the repurchase period commences are carried through income. Figures may not add up due to rounding.
2/ As implied by updated forecasts in *The Consolidated Medium-Term Income and Expenditure Framework* (4/10/15).
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* (4/10/15), 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* (4/10/15).
4/ SDR interest rate projections consistent with forwards for SDR interest rate basket instruments as of December 2015, and the remunerated reserve tranche position implied by the calculated principal in arrears and borrowing assumptions.

Annex IV. Market Risk and the Investment Mandate

The Fund is exposed to market risk on its investments, and the level of this risk has risen since the last review, mainly as a result of the implementation of the phased investment of the Fund's endowment. 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 15 billion as of July 31, 2015. Investments held in the Fixed-Income (reserves portfolio) and Endowment subaccounts summed SDR 10.4 billion and SDR 4.6 billion, respectively.

A. Background

The Executive Board established the Investment Account (IA) in April 2006 to allow for the investment of General Resources Account (GRA) currencies. Further resources may only be invested in the IA if the value of the IA is less than or equivalent to the Fund's general and special reserves.[1] The purpose was, and remains to diversify and augment the Fund's income. When the IA's new Rules and Regulations (the Rules) were adopted in 2013, following the entry into force in 2011 of the expanded investment authority of the Fund, two distinct subaccounts were created, each with a different financial objective, and investment strategy:[2]

- IA assets not attributed to gold sales profits were placed to the *IA Fixed-Income Subaccount* (FI). These resources are currently equivalent to the Fund's precautionary balances (except for those in SCA-1 and those still held in the GRA, pending the Board's disposition decision). They represent the continuation of the original IA resources and accumulated transfers and earnings. The Board reviewed the FI's strategy in August 2015 and approved wider investment powers to help strengthen the FI's resilience across different market scenarios. To deliver the reserves' portfolio twin financial objectives of balance sheet protection and income generation, the amended Rules of 2015 maintain the original investment objective of exceeding the three-month SDR interest rate without setting a hard target to avoid undue risk-taking (see below). The Board recognized nevertheless that the FI's liquidity requirements are low, in light of the Fund's multiple circuit breakers in the event of a shock on its balance sheet, and lengthened the FI's investment horizon from one year to three to four years. The implementation of the FI's new investment strategy will be phased over the next five years to mitigate market timing risk.

- IA assets attributed to profits from the sale of the Fund's post-Second Amendment gold during 2009 and 2010, and equivalent to an average sales price of $850 per fine ounce, plus any

[1] 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. 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* (EBS/06/57, 4/17/06).

[2] The Rules adopted in January 2013 established a third subaccount within the IA, the Temporary Windfall Profits Subaccount (TW). The TW was terminated on October 24, 2013, following the second distribution of the general reserve attributed to windfall gold sales profits for the benefit of the PRG Trust.

retained income attributed to these assets, were placed in the IA's *Endowment Subaccount* (EA). The EA's sole objective is to generate income. Its diversified asset allocation across global bonds and equities aims at achieving a long-term real return target of 3 percent in U.S. dollar terms.

The new expanded mandate for FI resources approved by the Board in August 2015 represents a prudent evolution from the original 2006 strategy. Precautionary balances are a key part of the Fund's strategy for managing financial risks and ensuring the strength of the balance sheet. They are available in the event that the Fund were to suffer a loss as a result of credit or other financial risks, and in this way, they play an important role in protecting the value of reserve assets that members place with the Fund. As a result, and compared to the EA, these resources are subject to a relatively conservative investment strategy that seeks to preserve nominal capital and limits the risk of permanent losses. In particular, in approving an expanded mandate for the FI, the Board noted it would be desirable to avoid strategies that carry risks of significant losses in times of global stress, when the Fund could itself be seeking to raise resources or facing strains on its own lending portfolio. The new strategy therefore constitutes a prudent evolution from the original SDR 1–3 year strategy that relied on holdings of low duration, highly rated government bonds. Low duration strategies will remain part of the overall new mandate: once implemented, the actively managed portion of the FI (Tranche 1) will be benchmarked to an SDR 0–3 year government bond index, so its duration will be slightly shorter than the original 1–3 year index on average; the longer-duration tranche of the FI (Tranche 2) will see its average duration increase gradually over time but will be invested only in high quality assets with a buy-and-hold approach, thus minimizing the risk of crystallizing capital losses. In addition, although permissible investments under the new strategy include private sector bonds and a broader universe of issuers and currencies, the average credit quality of the FI will be high. Market risk in the FI, although possible slightly increasing as the new expanded mandate is phased-in, is expected to remain low through appropriate diversification, asset class and issuer concentration limits, and by requiring currency exposure to be aligned with the SDR basket.

B. Market Risk Assessment

Key features of the IA

The estimated potential losses for the IA portfolio, in each of its subaccounts, are currently small but will increase over time as strategies for the FI and the EA are phased-in. With the three-year phasing of EA assets, which started in Q4 FY2014, the risk profile of the IA as a whole will increase, with potential losses increasing gradually as the phasing of the investment program progresses. As noted in previous papers, endowment-type portfolios differ from reserve portfolios, as 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 it should generate positive real returns. Marked-to-market losses on the EA, even if reversible, will directly affect the Fund's income and level of reserves (even though assets in the EA are not counted towards precautionary balances). With respect to the FI, as government bonds in the markets of the SDR basket are close to their historical lows, and sometimes near the zero bound,

the probability of losses should rates begin to normalize has increased, but the scale of losses will be limited given the relatively short duration of this portfolio.

Below is a high-level breakdown of the main categories of market risks for the FI and EA:

- **Interest rate risk:** In the FI, this risk is low and mitigated by limiting the duration of the portfolio. As noted above, the higher duration Tranche 2 of the new strategy will be phased-in over 5 years and will be guided by a buy-and-hold strategy to minimize the risk of permanent impairment. A duration of about 2.5 years on this Tranche implies that an instantaneous one percentage point increase in yields results in a loss of about 2.5 percent, or SDR 260 million (vs. about SDR 200 million in 2014). The duration of Tranche 1 will be even shorter, so the corresponding sensitivity to yield increases for this Tranche will be even less. In the long-horizon and diversified asset allocation of the EA, interest rate risk is higher (duration of about 7 years), but the fixed income allocation is expected to benefit from diversifying across the 54 countries in which the portfolio is invested.

- **Exchange rate risk:** The FI exposure to exchange rate risk is negligible, even under a broader mandate. The 2015 Rules require aligning the currency composition of the FI with the SDR basket and hedging back non-SDR holdings to one of the currencies of the basket. With respect to the EA, exchange rate risk is manifested at two levels. First, as the base currency of the EA is the US dollar, the endowment is exposed to fluctuations in the USD-SDR exchange rate when recorded on the Fund's balance sheet in SDR. Second, once fully invested, the EA will also be exposed to residual exchange rate risk, as only fixed income instruments denominated in developed market currencies are hedged back to the US dollar. This leaves approximately 25 percent of the portfolio unhedged, specifically, in the developed market equities and REITs sectors where currency volatility is a smaller proportion of overall market volatility, as well as in emerging market assets where hedging is more costly.

- **Credit risk:** Under its new strategy, the FI will be marginally exposed to default risk and credit spread widening, but this risk will be limited. The 2015 Rules set out a minimum rating threshold of single-A, using Standard and Poor's long-term rating scale, and the Managing Director may establish higher thresholds if needed. To further mitigate credit risk on the FI, holdings of non-sovereign bonds are limited to about one-half of the FI with additional concentration limits set out by the Managing Director. The extent to which the FI is exposed to credit risk within this limit is ultimately controlled by the Fund's external managers. In the EA, after it is fully invested, credit risk will be more prominent. Nevertheless, its diversified asset allocation and rating threshold of BBB- on corporate bonds and BBB+ on sovereign bond, along with a strict divestment rule in the event of a downgrade, are intended to minimize undue exposure to default risk.

- **Liquidity risk:** Liquidity risk is controlled in the FI by limiting investments to highly-rated marketable securities. Liquidity risk on the EA is also expected to be limited once fully invested. While the EA will include instruments that are less liquid, such as emerging market bonds and developed market corporate bonds, the large share of developed market sovereign bonds

(40 percent) and publicly-traded equities (35 percent) will limit the liquidity risk of the overall portfolio. Further, as noted to the Board in the past, actual liquidity requirements on FI or EA resources are low, so both subaccounts can sustain periods of reduced market liquidity.

Historical stress test on FI and EA resources

Historical stress tests on the IA offer unbiased examples of tail risk but as discussed on several occasions with the Board, current exceptional market conditions in fixed income markets limit the effectiveness of historical stress tests to assess *future* market risks.

- For the FI, rapidly rising interest rates constitutes the main risk. Historically, the most challenging environment for fixed-income investors in SDR basket currencies occurred in 1994, when two year SDR-weighted yields rose from 4 percent to 6.35 percent. Rapid and unanticipated rate hikes by the Federal Reserve spilled over into European and Japanese markets, despite a 75 basis point cut by the Bundesbank. During that period, rolling one-year returns for the FI would have fallen to -1.3 percent at 95th percentile cutoff, assuming that all active external managers used the full extent of the permissible universe. The 2004–07 tightening cycle is, on the other hand, an example of a smooth and gradual tightening path. After a prolonged period of very low yields, the Federal Reserve (in June 2004) and then the ECB (in November 2005) raised policy rates over a period of about two years. Over that period, the FI's rolling one-year returns at 95th percentile cutoff would have remained positive (0.6 percent, with similar assumptions as above). Over a three-year horizon, all returns would have been positive, which supports the low risk characteristics of the FI.

- For the EA, the global financial crisis is the most significant market event of the past few decades. If fully invested at the onset of the crisis, the EA would have lost about 30 percent of its value between April 2008 and April 2009,[3] but it would have fully recovered after about 3 years. Past discussions with the Board leading to the adoption of the EA's Rules highlighted this aspect. As endowments have, in theory, an infinite investment horizon, and generally have more ambitious return expectations, they can be more tolerant of short term volatility and are generally exposed to larger tail risk. They tend to recover from their underperformance over time however.

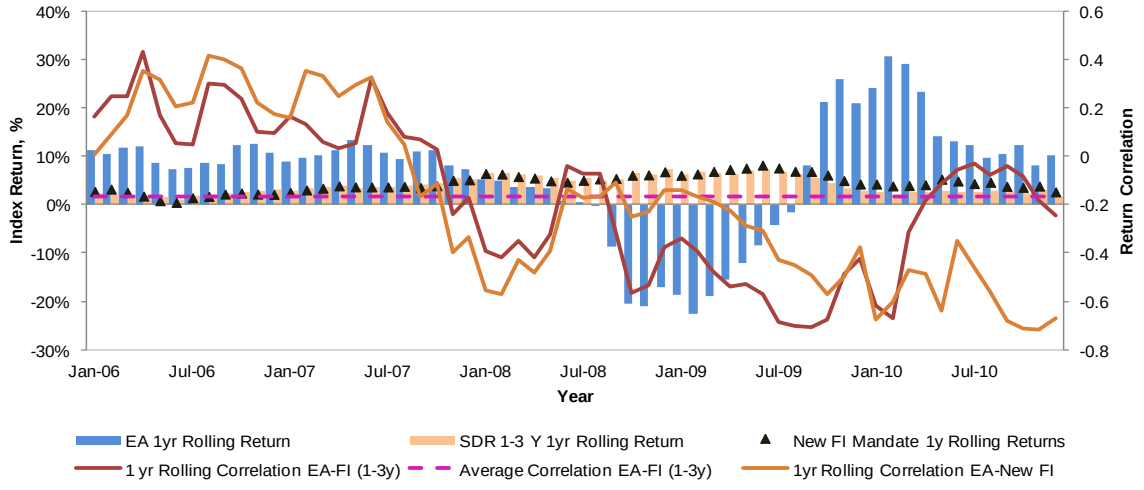
These adverse market scenarios are only illustrative as neither the FI nor the EA were established at the time of these two episodes of market volatility; both events would have reduced the Fund's level of reserves for a period of time. The rapid recovery, within a few months to a year or two depending on the IA subaccount, is a historical key feature of the FI and EA investment strategies. In the 1994 episode, the FI would have lost about 2 percent within the year (intra-year peak-to-trough), or about SDR 200 million assuming a starting portfolio size of SDR 10.4 billion. Given its large share of sovereign bonds, and the drop in equities following the FOMC's unexpected 1994 rate hike, the EA would have also incurred a 4 percent loss in USD terms, 9 percent in SDR terms, or about SDR 400 million. Both portfolios would have quickly recovered, however, in

[3] Using VaR data compiled on the EA's actual portfolio holdings (Source: State Street).

5 months for the FI, and within 1½ years for the EA. During the global financial crisis, assuming a SDR 4.4 billion endowment at end-2007, and using broad index levels (rather than actual portfolio holdings), the EA would have lost about SDR 770 million by end-February 2009, markedly less than in USD terms, as the dollar appreciated during the period. It would have fully recovered by end-2009.

While the FI and EA pursue different financial objectives and investment strategies, from the perspective of the Fund's level of reserves and income position there is merit in assessing the degree of correlation between the two IA subaccounts, particularly in bear markets. Using broad index returns and static asset allocations, it is worth noting that the FI's returns would have exhibited a low to negative correlation vs. the EA during the global financial crisis, as shown in Figure IV.1. With a starting portfolio size of SDR 10.4 billion, flight to quality gains on the FI would have exceeded all market losses on the EA (in SDR terms). Under its new expanded mandate, the FI would have also been countercyclical to the EA, benefitting from flight to quality characteristics.

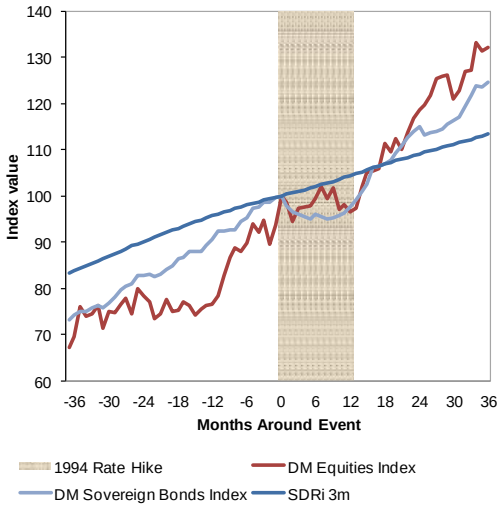
Figure IV.1. One-Year Rolling return of the FI and EA Subaccounts (lhs) and FI-EA Correlation of Returns (rhs) during the Global Financial Crisis



Sources: Datastream, Bloomberg, and IMF Staff calculations.

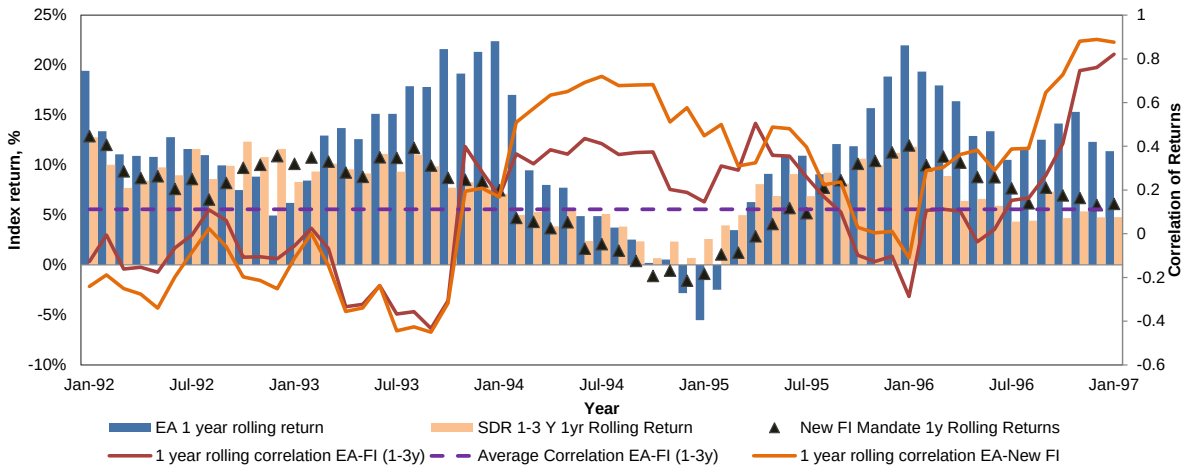
Reserves and income would have been affected differently under a 1994-type scenario, where an unanticipated and rapid tightening cycle affected negatively both safe sovereign bonds and risky assets. The FI wouldn't have benefited from a flight to quality. As shown in Figure IV.2, global bonds and global equities performed poorly in 1994, losing both about 3 percent in USD terms, and nearly 5 percent for bonds half-way through the year. Both asset classes subsequently recovered in 1995. Focusing on the FI and EA combined portfolio performance, the Fund's level of reserves and income position would have deteriorated as a result of this unanticipated series of rate hikes. Both portfolios within the IA would have suffered in the short term, albeit to a much smaller extent than during the most recent financial crisis. Compared to the SDR interest rate (not shown), the underperformance would also have been significant (3.6 and 5.9 percent for the SDR 1–3 year and the new FI, respectively), but largely reversed the following year. In nominal terms, the FI and EA would have recovered swiftly, as noted above (Figure IV.3).

Figure IV.2. Performance of Global Bonds and Equities around the 1994 Rate Hike Period



Sources: Datastream, Bloomberg, and IMF Staff calculations.

Figure IV.3. One-Year rolling Return of the FI and EA Subaccounts (lhs) and FI-EA Correlation of Returns (rhs) around the 1994 Rate Hike Period



Sources: Datastream, Bloomberg, and IMF Staff calculations.

IA Market and Income Risk Going Forward

Assessing market risk in the future is subject to extreme uncertainty and largely depends on underlying assumptions. What follows updates earlier analyses presented to the Board. For the FI, the main risks arise from the near-zero interest rate environment in SDR government bond markets and from possibly rapidly rising rates if markets anticipate monetary policy normalization. For the EA, the main risk arises from a widespread market correction in risk assets, akin the global financial crisis. For the IA as a whole, the main risk is one where all assets, bonds and equities, fall in value much as they did in 1994. In these cases, the Fund's level of reserves and income position would come under stress. Apart from actual market events, both the FI and the EA also face the risk of generally low returns if markets remain broadly unchanged in the foreseeable future. Should it be the case, the Fund could fall short of return assumptions assumed in the NIM.

Focusing first on the FI, the main future risks for the FI are short-term losses due to rapidly rising rates or very low returns if rates hover around current near-zero levels. In both cases, future income and the pace of reserve accumulation could be lower than expected. To mitigate these risks, the Board approved in August 2015 a new expanded investment strategy to increase the resilience of the FI in the medium term to various interest rate environments. This is done through tranching, phasing, and prudent diversification. The short-duration and diversified Tranche 1 keeps duration risk under control while repricing itself as yields rise; the longer-duration buy-and-hold Tranche 2 will be phased in over five years to reduce the uncertainty about the timing and extent of (eventual) monetary tightening by the major central banks.

Quantifying market risks on the FI going forward is subject to significant uncertainty. Future returns of the FI will be affected by the pace of monetary policy tightening (if any), the level of interest rates, changes in the shape of the yield curve, evolutions in credit spreads, and outcomes of investment strategies employed by the Fund's external managers. The stylized analysis underpinning the *Review of the Investment Strategy for the Fixed-Income Subaccount of the Investment Account* explored different market scenarios to illustrate a range of possible outcomes for the FI:

- If rates remain close to current historically low levels of yields over say, the next five years, the FI could continue to exceed the SDR rate (the FI's implicit cost of funds), albeit with some volatility due to very low level of yields and income cushion, but the absolute level of returns would necessarily remain low by historical standards;

- If rates rise rapidly, the FI could undergo significant losses for some time in absolute terms but especially vis-à-vis the SDR rate. The probability of loss of government bonds in the first two or three years could exceed 50 percent depending on the pace of rate increase, implying a high likelihood of underperforming the three-month SDR rate with magnitudes similar to 1994. The new expanded investment strategy for the FI provides a broader set of permissible instruments to cushion this market risk, but the decision to allocate to those assets is left to external managers within tight risk controls. Over time, with higher rates, the income component of total return will increase and better protect the portfolio, but this embedded protection would take some time to accrue;

- If rates rise gradually, the FI runs the risk of low or negative returns depending on the pace of rate increases. With current yields, the FI's breakeven is compressed: using end-October 2015 levels, if yields increase by more than 38 basis points, i.e., more than implied by market forwards, the one-year return on 2-year government bonds (a proxy for the FI) would become negative. As noted above, the wider permissible investment universe provided to managers in the FI's new Rules are intended to better protect the portfolio but the ultimate decision to invest in these instruments is left to managers.

For the EA, once fully invested, the risks of losses and/or low future returns will prevail more than in the case of the FI but the expectation is for the strategy to be sufficiently diversified to recover from losses over time.

- While past performance does not predict future returns, prior events can still serve as a useful guide to evaluate the possible range of future losses due to market correction. 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. This is significantly more than for the FI. Simulated returns on broad benchmark indices showed that the EA would have lost about 30 percent during the global financial crisis, with the portfolio gradually recovering over subsequent years. In addition, the strategy was tested against other past large market corrections. Using as reference large equity and bond market corrections since 1970, the endowment value would have also 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. In the latter case, a strong recovery would have also followed.

- Looking ahead, the EA also faces the risk of low returns, compared to long-term historical averages. As noted above, the EA pursues a very long term strategy, but in light of current exceptional market valuations, there is a risk that future bond and equity returns are significantly below their long-term averages. In a "new normal" state of the world of significantly lower return expectations compared to historical averages, the EA could fall below the 3 percent target to average perhaps 1.5-2 percent, exposing the portfolio to greater "tail risk" if markets experience a very slow recovery after a correction. This would affect the Fund's level of reserves and income.

Overall assessment

Since the last review in 2014, market risk has risen mainly as a result of the phasing-in of the EA. Assessing current aggregate risk on the EA with a calculation of value-at-risk (VaR),[4] losses at a 95 percent confidence interval are estimated at USD 348 million, or SDR 245 million (about 9.5 percent of asset invested). By the end of FY2017, all of the EA will be invested. Assuming unchanged market conditions, VaR would rise to about SDR 430 million. Turning to the FI, VaR has remained stable since the last review in 2014, at about SDR 95 million, or 0.9%. Going forward, the FI will

[4] Estimated one-year "worst-case loss" or 95 percent Value at Risk, based on a historical simulation of portfolio data over the past three years by the Fund's custodian bank.

gradually transition to a new strategy to better protect the portfolio against adverse markets, but with the risk of rising interest rates in SDR basket currency markets, the FI is exposed to the risk of temporary market losses, and these risks may be larger than in previous episodes of monetary policy tightening, given near-zero yields. For illustrative purposes, VaR levels under the assumption of gradual normalization of interest rates could amount to about 1.9 percent, or about SDR 197 million). In the medium term, however, if rates start to normalize, income return will gradually increase and help contain capital at risk in the FI.

Annex V. Assessing the Potential for Drawings under Precautionary Arrangements

The annex assesses the potential use of the Fund resources by members with precautionary arrangements using illustrative stress scenarios by updating the analysis in the 2014 Review.[1] The stress scenarios estimate the impact of global shocks on exports, foreign direct investment and debt rollover rates, which in turn affects international reserves and external financing needs of affected countries, using the Fund's reserve adequacy metric (RAM) as a guide.[2] 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.

While the stress scenario analysis suggests that drawings on precautionary arrangements would only take place in severe global downturn scenarios, they would likely take place in a correlated manner if such scenarios did indeed materialize. In a global stress scenario severe enough to induce any one member to draw on its arrangement, there is a heightened likelihood that the other members would then follow suit by drawing. Complementary staff analysis of unconditional and conditional implied probabilities of distress (PoDs and CoPoDs respectively) in members with precautionary arrangements suggests that the probability of distress (that could cause a member to draw on its arrangement) is 4 to 5 times higher in event of distress in one of its precautionary arrangement peers.

A. Global Shock Assumptions and the Underlying Data

The illustrative stress scenario exercise uses univariate kernel distributions of changes in key external variables across a sample of emerging market economies in three past crisis episodes.[3] The periods examined are 1991, 2001 and 2009, the years of more than one standard deviation declines in aggregate demand for advanced economies. Based on a sample of 49 medium-sized emerging market economies, univariate kernel distributions are calculated for the associated changes in exports, FDI, and short and medium and long term debt rollover rates (both public and private) against a pre-crisis baseline.[4]

[1] See Annex I in *Review of the Adequacy of the Fund's Precautionary Balances* (1/15/14), which extended past analysis on the likelihood of drawing under precautionary arrangements.

[2] For further discussion on the metric see *Assessing Reserve Adequacy – Further Considerations* (11/14/13).

[3] Balance of payments need calculations in FCL and PLL Board documents draw on the same analysis. For a detail discussion the kernel distributions and the underlying data, see *Review of the Flexible Credit and Precautionary Credit Line* (11/1/11).

[4] For FDI and exports, the assumed baselines are the averages spanning the three years prior to the crisis year. For private and public debt rollover rates the baselines are the episode year values.

The univariate kernel distributions are then used to map "global shocks" of various severities into changes of the selected external variables.[5] Table V.1 shows the contraction in each variable as a results of a shock of three illustrative percentile magnitudes. At the 25th percentile, exports fall by almost 4 percent relative to the baseline and the FDI by 45 percent and the debt 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.[6] The shocks are, naturally, more extreme at the 5th and 10th percentiles.

Table V.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.

B. Potential Drawings under Precautionary Arrangements

The potential for drawing under precautionary arrangements is assessed by comparing the post-shock level of international reserves to the Fund's RAM. The risk weighted liability stock as determined by the RAM is the 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.[7] It is suggested that for prudential purposes countries' reserve coverage should be in the region of 100–150 percent of the risk weighted liabilities.[8] However, this does not

[5] Shocks to exports taken as shocks to exports of goods only.

[6] 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 25th percentile of past shocks.

[7] 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.

[8] For further discussion on reserve adequacy see *Assessing Reserve Adequacy* (11/14/13).

represent a strict threshold in the assessment and a member may not necessarily immediately draw on its arrangement even if its reserves fell below this range.

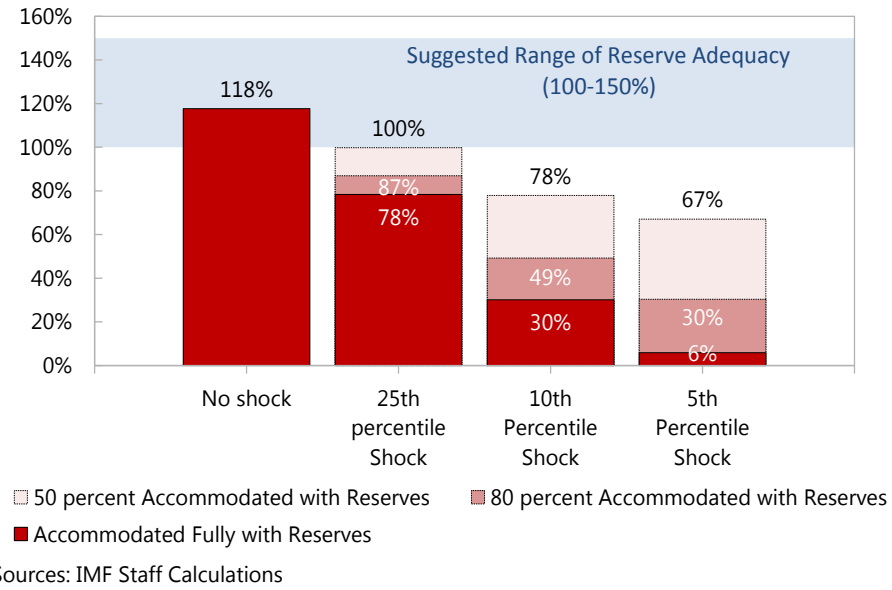
The impact of simultaneous shocks on reserves and reserve coverage is then calculated for the three members that currently hold Flexible Credit Lines (Colombia, Mexico, and Poland).[9] Simultaneous shocks are applied to each member's 2014 data for exports, FDI, short-term debt, and amortization of medium and long term debt. The consequent external financing shortfall could be fully or partially accommodated with reserves depending on how much the exchange rate and/or the domestic interest rate are allowed to adjust.[10] The implied remaining level of reserves is therefore examined under three different assumptions where the reserves cover 100, 80 and 50 percent of the financing shortfall. Each implied post-shock reserve level is then compared to the post-shock external liability shock that has been adjusted for the new lower export and debt levels.

The analysis suggest that members would be likely to draw on their precautionary arrangements only in the most conservative scenarios. Figure V.1 illustrates the impact of global shocks at three different percentile magnitudes on an illustrative average member with an FCL arrangement. At the 25th percentile of shocks, it is unlikely that members with FCL would draw under their respective arrangements, unless they were to rely solely on reserves to accommodate the shock. At the most conservative percentile shocks, however, the loss of reserves would be far larger. At the 10th percentile of shocks the average member's implied reserve coverage under the RAM would stand more precariously at just under 80 percent even if reserves would be used to cover only 50 percent of the implied external financing shortfall. Drawing under the FCL would become very likely at the 5th percentile of shocks, where the implied external financing shortfall would correspond in magnitude to almost the entire reserve stock of the illustrative average member.

[9] For simplicity and consistency, the analysis excludes the Precautionary Liquidity Line (PLL) of Morocco given the slightly different nature of the facility and existence of capital controls. The analysis also excludes the Standby Arrangements with lower access levels of Honduras, Kenya and Serbia, which are treated by the authorities as precautionary.

[10] The mix of members' policy response to cushion the shocks (access under precautionary arrangements, the use of reserves, exchange rate flexibility, and interest rate adjustments) is dependent on their policy preferences.

Figure V.1. Post-Shock Reserve Adequacy Metric (RAM)
For an Illustrative Average Member with Precautionary Arrangement, Percent



Sources: IMF Staff Calculations

It should be stressed that the results of the analysis are purely illustrative. The results are constrained by the nature of the statistical exercise as well as the characteristics of the database used. Assuming univariate probability distributions for the shock-impact on the external variables does not capture aspects that may help countries to better accommodate external shocks and the impact of a global shock would not be uniform across countries. 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. Moreover, it is highly debatable how relevant the more extreme shock-scenarios would be for members that have pre-qualified for an FCL.

C. Correlation in potential drawings

Although the estimated probability of drawing remains low, it is likely that the Fund would face multiple drawings under precautionary arrangements in a systemic global shock scenario of the type envisaged in the analysis above. This is supported by complementary staff analysis comparing historical implied unconditional and conditional probabilities of distress (PoDs and CoPoDs) in members with FCL arrangements, drawing on market quotes of five-year sovereign credit default swap (CDS) spreads in US dollars.[11] The CDS spreads are used to extract market expectations of member-specific PoDs. Dependence between individual PoDs are then used to estimate pairwise CoPoDs (PoD conditional on distress of another member).[12] Although direct channels of contagion between the current FCL members may be limited, the CoPoDs help to gauge correlation of credit event risks and

[11] Distress is defined as a (hypothetical) credit event that triggers sovereign CDS contracts. This could be a failure to pay on schedule, default or a restructuring leading to sovereign bondholder losses. A member would be likely to draw on its precautionary arrangement before such credit event materializes.

[12] The method employed is discussed in Segoviano (2006), "The Conditional probability of Default Methodology", Financial markets Group, London School of Economics, Discussion Paper 557; and Segoviano and Goodhart (2009), "Banking Stability Measures", IMF Working Paper, WP/09/04. The analysis is widely used in the Fund in other contexts to gauge market views on credit risks and interconnectedness.

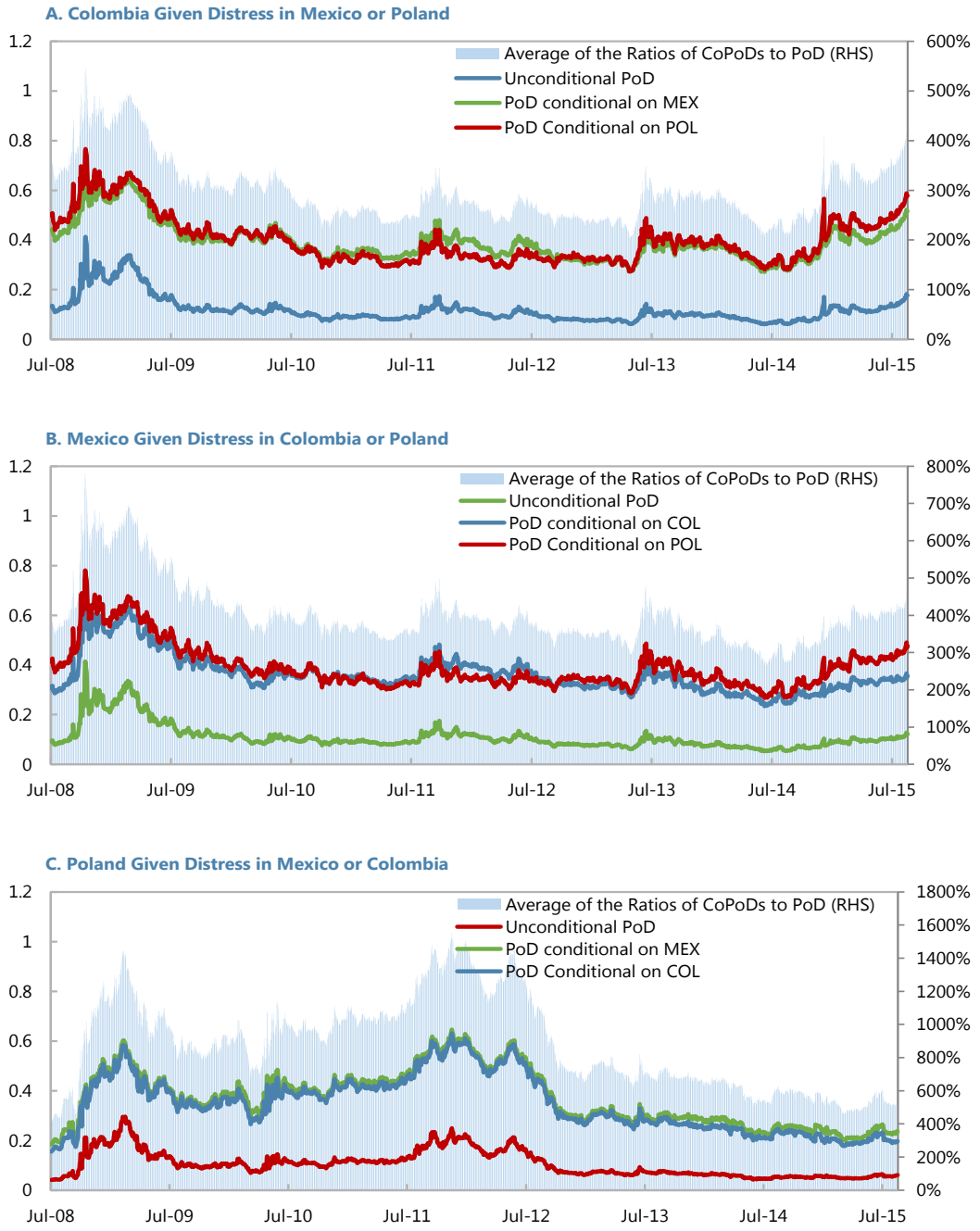
thereby potential for contagion (e.g. through confidence) as perceived by markets in the past. The historical ratio of CoPoD to PoD for each member can then be used to gauge how much more likely a member would be to experience distress, raising the probability of drawing on its FCL arrangement in event of distress in another member.[13] However, future correlations could deviate from historical correlations.

The analysis based on recent CDS spreads suggests that FCL members' implied probability of distress would be 4 to 5 times higher in event of distress in one of the other FCL member. Figure V.2 illustrates this with the historical average of the ratios of the two pairwise CoPoDs to each member's unconditional PoD (the light blue bars). For Colombia, the conditional probabilities moved up relative to the unconditional PoD in the course of the 2015 emerging market turmoil. The relative increase in CoPoDs was somewhat less apparent for Mexico, for which the pairwise CoPoDs given distress broadly followed the pattern of the unconditional PoD. For Poland, the implied interconnectedness of distress diminished after the global crisis, although the ratio of the two pairwise CoPoDs to the unconditional PoD was somewhat higher than for the other two FCL cases. Notwithstanding some year-to-year variation, the ratio of conditional to unconditional probabilities of distress consistently remained above a level of 200 percent for Colombia and higher for the larger two FCL arrangements.

[13] A member's sovereign CDS spread implicitly incorporates its access to an FCL arrangement and the implied probability of distress therefore does not directly lend itself to calculating the probability of drawing.

Figure V.2. Historical Ratios of Conditional and Unconditional Probabilities of Distress (PoD)

(1 Year Implied PD, July 2008 – August 2015)



Source: Bloomberg, IMF Staff Calculations