Fourteenth General Review of Quotas—The Size of the Fund: Initial Considerations and
The Chairman's Concluding Remarks
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INTERNATIONAL MONETARY FUND

Fourteenth General Review of Quotas—The Size of the Fund: Initial Considerations

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In consultation with other departments

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EXECUTIVE SUMMARY

Since the last general quota review, the global crisis has brought Fund resources into renewed focus. The crisis emphasized anew the need for liquidity buffers to face capital market shocks, and showed that significant cross-border financial activity can create external financing gaps even among advanced economies. More modest growth outlooks than previously assumed, and major fiscal challenges in some countries, may raise demand for Fund resources and limit the scope for a sufficient response at the individual country level should such a need arise again.

With no general quota increases since 1998, the size of the Fund has shrunk substantially relative to the global economy and to members' potential financing needs. Historically, quota reviews have tended to broadly restore the level of quota resources in relation to global GDP. To return quotas to their 1998 level in terms of GDP, they would need to be increased by about 80 percent from levels agreed in the 2008 Quota and Voice reform (or about 93 percent from current levels). Most other indicators that have been used as reference points during past general quota reviews point to somewhat larger quota increases. Overall, quota increases in the 130 to 200 percent range would be needed to restore quotas relative to averages across traditional global indicators.

Scenario analysis, which is conducted within the Fund's current mandate, suggests a range of quota increases broadly centered on a doubling of quotas, with some suggesting larger increases. Peak commitments in relation to members' financing needs under previous crises are used as a benchmark to assess the aggregate financing need the Fund can expect to face on the basis of past experience, although only the most recent crisis includes the FCL, which could add to needed resources. The range of these estimates is broadly consistent with those provided by historical comparisons of Fund quotas relative to indicators of the global economy—all pointing to a substantial increase in Fund quota resources. The design of Fund programs and the Fund's governance structure serve to avoid superfluous lending and contain potential moral hazard associated with such a resource expansion.

The total need for Fund resources, including its borrowed resources (notably the NAB), is assessed in the light of potential "tail events". Scenario analysis is used, incorporating both a bottom-up approach to assessing financing needs that builds on the Fund's vulnerability exercises, and an approach based on simple access assumptions aimed at assuring markets that sufficient financing would be available. This analysis tries to capture the possibility that in future crises, large economy authorities may be more constrained than in the current crisis, and hence the financing burden placed on the Fund may be substantially higher. The results suggest total Fund resources between SDR 800 billion and SDR 940 billion may be needed, in which case the proposed expanded NAB would represent an essential backstop to quotas even with a substantial quota increase.

A doubling of quotas, together with the proposed expanded NAB, would provide the Fund with a commitment capacity of about US$1 trillion. Such an increase would allow the Fund to support members with its current facilities under a broad range of scenarios. However, even under the Fund's existing mandate, some scenarios point to a case for more than a doubling of quota resources. Moreover, reforms to upgrade the Fund's crisis prevention and resolution instruments discussed in separate papers on the Fund's mandate could have substantial additional resource implications.

I. Introduction[1]

Against the background of the global crisis and emerging lessons, the IMFC has called for concluding the 14th General Review of Quotas by January 2011. In framing the review, the IMFC has also emphasized that the Fund is and should remain a quota-based institution, notwithstanding the large increase in its borrowed resources to meet lending needs in the global economic crisis. As part of the quota review as well as the work on the Fund's mandate, this paper considers both the appropriate size of the Fund's resource base and its composition. It indicates a relatively wide range of quota increases, broadly centered on a doubling of quota resources.

1. **This paper considers the size and composition of the Fund's resource base.** The IMFC's October 2009 communiqué called on the Fund to "examine the appropriate size and composition of its resources needed to safeguard its long-term ability to meet members' needs, consistent with the Fund's status as a quota-based institution."[2] The IMFC further noted that it looks forward to "discussing the size of the overall increase in quotas, which also helps facilitate changes in quota shares." In considering the composition of Fund resources, this paper takes into account the renewed and more flexible New Arrangements to Borrow (NAB), to be expanded to up to US$600 billion, which the IMFC notes "…will be reviewed in light of the outcome of the Fourteenth General Review of Quotas."

2. **The paper is organized as follows**. Key developments relevant to the size of the Fund since the 13th General Review of Quotas are summarized in section II. Section III first discusses the roles of quota and borrowed resources, indicating that quota resources should be sufficient to meet members' needs in most circumstances, while the NAB and other borrowed resources serve as a backstop to give confidence that the Fund is also prepared to address unforeseen "tail risks". The section then applies a number of approaches to assess the appropriate size of quota resources, and of total resources including borrowed resources. As this analysis suggests a range of potential increases in quota resources with many that would be large by historical standards, the section concludes by considering moral hazard issues related to enlarged Fund resources. Section IV proposes issues for discussion.

3. **This paper is part of a broader work program on issues related to the size, composition, and distribution of the Fund's resources.** A separate paper (*Fourteenth General Review of Quotas—Realigning Quota Shares: Initial Considerations,* 3/5/10) discusses issues related to the realignment of quota shares, as part of the work program on

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[1] Prepared by a team led by C. Beaumont (FIN), with M. Rossi, S. Rodriguez, and R. Rozenov (all FIN). In SPR, a team led by B. van Selm and comprising A. Piris, E. Jurzyk, and E. Vidon helped to prepare this paper. R. Teja, I. Mateos y Lago, J. Roaf, I. Halikias, B. Joshi (all SPR), and T. Krueger (FIN) also contributed.

[2] *Communiqué of the International Monetary and Financial Committee of the Board of Governors of the International Monetary Fund*, October 4, 2009, http://www.imf.org/external/np/cm/2009/100409.htm.

the 14th General Review of Quotas. Based on Directors' guidance on these two papers, subsequent work would bring together issues related to the size and distribution of the quota increase. The analysis in this paper is conducted within the Fund's current mandate, and does not take into consideration the implications of any potential reforms to enhance its financing role and its role in promoting the stability of the international monetary system, which will be discussed in separate papers. Changes in the Fund's mandate would have important implications for the appropriate size and composition of the Fund's resources.

II. Developments Since the Thirteenth Review

4. **The Thirteenth General Review of Quotas was completed in January 2008, the second consecutive review with no increase in quotas.**[3] The regular five-yearly review of the adequacy of Fund resources took place against the backdrop of sustained strong global economic growth, ample access to external market financing for most countries, and a sharp drop in Fund lending. With Fund liquidity at an all-time high, the Executive Board decided that there was not a sufficiently strong case for a general quota increase, while stressing the need to stand ready to consider the need for a quota increase in the event that the Fund's liquidity position were to deteriorate. The last general quota increase was adopted 12 years ago, at the time of the 11th review. This review had continued a tradition dating back more than three decades, in which general quota reviews resulted in quota increases which broadly kept pace with global developments (Table 1).

Table 1. General Quota Reviews

Review	Overall Quota Increase (percent)
First Quinquennial (1951)	no increase
Second Quinquennial (1956)	no increase
1958/59 [1]	60.7
Third Quinquennial (1960)	no increase
Fourth Quinquennial (1965)	30.7
Fifth General (1970)	35.4
Sixth General (1976)	33.6
Seventh General (1978)	50.9
Eighth General (1983)	47.5
Ninth General (1990)	50
Tenth General (1995)	no increase
Eleventh General (1998)	45
Twelfth General (2003)	no increase
Thirteenth General (2008) [2]	no increase

[1] This review was conducted outside the five-year cycle.
[2] Ad hoc increases totaling 11.5 percent have been agreed in the two rounds of the Quota and Voice reform that concluded in March 2008.

5. **Since late 2008, the global economy has been engulfed in a systemic crisis.** The crisis differed from earlier episodes in several dimensions, notably in its origins in financial problems in large industrialized economies and the strength of its transmission across the globe. Many countries faced very large fiscal or external financing requirements stemming from the need to provide assistance to the financial sector, the retraction of cross-border financial flows, breakdowns in the operation of domestic and international financial markets, and a flight to safety. External liquidity arrangements were sought by advanced economies as well as emerging market countries, through IMF facilities (about US$170 billion to date),

[3] *Thirteenth General Review of Quotas—Assessing the Adequacy of Fund Resources (*11/27/07).

swap lines with the U.S. Federal Reserve (amounting to US$620 billion before being uncapped for several central banks at the height of the crisis, with a further US$120 billion committed to emerging economies) and the European Central Bank (ECB), and support from other official agencies.[4] In addition, the IMF issued more than US$280 billion in Special Drawing Rights (SDRs) to boost global liquidity, taking overall support to the world economy well beyond a trillion US dollars. The crisis and the policy response have illustrated that high cost, low probability "tail events" are not an academic abstraction, and provided fresh evidence of the Fund's relevance for individual members and the global economy.

6. **The Fund responded rapidly and flexibly to meet members' needs by committing substantial resources, working with other official agencies.** The Fund committed resources at a record pace, with 21 new Stand-By Arrangements (SBAs) approved since early November 2008—five in that month alone—with emergency procedures followed in seven cases (Figure 1, top panel). Fund access limits were doubled, and access has been more front-loaded than in the past.[5] Other official agencies have also provided unprecedented levels of international support, sometimes in parallel with Fund programs. Notably, the EU and World Bank committed supplementary financing in conjunction with non-precautionary SBAs worth SDR 29.6 billion, just over half of the SDR 57.3 billion committed by the Fund.[6]

7. **To better combat current and future crises, new lending tools were created.**[7] The new Flexible Credit Line (FCL) replaced ex-post conditionality with a set of ex-ante qualification criteria, signaling that Fund resources would be available in large amounts to members meeting these criteria (3 FCLs were approved with SDR 52.2 billion committed). The availability of high access precautionary arrangements (HAPAs) was enhanced for members seeking similar support that did not qualify for the FCL (3 arrangements with SDR 1.6 billion committed). These two instruments represent a shift towards providing insurance to prevent crises. Preliminary evidence suggests that rapid, front-loaded financing has been successful in ameliorating the impact of the crisis and smoothing adjustment.[8]

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[4] Fed swap lines are described at http://www.federalreserve.gov/monetarypolicy/bst_liquidityswaps.htm and by Goldberg, Kennedy, and Miu, *Central Bank Dollar Swap Lines and Overseas Dollar Funding Costs,* Federal Reserve Bank of New York Staff Report, no. 429, January 2010. ECB press releases (www.ecb.europa.eu) announce liquidity schemes for Hungary, Denmark, Poland, and Sweden.

[5] Access levels under Fund arrangements approved since end October 2008 have averaged (unweighted basis) 619 percent of quota for non-precautionary SBAs, 300 percent of quota for precautionary SBAs, and 967 percent of quota for FCLs.

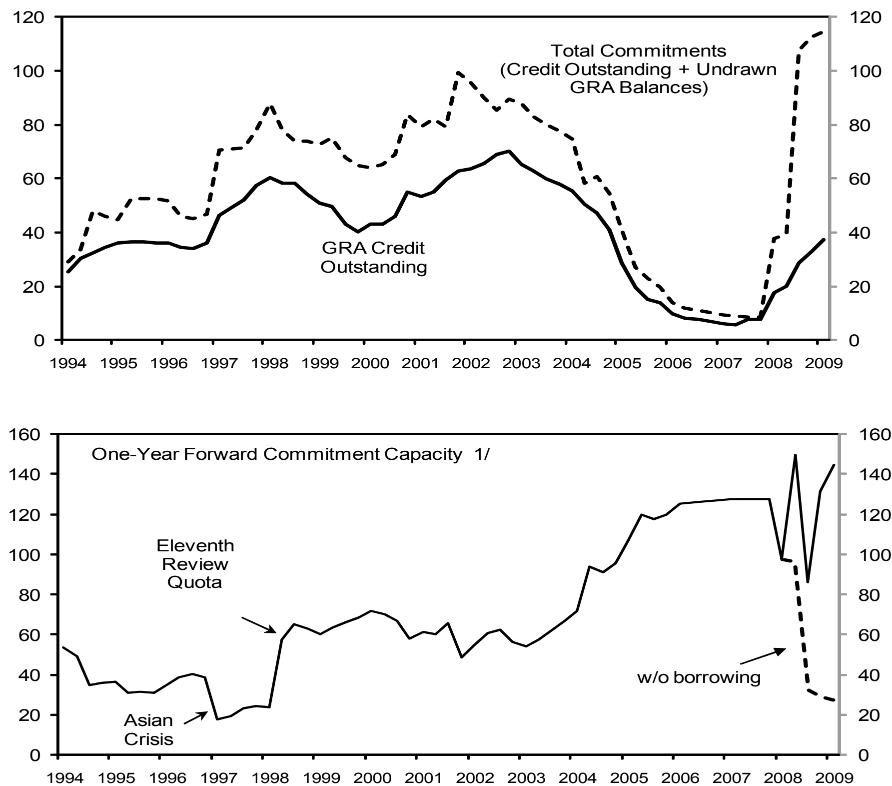
[6] The Fund also took a number of initiatives to help mitigate the impact of the crisis on low-income countries. These are not discussed in this paper because concessional IMF support is financed from a separate pool of resources. This report focuses on the adequacy of the resources of the General Resources Account.

[7] *GRA Lending Toolkit and Conditionality—Reform Proposals* (3/13/09), and *GRA Lending Toolkit and Conditionality—Reform Proposals—Revised Proposed Decisions* (3/19/09).

[8] *Review of Recent Crisis Programs* (9/14/2009).

8. **This flexible response would not have been possible without a substantial increase in Fund resources.** In September 2008, the Fund's forward commitment capacity was at a record high of almost SDR 128 billion. Nonetheless, concerns about the adequacy of Fund resources emerged soon after the crisis escalated following the collapse of Lehman Brothers. This reflected an appreciation that, in order to stabilize expectations, potential, rather than actual, financing needs would have to be covered.[9] Following calls by the G-20 and IMFC, the Fund expanded its resources through bilateral loan and note purchase agreements, with SDR 146 billion in bilateral financing available by end-2009. In the absence of these resources, the rise in credit commitments would have largely exhausted the Fund's commitment capacity (Figure 1, lower panel), which could have undermined confidence in the Fund's ability to support its members.

Figure 1. GRA Credit, Commitments, and Commitment Capacity: 1994–2009
(SDR billions)



1/ In December 2009 the FCC is adjusted to exclude receipts from gold sales to central banks of SDR 4.5 billion. The FCC includes only the amounts of NAB and GAB resources that have been activated.

Source: Finance Department

9. **Altogether, these developments indicate that potential future demand for Fund resources may be significantly higher than previously contemplated:**

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[9] *Review of the Adequacy of and Options for Supplementing Fund Resources* (1/12/09).

- The potential for economies with large financial sectors and cross-border exposures to face substantial external financing needs and consider using Fund resources has been demonstrated. Moreover, more modest growth outlooks than previously assumed in many countries, combined with significant fiscal challenges, could yet translate into a greater need for Fund resources.

- The crisis has shown that the Fund's lending resources should not be structured only to meet the needs of emerging market and low income countries. While only one advanced economy requested Fund support, several received important liquidity support from key central banks, and the risk that others could need Fund support cannot be ruled out, as discussed below.

- The crisis has highlighted the need for large liquidity buffers in dealing with fast and hard-hitting capital market shocks. However, it is costly, both nationally and globally, for each country to build huge buffers. The Fund can help reduce the need for countries to self-insure against crises. To be credible, this will need to be backed up by adequate resources—that is, resources that give confidence to both markets and members that enough liquidity will be available if needed.

- The number of members that might seek Fund resources has been broadened with the recent reforms related to the FCL and HAPA, and with more focused conditionality contributing to reducing the stigma of Fund arrangements. Indeed, members may seek large precautionary arrangements earlier in any future crisis as a preventive measure, which would require substantial IMF resources to be readily available.

- The timely availability of resources from other official sources, including key central banks, to those members in need cannot be taken for granted. The Fund may well have to take on a greater share of the overall response in future crises, consistent with its mandate and its role in the international financial system.

III. The Size and Composition of Fund Resources

10. **The appropriate size of the Fund's quota and borrowed resources is considered from a number of perspectives.** Consistent with its character as a quota-based institution, the Fund normally finances its General Resources Account (GRA) lending from its quota resources, but it has the ability to supplement its own resources through borrowing, as discussed in section III.A, which concludes that quota resources should be sufficient in most circumstances. In this context, section III.B assesses the size of quota resources based on traditional indicators, and scenarios that combine past crisis experience with recent developments in access and facilities. The Fund must also be equipped to protect international financial stability against unforeseen shocks, and section III.C explores scenarios of extreme stress to assess the size of total Fund resources, including borrowing such as through the NAB. These approaches provide a range of estimates for the size of total

Fund resources, with most estimates pointing to increases that would be large by historical standards. Against this background, section III.D briefly discusses the Fund's framework for containing potential moral hazard.

A. Roles of Quota Resources and the Expanded NAB

11. **The Fund is a quota-based institution.** Quotas play several key roles in a member's relationship with the Fund. First, members' quotas are the Fund's primary source for its financial assistance, with the currencies used in such assistance being provided, as an obligation under the Articles of Agreement, by those members with a sufficiently strong external position in the judgment of the Executive Board. Use of these resources is governed by the Executive Board under the quarterly Financial Transactions Plan (FTP). Second, quota subscriptions are central to the governance of the Fund and, together with basic votes, they determine members' voting power. Finally, members' quotas are also relevant for access to Fund resources and the thresholds above which surcharges are payable on the use of Fund resources, and general SDR allocations and dividend distributions are also made in proportion to quotas.

12. **Fund practice and policy has been to borrow only as a temporary supplement to quota resources.**[10] Borrowing has been considered appropriate at times when the Fund's current or prospective liquidity was regarded as inadequate, when the timing and size of a general quota increase was uncertain, and to finance the operations of newly-established facilities. Recent examples include the activation of the GAB and NAB in 1998 as a bridge to the effectiveness of a general quota increase.[11] Borrowing played its most important role in the late 1970s, when it financed over 60 percent of Fund credit and represented almost 30 percent of total quotas, but use of borrowing was later unwound and remained limited for the past two decades, except for the most recent period (Figure 2).

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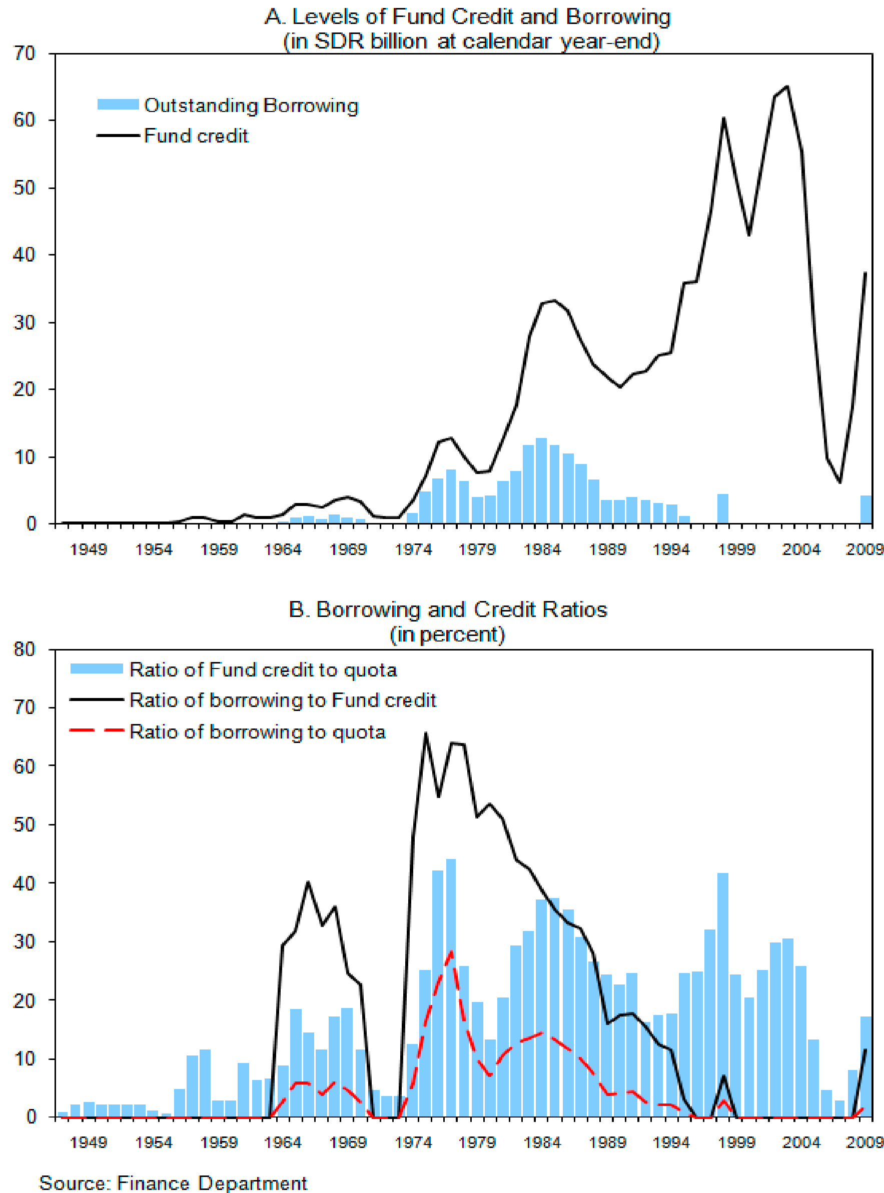
[10] The Fund is authorized to borrow to "replenish" its holdings of currencies in the GRA that are needed for lending (Article VII, Section 1(i)). The Guidelines for Borrowing by the Fund begin "Quota subscriptions are and should remain the basic source of the Fund's financing. However, on a temporary basis, borrowing by the Fund can provide an important supplement to its resources."

[11] The NAB and GAB activations were terminated in March 1999, when the Fund repaid the outstanding amounts following payments of quota increases under the 11th General Review of Quotas.

Figure 2. Borrowing by the Fund, 1947-2009



13. **Substantial temporary bilateral borrowing was necessary in the current crisis.** Total pledges under bilateral loan and note purchase agreements have amounted to SDR 199 billion, providing supplementary resources from the agreements in effect at end-2009 of SDR 146 billion. However, these borrowed resources were committed by members on a temporary basis, with drawings or note issuance feasible for a maximum of five years, and in some cases for no more than two years.

14. **The expanded NAB would replace this bilateral financing with a larger backstop to quota resources.** Standing borrowing arrangements have long been used by the Fund to provide a multilateral framework for supplementing its quota resources (Annex I). However, the NAB was not activated in the current crisis as it was too small to provide a credible boost

to Fund resources. In addition to being expanded from SDR 34 billion to about SDR 367 billion, it is intended that the reformed NAB will be a more flexible tool for crisis management than the current NAB (Box 1).[12] The fundamental backstop character would remain unchanged, with the NAB only to be activated when supplementary resources to quota resources are needed in order to forestall or cope with an impairment of the international monetary system. (Annex II compares key features of quotas with the proposed NAB.)

15. **The foregoing indicates that quota resources should at least be sufficient to meet members' needs in most circumstances.** As discussed, Fund practice and policy has been to borrow principally in circumstances where a temporary supplement to quotas is necessary. In

Box 1. Key Elements of the Proposed NAB Reform

The NAB is being reformed to make it a more effective tool of crisis management, while safeguarding the participants' interests. Key reform elements are:

- **Expanded range of allowed uses.** The current NAB is available only for specific transactions, which vary between participants and non-participants, and cannot, e.g., be used to finance FCL arrangements. Resources of the expanded NAB will be available to finance all GRA transactions by NAB participants and non-participants alike.

- **More operationally flexible form of activation.** To provide increased operational flexibility while ensuring appropriate governance of NAB resources, the cumbersome procedures for activation on a loan-by-loan basis are to be replaced by "periodic" activation, where NAB participants would authorize the use of NAB resources for arrangements approved, or outright purchases made, during a certain period (of no more than 6 months), up to a limit which could be below the total credit arrangement. Within such authorization, the use of NAB resources would be decided by the Executive Board through quarterly resource management plans.

- **Strengthening the built-in liquidity buffer for possible early repayments.** The NAB will include a stronger framework for using NAB resources to finance possible early repayments to a NAB participant with a balance of payments need. This will allow all NAB claims to continue to be treated as reserve assets regardless of their size. It will also reduce the need to maintain a liquidity buffer of quota resources, thus allowing the Fund to commit a larger share of quota resources before the activation of the NAB would need to be considered, reinforcing the backstop nature of the NAB.

- **More flexibility in admitting new participants and in increasing the size of the NAB.** The NAB will be modified to allow admission of new participants at any time (currently this is possible only when the decision is reviewed, unless it is amended by an 85 percent majority).

[12] Amendments to the NAB are discussed in the forthcoming paper, *Proposed Decision to Modify the New Arrangements to Borrow.*

addition to being temporary, recourse to borrowing should be exceptional:

- ***Given the voluntary nature of bilateral borrowing, its availability is not assured.*** Maintaining quotas at a level such that recourse to borrowing could be reasonably anticipated would therefore unduly risk undermining confidence that adequate Fund resources are available when needed.

- ***NAB resources are accessible only when the activation conditions are met.*** Activation has a separate governance structure that requires approval by a super-majority of the subset of Fund members that participate in the NAB.[13] Moreover, while the NAB is a standing borrowing arrangement, it is subject to regular reviews, and the size of the NAB shall be reconsidered in light of the outcome of the 14th General Review.[14]

16. **Nonetheless, by back-stopping quota resources in case of threats to international financial stability, a standing NAB provides important support to the Fund's quota based financing mechanism.** A sufficiently large standing NAB gives confidence that adequate resources will be available in the exceptional circumstances that warrant activation. Hence, while additional quotas over those needed in most circumstances would help provide assurance regarding the immediate availability of resources, quotas need not be as large as would be necessary to fully cover such "tail risks". During a severe crisis, demand for Fund arrangements is likely to originate from members that had access to international capital markets, including from some members in the FTP. A large NAB can credibly commit substantial resources to such members, helping to limit exits of members from the FTP and the associated reduction in the Fund's available quota resources.[15] The built-in liquidity buffer in the reformed NAB also implies that the Fund can use a larger share of its quota resources before the NAB needs to be activated compared with bilateral borrowing.

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[13] Activation of the NAB would follow a proposal for the establishment of an activation period from the Managing Director summarizing the need for a temporary supplement to the Fund's resources in order to forestall or cope with an impairment of the international monetary system. Activation would require first the approval by NAB participants holding 85 percent (increased from 80 percent in the existing NAB) of credit arrangements eligible to vote, and then a decision by the Executive Board by a majority of the votes cast.

[14] It is proposed that the amended NAB be reviewed no later than November 15, 2011.

[15] In the current global crisis, exits from the FTP have been limited to Hungary and Kazakhstan, but in previous crises, such as the Asian crisis, there was a larger reduction in the size of resources available through the FTP. An exit from the FTP would also reduce NAB resources if the member participates in the NAB, as members that are no longer in a sufficiently strong external position to participate in the FTP would not be subject to calls under the NAB.

B. Assessing the Size of Quota Resources

Quotas relative to global economic indicators

17. **The adequacy of quotas is first assessed relative to traditional indicators of the global economy.** The potential needs of the membership for Fund financing depend on many factors, including the overall size of the global economy (GDP, trade and financial flows, and domestic and international asset and liability positions), the strength of members' policies and institutions, and the depth and robustness of domestic and international financial systems. Nonetheless, the recent crisis indicates that large and concentrated financing needs can arise even with improved macroeconomic policies and institutions, implying that the traditional indicators of the size of the global economy remain key yardsticks for Fund resources. The following comparisons are based on quota resources agreed under the 2008 Quota and Voice reform ("agreed quotas"), with the increase in quotas to SDR 238.4 billion designed to address Fund governance issues rather than the size of the Fund.[16]

18. **The size of quotas relative to global GDP was a key consideration in previous quota reviews.** From the early 1980s to the late 1990s, quota increases were generally sufficient to keep Fund quotas broadly stable relative to global GDP, at around 1.2 percent (Figure 3, Table 2).[17] The exception during the period was the Tenth General Review, when no quota increase took place, though this was followed, in the wake of the Asian crisis, by the acceleration of the Eleventh Review, which restored the agreed size of the Fund relative to global GDP by 1998. Global GDP has since doubled, while two consecutive general reviews were completed without a quota increase. As a result, current quota resources in relation to global GDP have reached the lowest level in the history of the Fund. *An 80 percent increase in quota resources would be needed to restore quotas relative to GDP to the level agreed at most reviews during the 1980s and 1990s*.

19. **The growing importance of trade and capital flows suggests that higher quota relative to global GDP than previously maintained may be needed.** An economy's openness can entail risks beyond those captured by its size, suggesting that these factors should also be taken into account in assessing the potential need for Fund resources. Since the Eleventh Review, rapid globalization has been reflected in current international payments growing by 230 percent. Whereas quota resources were in the range of 5 to 7 percent of current payments from the early 1980s until the late 1990s, agreed quota resources are now just under 2 percent of current payments. *To return quotas relative to international trade to their 1998 level, quota resources would need to expand by about 195 percent*. In the same

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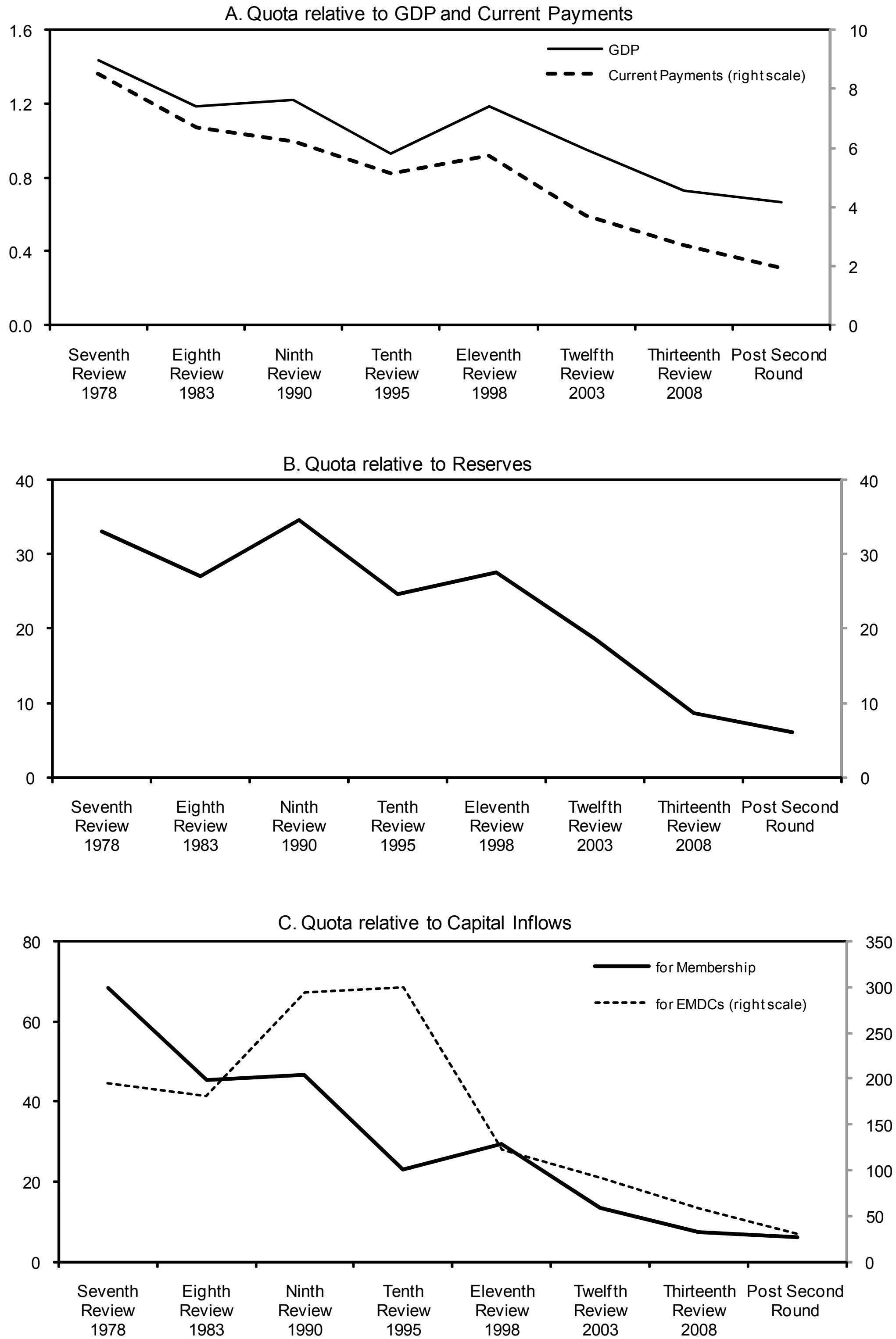
[16] The 11.5 percent increase reported in Table 1 is the sum of the first round of ad hoc quota increases already in effect (for China, Korea, Mexico, and Turkey), and the second round of ad hoc increases for 54 members agreed in March 2008, totaling 9.55 percent.

[17] Data reported in Table 2 and Figure 3 is based on IMF membership at the time of each quota review.

Figure 3. Indicators of the Size of Fund Quota (In Percent)



Source: Finance Department.

Table 2. Size of Fund Quota and Economic Indicators
(In billions of SDRs unless otherwise indicated)

	Seventh Review 1978 1/	Eighth Review 1983 1/	Ninth Review 1990 1/	Tenth Review 1995 1/	Eleventh Review 1998 1/	Twelfth Review 2003 1/	Thirteenth Review 2008 1/	Post Second Round 2/
Size of Quota Increase, in Percent	50.9	47.5	50.0	0.0	45.0	0.0	0.0	11.5
1. Agreed size of the Fund 3/ 4/ 5/	61.1	90.0	135.2	146.1	212.0	213.7	217.6	238.4
2. Economic indicators and applicable data periods	1972-76	1976-80	1981-85	1986-90	1990-94	1995-99	2001-05	2004-08
a. GDP	4,253	7,588	11,083	15,744	17,884	22,442	29,912	35,771
b. Current payments 6/	718	1,341	2,168	2,852	3,700	5,785	8,026	12,251
c. Reserves	185	333	391	594	768	1,150	2,539	3,957
d. Variability of current receipts	43	67	112	159	173	264	345	444
e. Capital inflows 7/	89	199	291	634	718	1,608	2,990	3,841
f. Capital inflows to EMDCs 7/	31	50	46	49	173	233	373	805
3. Ratio of the agreed size of the Fund to economic indicators (Index, 1998=100)								
a. GDP	121.2	100.0	102.9	78.3	100.0	80.3	61.3	56.2
b. Current payments 6/	148.5	117.1	108.8	89.4	100.0	64.5	47.3	34.0
c. Reserves	119.7	98.0	125.3	89.1	100.0	67.4	31.1	21.8
d. Variability of current receipts	116.1	109.7	98.6	75.1	100.0	66.2	51.5	43.9
e. Capital inflows 7/	231.6	153.3	157.5	78.1	100.0	45.0	24.7	21.0
f. Capital inflows to EMDCs 7/	158.7	147.6	239.1	243.3	100.0	74.7	47.5	24.1
4 Ratio of the agreed size of the Fund to economic indicators (in percent)								
a. GDP	1.4	1.2	1.2	0.9	1.2	1.0	0.7	0.7
b. Current payments 6/	8.5	6.7	6.2	5.1	5.7	3.7	2.7	1.9
c. Reserves	33.0	27.0	34.6	24.6	27.6	18.6	8.6	6.0
d. Variability of current receipts	142.1	134.3	120.7	91.9	122.4	81.0	63.1	53.7
e. Capital inflows 7/	68.4	45.2	46.5	23.1	29.5	13.3	7.3	6.2
f. Capital inflows to EMDCs 7/	195.1	181.4	293.9	299.0	122.9	91.8	58.4	29.6
5. Current quota needed to restore relative size of Fund at the time of past quota increases (in billions of SDR)								
a. GDP	514	424	436	-	424	-	-	-
b. Current payments 6/	1043	822	764	-	702	-	-	-
c. Reserves	1307	1069	1368	-	1092	-	-	-
d. Variability of current receipts	630	596	535	-	543	-	-	-
e. Capital inflows 7/	2626	1737	1786	-	1134	-	-	-
f. Capital inflows to EMDCs 7/	1569	1460	2365	-	989	-	-	-
6. Simple average (a,b, and f)	1042	902	1188	-	705	-	-	-
7. Weighted average (a,b,c and d) 8/	730	602	596	-	559	-	-	-

Source: Finance Department

1/ Year in which the quota review was completed, i.e., when the Board of Governors' Resolution on quota increases was approved. The Tenth Review did not provide for an increase in quotas, and the increase in actual quotas relative to the Ninth Review is due to the increase in the number of members.
2/ Based on preliminary data primarily from the World Economic Outlook, October 2009.
3/ Column for Seventh Review includes the special quota increases for China and Saudi Arabia in 1980 and 1981.
4/ Column for Twelfth Review includes China's ad hoc quota increase of SDR 1.682 billion in 2002.
5/ Column for Thirteenth Review includes ad hoc quota increases for China, Mexico, Korea, and Turkey of SDR 3.809 billion in 2006.
6/ Defined as the average of the sum of payments on goods, services, income and current transfers for a five-year period.
7/ Defined as the three-year average of the sum of inflows of direct, portfolio and other investment. Data based on World Economic Outlook, October 2009.
8/ The following weights are used: 0.5 for GDP, 0.3 for current payments, 0.05 for reserves and 0.15 for variability of current receipts.

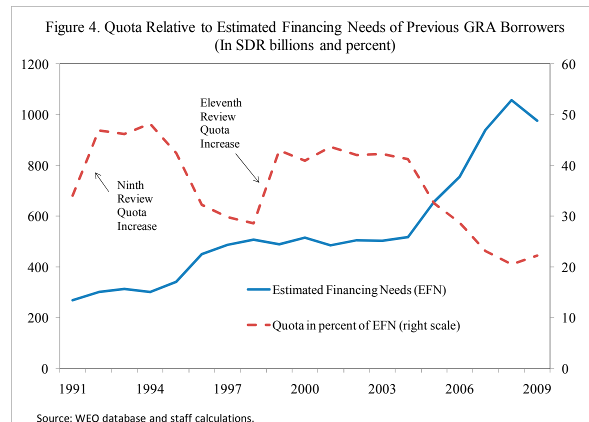
period, capital inflows to emerging markets and developing countries (EMDC) have jumped by 366 percent. *Returning to 1998 levels relative to capital inflows to EMDCs would require a quota increase of 315 percent* (see bottom of Table 2). If the expansion in trade and capital flows and the growth in GDP are given equal weight*, returning to 1998 levels relative to this average would require a quota increase of almost 200 percent*.

20. **The sharp reduction in quotas relative to members' own reserves is a further indicator of the need for a larger international liquidity pool.** Quotas corresponded to 28 percent of global reserves at the time of the Eleventh Review, and they had remained around 30 percent of global reserves during the two preceding decades. However, agreed quotas have dropped to only 6 percent of reserves with the subsequent 415 percent increase in reserves. Even if a significant portion of this accumulation reflects non-precautionary factors, the capacity of quotas to augment or replenish members' external liquidity buffers when they are under pressure, is, nonetheless, greatly diminished. One way to assess the role of reserves for quota resources is in the context of the quota formula, a benchmark that has also been used in earlier general quota reviews. Assigning the same weights to GDP, current payments, reserves, and variability of current receipts as used in the current quota formula, *returning to 1998 levels would require a quota increase of over 130 percent*.

Quotas relative to members' external financing needs

21. **Estimates of members' external financing needs are also used to assess the adequacy of quota resources, as in past reviews.** The following analysis is based on estimates for 76 past GRA borrowers since 1990. Estimated financing needs (EFN) of this group of members have almost doubled from 1998 to 2009 (Figure 4), even with reserve accumulation by countries with reserves exceeding short-term debt excluded from the estimates.[18] As a result, quota resources declined to about 22 percent of EFN of previous GRA borrowers in 2009, from 43 percent after the Eleventh Review. As quota increases will take some time to come into effect, and will be in place for some years, the medium-term growth in

Figure 4. Quota Relative to Estimated Financing Needs of Previous GRA Borrowers
(In SDR billions and percent)



Source: WEO database and staff calculations.

[18] As in *Thirteenth General Review of Quotas - Assessing the Adequacy of Fund Resources* (11/27/07), gross financing needs are estimated using WEO data as the sum of current account deficits net of grants, medium- and long-term debt amortization, arrears repayments, and reserve accumulation. EFNs are calculated by adjusting gross financing needs to include short-term debt but to exclude reserve accumulation by countries with reserves exceeding short-term debt, and to also exclude countries with negative gross needs.

financing needs should also be considered. Based on WEO projections, *a quota increase in the order of 110 percent would be needed to restore the ratio of quota resources relative to EFN to its level at the Eleventh Review until 2014.*

22. **Further analysis aims to assess the aggregate financing need the Fund could expect in most circumstances, drawing on past crisis experience** (see Annex III). The analysis focuses on past peaks in Fund commitments in 1998, 2002, and 2009, which can help guide assessments of the scale of quota resources needed in most foreseeable circumstances, although this experience should be considered a lower bound given that the FCL did not exist in previous crises, and it was a new facility in the current crisis. Two scenarios illustrate the potential need for quota resources:

- **Scenario A is for a scale broadly in line with the average experienced in recent years.** The range of members with Fund arrangements is assumed to be the average of the three crises (at 5.4 percent of global GDP). To accommodate the estimated rise in EFN by 2014, access levels are assumed to average 905 percent of agreed quota, up from 833 percent in 2009.[19] *Covering the implied volume of Fund credit commitments by 2014 would require a quota increase of almost 70 percent*.

- **Scenario B covers the historical maximum in terms of members with Fund arrangements, corresponding to the experience in 1998.** A crisis of such scope would involve commitments to members accounting for 8 percent of global GDP. With the same average access as scenario A*, this scenario would indicate a roughly 140 percent quota increase*.

Summary of quota analysis

23. **The analysis in this section leads to a relatively broad range for potential quota increases—with several indicators suggesting roughly a doubling, but others also larger increases** (Table 3). Quota increases of 70 to 80 percent are consistent with a crisis scenario broadly in line with the average experienced in recent years and would be sufficient to broadly restore the size of quota relative to GDP to the level maintained from the Eighth to the Eleventh Reviews. Larger increases, exceeding 100 percent, would be needed to reflect the growth in trade, capital flows, and reserves.

Table 3. Summary of Analysis of Potential Quota Increases

	Quota (SDR billion)	Increase (Percent)
Post Second Round Quota	238.4	
Restoring quota to former benchmarks		
Relative to global GDP (8th, 9th and 11th reviews)	429	80
As a share of EFN (in 2014)	500	110
Relative to quota formula weighted variables	559	134
Relative to current payments	702	194
Relative to average of GDP, trade, and capital flows	705	196
Relative to capital inflows to EMDCs	989	315
Scenarios based on crisis experience		
A: Crisis of recent average scope	397	67
B: Crisis of similar scope to 1998	573	140

Source: staff calculations.

[19] The assumptions on access are guided by the absolute level of access in the current crisis, and the scenarios do not reflect a larger quota in the SDR amounts committed.

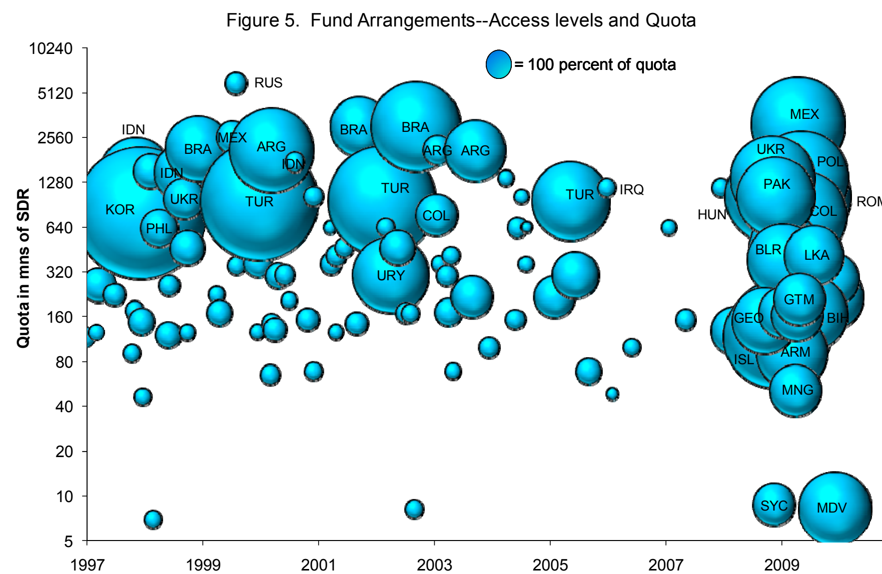
Increases above 100 percent would also enable the Fund to provide crisis support to a broader range of members in scenarios that may better reflect the potential scope of Fund support following the adoption of the FCL (see scenario B).

24. **Further reform of Fund lending facilities would add to these needs.** The recent Board paper on the Fund's Mandate suggests a number of reform options, including increasing the FCL's flexibility (with higher access or relaxed qualification criteria) or systemic swap lines (the Fund unilaterally offering to make a credit line available for a specified period to members who satisfy certain qualification criteria). If some of these options are pursued, the size of the Fund's resources would need to be commensurately larger. Depending on the outcome of these discussions, an assessment of the implications for Fund resources would be undertaken in a future staff paper.

C. Assessing the Size of Total Fund Resources

25. **Preserving international financial stability in a severe systemic crisis requires that the Fund can quickly supplement its quota resources through borrowed resources.** Recent history illustrates that Fund commitments can be large and concentrated (Figure 5). Total Fund resources, including the NAB, must give confidence that the Fund can play its role in preserving international financial stability in a "tail risk" event. Assessments of resources that could be necessary are unavoidably subject to great uncertainty. This section takes a scenario-based, bottom-up approach. A key difference from the analysis presented above is that the analysis tries to capture some of the tail risks not realized in previous crises, such as the potential demand for Fund arrangements that in practice did not materialize after the April 2009 G-20 and IMFC meetings helped restore confidence. There is also the possibility that some large economy authorities may be more constrained in future than in recent crises, with part of the financing burden assumed to be taken by up the Fund.

Figure 5. Fund Arrangements--Access levels and Quota



Source: Staff calculations.

26. **Two approaches are presented:**

- *Financing scenarios*: shocks to external financing flows (FDI, external debt rollovers, portfolio flows) are assumed, which are partially buffered by international reserve drawdowns and current account adjustment. Fund financing is assumed to cover the majority of the financing gap, with other official sources covering the remainder.

- *Access scenarios*: a set of members are assumed to request Fund support, with total commitments based on assumptions for access levels. While it is unlikely that all these members would request access simultaneously, the analysis indicates the scale of resources needed to give confidence that such support could be provided.

27. ***Financing scenarios* point to a potential need for Fund support on the order of SDR 580 billion in a tail event** (Annex IV). More than sixty emerging market and advanced economies are included in the analysis, drawn from the vulnerability exercises for emerging economies (VEE) and for advanced economies (VEA), supplemented by a few cases of members currently drawing from the GRA. In a sudden-stop scenario, a subset of emerging markets have financing needs estimated at around SDR 270 billion. Resident and non-resident deposit outflows would further increase the number of emerging economies that require financing, with the potential total need for Fund financing rising to some SDR 430 billion. In these scenarios, advanced economies generate up to SDR 150 billion in additional Fund commitments in the face of a systemic banking crisis and with some fiscally vulnerable countries experiencing difficulties funding government debt.[20]

28. ***Access scenarios*, based on simple access assumptions, also indicate large potential needs for Fund resources, on the order of SDR 675 billion in a tail event.** These scenarios assume Fund arrangements with the same subset of members as in the above financing scenario. Rather than basing access on calculated financing needs (which implies wide variations in access levels), uniform access of 1,000 percent of agreed quota is assumed, consistent with several cases during the current crisis. Under such assumptions, emerging markets facing a combined sudden stop and deposit outflows would require total Fund financing of SDR 385 billion. Financing committed to advanced economies would be about SDR 290 billion—somewhat lower than the amounts drawn under the major central bank foreign exchange swaps at the height of the current crisis.

[20] The advanced economies included are those identified as highly vulnerable in the Fall 2009 vulnerability exercise for advanced economies and also those with large financial sectors relative to their size (taken from the forthcoming Board paper 'Cross-Cutting Themes in Surveillance of Economies with Large Financial Sectors').

29. **These scenarios highlight the value of the proposed renewed and expanded NAB as a standing backstop to the Fund's quota resources.** At around SDR 367 billion, the expanded NAB represents a substantial backstop to the Fund's quota resources. For example, together with an 80 percent increase in quota resources, the Fund's total resources would be SDR 800 billion, sufficient to make commitments covering the need for Fund support of SDR 580 billion in the above tail event financing scenario (Table 4). Generating a commitment capacity sufficient to cover the SDR 675 billion financing need from the access-based scenario would require a quota increase of 140 percent, bringing the Fund's total resources to about SDR 940 billion. These results indicate that the expanded NAB would remain a valuable tool to forestall impairment of the international monetary system even with the substantial quota increases indicated by the analysis of the previous section.

30. **A doubling of quotas, together with the proposed expanded NAB, would provide the Fund with a commitment capacity of about US$ 1 trillion.** This would allow the Fund to support members with its current facilities under a broad range of scenarios. As noted, however, substantial additional resources could be needed to support a further significant upgrading of the Fund's crisis prevention and resolution instruments. A detailed assessment of those needs is premature, given that discussions on these instruments and the Fund's mandate are at an early stage.

Table 4. Commitment Capacity from Quota and NAB Resources 1/
(In billions of SDRs)

	Total Quota A	Quota of FTP Members B	Prudential Balance C=0.2*B	Quota-based Commitment Capacity D=B-C	Expanded NAB Resources E	Total Resources A+E	Total Commitment Capacity 2/ D + 0.8*E
Agreed quota and NA	238.4	200	40	160	367	605	453
Quota increase (percent)							
50	358	300	60	240	367	725	533
60	381	320	64	256	367	748	549
70	405	339	68	272	367	772	565
80	429	359	72	288	367	796	581
90	453	379	76	304	367	820	597
100	477	399	80	320	367	844	613
110	501	419	84	335	367	868	629
120	524	439	88	351	367	891	645
130	548	459	92	367	367	915	661
140	572	479	96	383	367	939	677
150	596	499	100	399	367	963	693

Source: Finance Department
1/ NAB total is preliminary. Calculations assume that the NAB remains unchanged from current proposals.
2/ A liquidity buffer of 20 percent is assumed to be retained in the NAB to ensure the reserve asset status of NAB drawings.

D. Enlarged Fund Resources and Moral Hazard

31. **Past discussions on the size of the Fund have weighed the benefits of adequate resources for the Fund against potential costs.** It has been noted that the costs associated with a possible shortfall or excess of Fund resources are asymmetric, in that the direct financial costs to creditor members of an increase in quotas are negligible, whereas the potential costs of an inadequate resource base are much larger in terms of the impact of disorderly adjustment on members and on the system if the Fund were unable to fulfill its responsibilities.[21] Nonetheless, an increase in Fund resources on the orders of magnitude discussed above could raise concerns about moral hazard. While the range of quota increases from section III.B includes increases that are large by historical standards, this primarily reflects the fact that there has not been a general quota increase since 1998. Moreover, increases in this range would return the size of the Fund to previous levels relative to the size of the global economy. In this sense, concerns about moral hazard are not of a fundamentally different magnitude than in the past.

32. **Moral hazard risks are contained by several factors, including the design of Fund programs.** Fund lending has long raised concern that it may lead to excessive risk taking by national authorities in setting policies (debtor moral hazard) or by private creditors underpricing lending risks (creditor moral hazard). However, a broad consensus has emerged at past Board discussions that this risk is low in practice, owing to the strong framework in place to limit the risk of losses to the Fund (Box 2).[22] A key factor mitigating debtor moral hazard is the design of Fund programs, which provide financing to smooth adjustment, while ensuring the member's capacity to repay the Fund in the medium term. While ex post conditionality was eliminated in the case of the FCL, moral hazard concerns were instead to be addressed through eligibility criteria in relation to a member's fundamentals, economic policy frameworks and policies, and track record of policy implementation. As in previous financial crises, a number of recent IMF programs addressed possible creditor moral hazard directly, with the Fund successfully coordinating efforts to maintain private banks' exposure (for example, in the so-called 'Vienna Initiative'), such that Fund support would not be used to finance outflows to institutions that had been major sources of inflows prior to the crisis.

33. **There are also strong safeguards against superfluous lending.** Fund lending requires that the member has a balance of payments need, as well as Executive Board approval. As a result, there is no evidence of unnecessary lending—the Fund had very low new lending commitments in the years leading up to the current crisis, despite having large

[21] *Thirteenth General Review of Quotas—Assessing the Adequacy of Fund Resources* (11/27/07).

[22] Potential moral hazard implications of larger IMF resources have been discussed in previous quota reviews, in particular the 12th review that took place after the capital account-related crises of the 1990s. The staff paper *Fund Financial Support and Moral Hazard: Analytics and Empirics* (3/2/07) provides an overview of the arguments.

uncommitted resources. Looking ahead, the implementation of the Fund's new income model will create new sources of income, reducing dependence on lending as an income source, and thereby reducing further any budgetary incentives to lend.

Box 2. Fund Lending and Moral Hazard

Standard definitions of moral hazard refer to the risk that one party to a contract can behave to the detriment of the other party in ways that cannot fully be captured by the contract. The concept originates from the insurance industry: insured parties can change their behavior in ways that raise the likelihood of the event being insured against, generating an expected loss for the insurer. For example, with a home insurance policy in place, owners may take fewer precautions to avoid damage to their property than in the absence of insurance.

Applied to the IMF as a global 'insurer', if Fund loans were not repaid, resulting in a transfer of wealth from the IMF to private creditors and debtor governments, the moral hazard incentive to take on excessive risk would be obvious. However, if loans are always repaid in full and rates of charge adequately compensate for repayment risk, the Fund cannot be a source of moral hazard. This is the essence of the 'Mussa theorem'.[1]

In practice the repayment record of the Fund is very good—to date, Fund financial support has not involved any quantitatively significant wealth transfer.[2] Members that borrow from the Fund and their private creditors are therefore unlikely to believe that the Fund will make losses on its current or future loans. Hence, they are unlikely to adopt a 'moral hazard play' in the expectation of a subsidy from the IMF.

Moral hazard is also frequently defined more loosely as *any* greater risk taking by debtors or creditors in response to the prospect of official financial support. But it can be noted that increased risk taking is to some extent *expected and desirable* due to the Fund's existence, in that it permits higher aggregate growth through international transactions, while sharing the risks these incur. Further, the intended purpose of Fund financing is to allow members experiencing balance of payments difficulties to run more expansionary fiscal and monetary policies than they otherwise could, thereby avoiding other problems—such as protracted recessions or protectionist measures. Fund lending would be welfare enhancing as long as it provides insurance benefits in excess of the cost (in terms of losses incurred by additional risk-taking). In the past, conditionality (for debtor moral hazard) and private sector involvement (for creditor moral hazard) have also acted as mitigants to risky behavior, and can be thought of as a form of "copayments".

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[1] See Mussa, Michael, 1999, "Reforming the International Financial Architecture: Limiting Moral Hazard and Containing Real Hazard," in *Capital Flows and the International Financial System*, ed. by David Gruen and Luke Gower (Sidney: Reserve Bank of Australia), 216–36. Mussa, Michael, 2004, "Reflections on Moral Hazard and Private Sector Involvement in the Resolution of Emerging Market Financial Crises," in *Fixing Financial Crises in the Twenty-first Century*, 2004, ed. by Andy Haldane (London: Routledge), pp. 33–51.

[2] Zettelmeyer and Joshi (WP/05/08) show that, on average, past GRA financial support has not involved any quantitatively significant transfer from the Fund, in the sense that the rate of charge covers the Fund's own cost of funds, plus a premium that reflects the probability of not being repaid.

IV. Issues for Discussion

34. **Analysis within the Fund's current financing framework and mandate indicates that a substantial quota increase is needed to ensure that quota resources are adequate in most circumstances.** The current crisis has vividly demonstrated the importance of the Fund having adequate resources. While some indicators suggest a doubling of quota resources to adequately support the Fund's current mandate, other estimates point to even larger increases. Following two general quota reviews that did not result in any increase, the need for a quota increase that is large by historical standards reflects several considerations:

(i) the substantial expansion in members' potential financial needs since the last general increase was agreed 12 years ago;

(ii) a recognition that some crises could have very broad dimensions, affecting potentially a sizable portion of the membership at the same time, including several with large financial sectors and financing needs;

(iii) recent reforms of Fund facilities which could significantly broaden the range of members that may seek Fund support in future crises; and

(iv) the need to restore quota resources to levels relative to the global economy that members have deemed appropriate historically.

Such a quota increase would ensure the Fund has adequate resources to fulfill its mandate without borrowing in most circumstances, consistent with the quota-based nature of the Fund and thus ensuring the backstop character of its borrowing, most importantly the reformed and expanded NAB. Nonetheless, as noted, some of the reform options for Fund financing under discussion could argue for a more substantial expansion of quota resources, suggesting that it would be premature to propose a precise size for the increase in quotas at this early stage of the work on the Fund's mandate.

35. **Directors may wish to indicate their views on the following issues:**

- How do Directors assess the implications of developments since the 13th General Review of Quotas, including the global financial crisis, and the recent reforms of the Fund's facilities, for the adequacy of quota resources? Do they agree that, following two reviews without a general quota increase, a substantial increase in quotas is needed?

- Do Directors agree that quota resources should be sufficient to meet members' needs in most circumstances, consistent with the backstop role of the NAB?

- What are Directors' views on the size of the needed increase? How do they assess the indicators presented in this paper that point to a range of quota increases, with most suggesting a doubling or larger increases? What are Directors' preliminary views on

the implications of a significant upgrading in the Fund's crisis prevention and resolution instruments?

- Do Directors agree that, even with a substantial increase in quotas, the reformed and expanded NAB will continue to be needed as an essential backstop against tail risks? Do they agree that an increase in the Fund's total commitment capacity, including the new NAB, to about US$1 trillion, would send a strong signal that the Fund has adequate resources to support its members under a broad range of scenarios?

- Do Directors agree that the moral hazard risks associated with an enlarged Fund are broadly contained by the design of programs, its governance structure, and other safeguards against superfluous lending?

ANNEX I. THE FUND'S STANDING BORROWING ARRANGEMENTS: GAB AND NAB

Standing Borrowing Arrangements. Through the General Arrangements to Borrow (GAB) and the New Arrangements to Borrow (NAB) a number of member countries and institutions stand ready to lend additional resources to the Fund to cope with an impairment of the international monetary system or to deal with an exceptional situation that poses a threat to the stability of that system. (As discussed in Box 1, it is proposed that the NAB be reformed and expanded.) These standing arrangements help to ensure that supplementary resources can be mobilized in a timely manner from participants with strong external positions according to pre-agreed burden sharing arrangements, involving proportionality of drawings to the size of participants' credit arrangements. While source of financing differs from the Fund's regular quota-based financing mechanism, the use of the NAB and the GAB resources is incorporated within the Fund's regular lending facilities and policies.

NAB Overview. The NAB is the facility of first and principal recourse vis-à-vis the GAB except in limited circumstances (involving Fund credit to a member that is a participant of both the GAB and NAB, or where a proposal for calls under the NAB is not accepted). The current NAB enables the Fund to borrow specified amounts from 26 member countries (or their institutions) up to SDR 34 billion. The NAB was proposed following the Mexican financial crisis in 1995 in response to growing concerns that substantially more resources might be needed to respond to future financial crises, and it was established with effect from November 1998. The NAB has been renewed twice, most recently in November 2007 for a further period of five years from November 2008.

GAB Overview. The GAB enables the Fund to borrow specified amounts from 11 member countries (or their central banks) up to SDR 17 billion, with an additional SDR 1.5 billion available under an associated arrangement with Saudi Arabia. The GAB was established in 1962 and it has been renewed ten times, most recently in November 2007 for a five year period from December 2008. Initially, the GAB could be used only to finance drawings on the Fund by one of the GAB participants, reducing the risk that drawings would effectively deplete the Fund's quota based resources. In response to the growing pressures on the Fund's resources caused by the emergence of the debt crisis in Latin America in the early 1980s, the GAB credit lines were increased and the GAB was amended allow it to finance lending to nonparticipants in the GAB in situations where the Fund's own resources would be inadequate.

NAB/GAB Resources and Usage. The maximum combined amount of resources available under the current NAB and GAB is SDR 34 billion (i.e., the GAB and NAB commitments are not additive). The NAB and GAB resources are available to finance the Fund's lending to its members only after a proposal for "calls" on the GAB or the NAB by the Fund's Managing Director is accepted by their participants with a requisite majority, and the proposal is then also approved by the Fund's Executive Board. The GAB has been activated ten times, most recently in July 1998, while the NAB has been activated once, in December 1998.

ANNEX II. COMPARISON OF QUOTA RESOURCES AND THE PROPOSED EXPANDED NAB

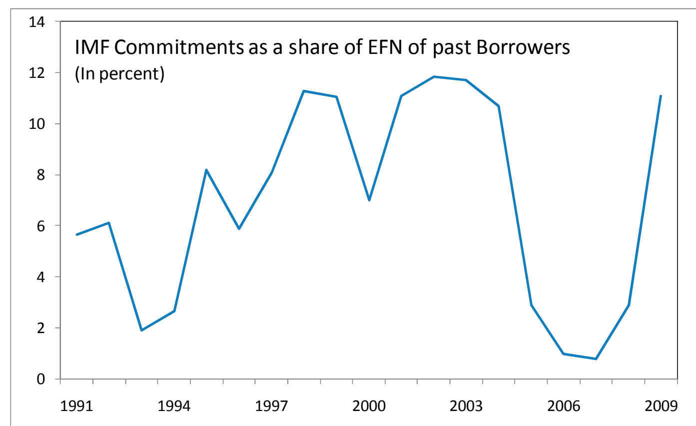
	Quota Resources	**Proposed Expanded NAB**
Role	Permanent resource for nonconcessional Fund lending.	Backstop to quota to be used only when necessary to supplement quota resources.
Uses	All GRA financing	All GRA financing
Participants	Currently 52 members, with 83 percent of quota, that are judged by Executive Board to have a sufficiently strong external position to be included in the Financial Transactions Plan (FTP)	Expanded from 26 participants currently to about 42 participants (members or their official institutions).
Availability	Immediate, in case of a Board decision to use GRA resources for lending.	Contingent—if supplemental resources are needed to forestall or cope with an impairment of the international monetary system, the Managing Director can propose an activation period for NAB for approval by at least an 85 percent majority of credit arrangements. The activation would specify both a maximum amount and the period (up to a maximum of six months).
Management of Resources	Financial Transactions Plan adopted quarterly by the Executive Board	Quarterly Resource Mobilization Plan adopted by Executive Board, which reflects the ratio of quota to NAB resources to be used in financing lending in accordance with the borrowing policies.
Governance	All Executive Directors can vote on use of quota resources, with voting power based on the voting power of members electing or appointing the Executive Director (i.e., basic votes and quota based votes).	Only NAB participants included in the FTP at the time of a vote to establish an activation period may vote on activation, with votes proportional to the size of credit arrangements. Activation also requires a decision by the Executive Board by a majority of the votes cast.
Burden-sharing among creditors	A common ratio for the reserve tranche position relative to quota among the members included in the FTP is the target.	Proportionality of drawings relative to the size of participants' credit arrangements; the share of credit arrangements deviates from quota shares in some cases.
Cost	SDR interest rate is marginal cost to Fund and marginal return to members. (Members receive a lower average return on reserve tranche positions due to the portion of positions that is unremunerated and burden sharing adjustments for interest arrears.)	SDR interest rate, unless a higher interest rate is agreed by an 85 percent majority of credit arrangements. (Burden sharing adjustments do not apply to NAB claims.)

ANNEX III. SCENARIO ANALYSIS BASED ON RECENT CRISES

As a means to assess the range of quota resources that may be needed in most circumstances, the potential demand for IMF commitments is estimated using key ratios observed during recent crisis episodes and WEO projections of members' financing needs.

Financing needs. The size of the Fund is assessed in relation to members' potential financing needs. Traditionally, gross financing needs are defined as the sum of current account deficits net of grants, medium- and long-term debt amortization, arrears repayments, and reserve accumulation.[23] Building on the approach used in the Thirteenth Review, estimated financing needs (EFN) are calculated by adjusting gross financing needs to include short-term debt but to exclude reserve accumulation by countries with reserves exceeding short-term debt, and to also exclude countries with negative gross financing needs.

Coverage. For the purposes of the scenario analysis, the estimated financing needs of previous borrowers have been calculated using data from the October 2009 World Economic Outlook (WEO). Previous borrowers include 76 members with GRA arrangements since 1990.[24] While alternative criteria for members' selection could be justified as well, the group of past borrowers seems a natural candidate as it excludes PRGT-eligible countries except those with past GRA programs, and also excludes emerging market members that are unlikely to seek Fund support in the medium term. The results are not very different if the EFN of all emerging market and developing countries are used instead. Historically, Fund commitments peaked at about 12 percent of EFN during the crises in 1998, 2002, and 2009.



Past crises. The peak of commitments and credit outstanding rose in nominal terms in each of the recent crises, with the most recent crisis notable for the large share of new commitments (Table III.1). The crisis in 1998 was reflected in commitments to 25 members representing 8 percent of global GDP and 11¼ percent of total quotas. The current crisis has entailed Fund commitments to a similar number of members, but its scope was smaller in

[23] See Thirteenth General Review of Quotas - Assessing the Adequacy of Fund Resources (11/27/07).

[24] Four previous borrowers that are now classified as advanced economies (the Czech Republic, Iceland, Korea and the Slovak Republic) are excluded because WEO does not provide sufficiently detailed BOP data for advanced economies.

term of borrowers' share of global GDP or quotas.[25] Average access levels (for commitments under Fund arrangements) rose from 350 percent of quota in 1998 to 833 percent of quota by 2009 reflecting increased members' needs, the decline in the relative size of quotas, and new lending tools, such as the FCL.

Table III.1 Analysis of Financing Needs of Previous GRA Borrowers
(In billions of SDRs, unless otherwise indicated)

	Peak Commitments in Recent Crises			Crisis Scenarios	
	1998	2002	2009	A	B
I. Uses of Resources					
Commitments and credit outstanding	87.8	99.4	114.3	175.3	252.9
Under current arrangements	57.3	62.1	108.0	165.3	242.9
Outstanding credit from prior arrangements	30.5	37.3	6.3	10.0	10.0
II. Commitments--Access and Scope					
Access (average commitments), in percent of quota 2/	350.1	518.3	833.3	905.2	905.2
Implied access level in percent of total quota required	…	…	…	543.4	376.6
Borrowing members 3/					
Share of global GDP, percent	8.0	3.7	4.4	5.4	8.0
Share of total quota, percent	11.3	5.6	6.0	7.7	11.3
Number	25.0	14.0	24.0	…	…
III. Supply of Resources					
Usable quota, net of prudential balance 4/	76.6	130.4	143.9	262.9	379.3
In percent of quota 5/	52.7	61.3	66.2	66.2	66.2
Share committed, percent 6/	114.6	76.2	79.4	66.7	66.7
Total quota required 7/	…	…	…	397.1	573.0
Implied quota increase, percent	…	…	…	66.6	140.4
Memo items					
EFN of previous borrowers 8/	507.3	505.4	976.0	1162.4	1162.4
Total quota, actual 9/	145.3	212.7	217.4	238.4	238.4

Scenario Descriptions

A: Borrowing member share is average from 1998, 2002 and 2009. Average access is raised by 8.6 percent to 905 percent of agreed quota to allow for projected growth in EFN by 2014, net of the quota increase under the 2008 Quota and Voice reform.

B: Borrowing member share from 1998. Average access raised as in scenario A.

Source: staff calculations.

1/ Includes 76 members which have had GRA arrangements since 1990, excluding four advanced economies owing to data availability.
2/ Ratio of credit commitments to the quota of borrowing members. Scenarios base access on quotas after the 2008 Q&V reform.
3/ Borrowing members includes all members with current GRA arrangements, both precautionary and non-precautionary.
4/ Quota of members included in the FTP, net of the prudential balance (20 percent of FTP members' quota), which protects the liquidity of reserve positions in the Fund, and provides a buffer against erosion of participation in the FTP during a crisis.
5/ In the crisis scenarios, it is assumed that there is no reduction in the share of FTP members within total quota from 2009 levels.
6/ The two-thirds ratio assumed in scenarios assumes a buffer of usable quotas is maintained when activating the NAB or other borrowing, but the scale of this buffer will depend on the size of the pipeline of arrangements among other factors.
7/ Quota sufficient to ensure that commitments in the scenario equal two-thirds of usable quota net of the prudential balance.
8/ Scenarios are WEO projections for 2014, for a 19 percent increase over 2009 levels.
9/ For the scenarios, total quota includes the ad hoc increases agreed under the 2008 Quota and Voice reform.

[25] More relatively large members had Fund commitments in 1998, including four with quota shares over 1 percent (Argentina, Brazil, Indonesia, and Russia) compared with one in 2009 (Mexico).

Scenarios. Compared with the current crisis, it is important to allow for the possibility that members accounting for a larger share of the global economy may request Fund support, to reflect both historical experience and also recent developments in Fund facilities that may expand the range of members that seek Fund support in future. Two scenarios for the breadth of the crisis are considered:

- Scenario A assumes the average share for the three crisis years 1998, 2002 and 2009, at 5.4 percent of GDP or 7.7 percent of quota.

- Scenario B is based on the scope of members with Fund commitments experienced in 1998, at 8 percent of GDP or 11.3 percent of quota.

Timeframe and access levels. The scenarios have a medium-term perspective, being based on WEO projections for EFN in 2014, which are for EFN to expand by 19 percent from 2009 levels. Average access levels relative to EFN in the current crisis are used as a benchmark for the scenarios. When effective, the 2008 Quota and Voice reform will raise quotas by 9.6 percent over 2009 levels, and the remainder of the 19 percent increase in nominal access is reflected in average access assumed to be 905 percent of quota agreed under the reform—an increase of 8.6 percent over access of 833 percent of quota in 2009.[26]

Key financial assumptions. In the scenarios, no decline in the share of usable quota (quota of members included in the FTP) is assumed from the current level of 82.7 percent of quota. It is assumed that the prudential balance (20 percent of usable quota) is not utilized, as these resources serve to protect the liquidity of members' reserve tranche positions, and also against a potential decline in FTP membership. For the purpose of assessing the size of quota resources, it is further assumed that two-thirds of usable resources (net of the prudential balance) would be utilized before activating borrowing.[27]

Results. Scenario A generates new commitments of SDR 165 billion, about 50 percent larger than observed in 2009. The size of quotas required to meet such commitments (and SDR 10 billion in outstanding credit from previous arrangements) without triggering a need for supplementary resources is about SDR 397 billion, a 67 percent increase from agreed levels. Substantially larger commitments, of SDR 243 billion, would be entailed in Scenario B, in parallel with the larger economic weight of members receiving Fund commitments. The size of quotas required to generate such commitments is SDR 573 billion, a 140 percent increase over agreed levels.

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[26] With access fixed in nominal terms across the scenarios, access declines relative to the level of quota generated by each scenario, to about 380 percent in scenario B, little above access levels in 1998.

[27] While almost 80 percent of usable quota (net of the prudential balance) was committed in 2009, this is too high a ratio for estimating quotas sufficient to handle such financing needs, as substantial borrowing was needed to prevent the Fund's commitment capacity declining to the point that confidence would be undermined.

ANNEX IV. SCENARIO ANALYSIS BASED ON FINANCING ASSUMPTIONS

Scenario analysis was used to estimate the potential need for Fund resources in a tail event. This would entail significant financial sector and fiscal stress in some advanced economies and capital outflows from a large number of emerging markets.

Methodology and results for emerging markets [28]

Scenarios. The potential need for Fund resources in emerging markets is assessed through two scenarios—a "sudden stop" in a range of capital flows to all emerging market economies, and a deeper crisis also involving bank deposit outflows. The baseline is the average balance of payments outturns and projections for the 2007-2009 period (implying higher capital flows and wider current account deficits than at present) and the shock is assumed to last for one year. Fifty-six countries from the vulnerability exercise for emerging economies, plus a small number of emerging market program countries, are included in the sample.

Assumed shocks for emerging markets
Percent deviation from baseline unless otherwise indicated

FDI inflows	-20
External debt rollover rate (percent)	60
Net portfolio inflows	-15
Bank deposits (residents)	-5
Bank deposits (non-residents)	-20

Shocks are applied to FDI inflows; rollovers of short and medium-and-long-term borrowing; portfolio flows; and resident and non-resident deposits (as is summarized in the text table). The rollover rate of 60 percent is consistent with staff estimates of potential developments in the current crisis, as reflected in Box 1 contained in Review of the Adequacy of and Options for Supplementing Fund Resources. This appears suitable as a tail event assumption, as in practice rollover rates proved to be higher on average, in part reflecting the success of international efforts such as the Vienna Initiative. The deposit outflow assumptions are also consistent with that contained in Review of the Adequacy of and Options for Supplementing Fund Resources, while the assumed 20 percent reduction in FDI inflows is based on the VEE, and the 15 percent reduction in net portfolio inflows is moderated from that assumed in the Review of the Adequacy of and Options for Supplementing Fund Resources, because experience indicates that much of the adjustment took place via asset price reductions.

Buffers. These shocks are partially offset by a drawdown of international reserves (subject to the constraint that they remain above 100 percent of short-term debt, and do not fall by more than a quarter relative to their initial level). The latter constraint reflects the observed reluctance of many central banks to draw down reserves heavily in the current crisis, perhaps

[28] The methodology followed is similar to that in *Review of the Adequacy of and Options for Supplementing Fund Resources*,(1/12/09).

in response to the perceived negative signal that rapid declines in reserves may send.[29] In addition, and as in *Review of the Adequacy of and Options for Supplementing Fund Resources* (1/12/09), current accounts are assumed to improve by half, reducing financing needs through adjustment. The Fund is assumed to cover the remaining financing need.

Results. The estimated call on Fund resources is substantial. The "sudden stop" scenario generates a need of SDR 266 billion (stemming from 39 countries), rising to SDR 430 billion (45 countries) in the broader-based crisis case that also entails deposit outflows. In the sudden stop scenario the median use of Fund resources equals 7.6 percent of GDP and 610 percent of quota, with about 30 percent of countries using more than either 10 percent of GDP or 1000 percent of quota. Median access is notably higher in the deposit outflow case, at 10.2 percent of GDP or 850 percent of quota, with half of countries using more than 10 percent of GDP and 30 percent using more than 1000 percent of quota. About half of total demand stems from emerging Europe, with the largest five cases (from Eastern Europe and Asia) also accounting for half of total commitments.

Emerging market scenario analysis

Financing needs and buffers	SDR bns	US$ bns
Net financing requirements	439	680
Use of international reserves	172	267
"Sudden stop" financing gap	**266**	**413**
Deposit outflows	228	354
Additional use of reserves	64	100
"Deposit outflow" financing gap	**430**	**667**

Methodology and results for advanced economies

Scenarios. The shock applied aims to reflect a systemic banking crisis, with a widespread retreat from risky assets, including—in a second scenario—difficulties in the funding of government debt by non-residents in fiscally vulnerable economies. Countries in the sample are those rated highly vulnerable in the fall 2009 vulnerability exercise for advanced economies (VEA), and those with large financial sectors relative to their size.[30] Shocks are applied to the stock of bank and government debt held by non-residents. VEA simulations using models of shock transmission through bank lending channels suggest that stress in some of the economies considered could spread widely, with strong impacts on other countries in the vulnerable group. The Fund is assumed to provide support in meeting the

[29] These assumptions are identical to those in *Review of the Adequacy of and Options for Supplementing Fund Resources* (1/12/09) except in two respects: firstly, drawdowns of other foreign assets are not considered here given the difficulty of assessing how drawdowns by one country would translate into lower inflows elsewhere (leaving global gross financing needs unchanged) and data limitations, and secondly the 25 percent maximum decline in reserves was not previously applied.

[30] The latter are drawn from the forthcoming Board paper 'Cross-Cutting Themes in Surveillance of Economies with Large Financial Sectors'.

external financing needs of banks, and budget support to compensate for a lack of external funding at reasonable interest rates.

Adjustment and share of Fund financing. As in *Review of the Adequacy of and Options for Supplementing Fund Resources* (1/12/09), the current account is assumed to adjust by 50 percent. However, this adjustment is only considered to alleviate financing pressure if a bank financing gap opens up (as described below). The Fund is assumed to contribute 60 percent of total official financing to cover the remaining gap, with foreign currency liquidity swap lines with major central banks and other bilateral support supplying the remainder.

Banking crisis. Rollover rates of gross short-term bank external liabilities of 85 percent are applied as a reasonable tail risk scenario. While relevant benchmarks are scarce, the decline in gross short-term bank external liabilities between the second and fourth quarters of 2008 averaged 18 percent in dollar terms for the countries considered in this sample. Banks are assumed to use liquid assets (cash and government securities) to cope with the shock, and the financing gaps are calculated as the shortfall between estimated liquid assets after the shock and a minimum liquid asset level. This minimum is set equal to 3 percent of liabilities (they did not fall below this level in any of the countries in the sample during 2008).

Government external debt. In the context of the banking crisis, a second scenario assumes a 5 percent reduction in the stock of external debt of the government reflecting lower demand by non-residents. This draws on the experience of "failed" auctions in some countries at the height of the crisis. While government debt of advanced economies held by non-residents is often domestic currency denominated, a reduction in such holdings still represents a capital outflow.

Results. Applying the banking crisis scenario to end-2008 gross short-term external liabilities generates a gross funding shortfall of SDR 968 billion.[31] After running down buffers and considering adjustment, the Fund would cover approximately SDR 112 billion. An additional SDR 58 billion in financing needs is generated by government debt shock, of which the Fund is assumed to cover about SDR 32 billion.[32] The total call on Fund resources would be of approximately SDR 145 billion, of which SDR 110 billion would stem roughly evenly from three countries.

Advanced economy scenario analysis

Financing needs and buffers	SDR bns	US$ bns
Bank funding shock	968	1,501
Use of liquid assets	747	1,158
Current account adjustment	35	54
"Bank shock" financing gap	**186**	**289**
Of which: Fund financing	112	173
Govt. external debt shock	58	90
Total financing gap	**244**	**379**
Of which: Fund financing	147	228

[31] Data is from Bankscope, for 2008.

[32] Data is for the second quarter of 2009, from the JEDH database.

April 19, 2010

The Chairman's Concluding Remarks
Fourteenth General Review of Quotas—
The Size of the Fund—Initial Considerations
Committee of the Whole on Review of Quotas Meeting 10/2
April 14, 2010

This is our first opportunity to assess the adequacy and composition of the Fund's resources in the context of the 14th General Review of Quotas. As many Directors have stressed, the Fund's critical role in the response to the global crisis vividly demonstrates the importance of ensuring that it has an adequate resource base. Directors emphasized that the Fund is, and should remain, a quota-based institution, notwithstanding the large increase in its borrowed resources recently agreed. They emphasized also that the size and composition of the Fund's resources cannot be assessed in isolation. Parallel progress in other areas, specifically on quota distribution, the Fund's future financing role, and broader governance reform, is needed if we are to arrive at a package of reforms to strengthen the Fund's legitimacy and effectiveness that can command the necessary broad support. I, therefore, recognize that the views expressed today are preliminary.

Directors noted that a range of indicators show that the relative size of the Fund has declined substantially since the last general quota increase twelve years ago. In addition, recent events have highlighted the fact that global financial crises can have broad dimensions, potentially affecting a wide group of members, while the recent reforms of the Fund's facilities could potentially expand the range of members that may seek Fund support in the future. In this context, some Directors stressed that, while the Fund has a central role in the international monetary system, contributions from multilateral development banks and other official sector sources should also be expected to play a role in meeting the financing needs of member countries.

Against this background, most Directors saw a strong case for a substantial increase in the Fund's quota resources. Many Directors expressed a preliminary view that broadly a doubling of quotas would ensure that quota resources remain adequate in most circumstances, with some arguing for a larger increase in view of the rapid growth in international trade and capital flows, and to ensure that Fund resources remain adequate to assist members in crisis prevention and resolution. A few other Directors, noting the recent SDR allocations and the enlarged, more flexible New Arrangements to Borrow (NAB), were skeptical about the need for a quota increase beyond the amount needed to achieve the targeted realignment of quota shares. Some Directors considered it too early to express a

specific view on the size of the increase at this stage, given the ongoing discussions of other related strands of work that might have a bearing on the adequacy of Fund resources.

Most Directors considered that the design of Fund programs, its governance structure, and other safeguards sufficiently contain the risks of moral hazard and superfluous lending associated with an enlarged Fund. A few Directors cautioned, however, that an excessively large quota increase could heighten moral hazard risks.

While welcoming the recent Board approval of the amended NAB, Directors stressed the backstop character of Fund borrowing. Many considered that a substantial increase in quotas, together with the additional resources available under the expanded NAB, would send a strong signal that the Fund has adequate resources to support its members under a broad range of scenarios. A few others saw the reformed NAB as a valuable financing tool such that its activation should not be limited to tail-risk events. Directors also noted that the NAB is to be reviewed once a decision on the quota increase is taken, and some were of the view that the overall Fund resources are adequate and that a reduction in the size of the NAB should not be precluded if a substantial quota increase is agreed, in order to achieve an appropriate balance between quota and borrowed resources.

To conclude, today's discussion has offered a useful opportunity to reflect on critical issues related to the size and composition of the Fund's resources. I believe we have made a good start in defining the key considerations that are relevant to determining the size of the needed quota increase. Looking ahead, these issues will be taken up again jointly with further staff work on realigning quota shares, with staff expected to issue a paper with updated quota calculations based on the finalized 2008 data set soon after the Spring Meetings. A continued spirit of compromise and constructive and strong engagement will be needed to successfully conclude the 14th Review by the January 2011 deadline.