INTRODUCTION

1. This paper provides background for further discussions on the 15th General Review of Quotas (hereafter the 15th Review). In line with its agreed work plan,[1] Executive Directors met as the Committee of the Whole (CoW) on two occasions in September 2017 for an informal exchange of views on key issues for the 15th Review. The discussions covered issues related to the quota formula and realigning quota shares on September 1st[2] and the adequacy of Fund resources on September 15th.[3] In these discussions, Directors recognized that these issues are closely interlinked and will ultimately need to be agreed as a package. They also provided useful feedback and clarifications of views.[4] Against this backdrop, this paper presents further work on the adequacy and composition of Fund resources, on selected issues related to the quota formula, and on issues related to the distribution of quotas. No proposals are made at this stage, pending further Board guidance on possible approaches to narrowing the current differences of views.

2. The paper is organized as follows. The next section revisits selected issues on the adequacy and composition of Fund resources. It is followed by a brief stock take of discussions on the quota formula and the results of further work in response to Directors' requests. The next section reviews alternative approaches to distributing quota increases, and presents some illustrative simulations. The paper concludes with a summary and issues for discussion. Additional technical material is presented in a set of Annexes issued as Supplement 1.

ADEQUACY OF FUND RESOURCES

During the September 15th discussion, Directors expressed a range of views on the appropriate size of quotas and the Fund's overall lending capacity. Many Directors supported, or were open to, a quota increase that would at least maintain the Fund's current lending capacity, with many of these calling for an increase in the lending capacity. Many others had not yet formed a view, with a few noting that the Fund's current quota and NAB resources appeared sufficient to handle a range of scenarios. Building on staff's earlier work and Directors' feedback, this section presents additional analyses on the adequacy and composition of Fund resources.

[1] As set out in the Board of Governors Resolution No. 72-1, adopted on December 5, 2016, this work should be completed by the 2019 Spring Meetings and no later than the 2019 Annual Meetings. The work plan was set out in Attachment I of *Fifteenth General Review of Quotas—Report of the Executive Board to the Board of Governors* (11/2/16).

[2] As background for this discussion, staff had prepared *Fifteenth General Review of Quotas—Quota Formula and Realigning Shares* (8/2/17).

[3] As background for this discussion, staff had prepared *Adequacy of Fund Resources—Further Considerations* (7/31/17).

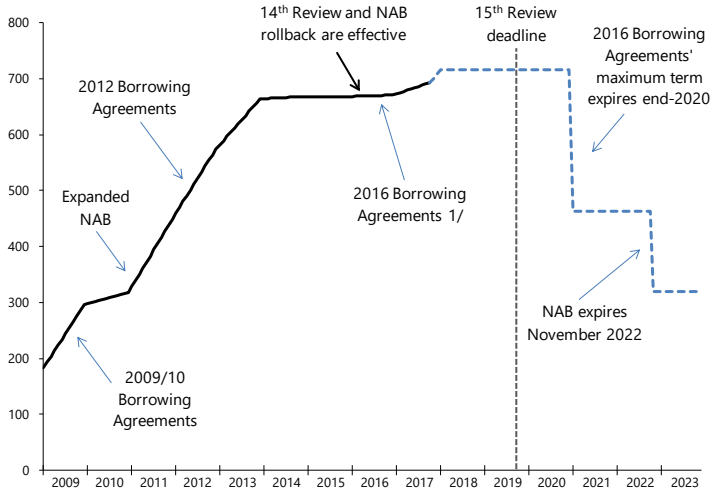
[4] See *The Chairman's Concluding Remarks—Fifteenth General Review of Quotas—Quota Formula and Realigning Shares* (9/7/17) and *The Chairman's Concluding Remarks—Fifteenth General Review of Quotas—Adequacy of Fund Resources Further Considerations* (9/22/17). These two meetings of the CoW helped inform the *Progress on the Fifteenth General Review of Quotas—Report of the Executive Board to the Board of Governors* (10/4/17).

A. Context

3. There is a shared commitment to a strong, quota-based and adequately-resourced IMF at the center of the global financial safety net (GFSN).[5] In a world of increasingly globalized risks, the Fund's expertise and its catalytic and central financing roles remain critical. And, with its near-universal membership and a wide array of lending instruments, the Fund has retained its central role by providing for efficient risk sharing and reserve pooling at the global level, which helps promote global economic and financial stability.

4. Absent further action, the Fund's lending capacity would fall sharply by end-2019 or end-2020 at the latest.[6] While bilateral borrowing has played a key role since the global financial crisis (GFC) as a backstop to quotas and NAB, many Directors had stressed that it would be important not to pre-suppose future discussions on the possible renewal of the bilateral borrowing agreements (BBAs). If the 2016 BBAs expire, the Fund's total lending capacity would decline by a third to SDR 463 billion. Without a renewal of the NAB resources, the lending capacity would decline further to SDR 320 billion by end-2022.

Evolution of the Fund's Lending Capacity[1/]
(In billions of SDR)



Source: Finance Department.
1/ The 2016 borrowing agreements have an initial term to end-2019, extendable for a further year through end-2020 with creditors' consents.

5. A general quota increase as part of the 15th Review would serve several purposes:

- **Ensure adequate permanent resources are available before the next systemic crisis.** A key lesson of the GFC was that, to better respond to a crisis, the Fund should secure sufficient resources in advance, relying primarily on quotas.[7] The updated two-pillar framework, discussed below, sheds further light on the Fund's resource needs under crisis scenarios.

[5] *Communiqué of the Thirty-Sixth Meeting of the International Monetary and Financial Committee (IMFC)*, October 14, 2017.

[6] For an overview of different concepts of Fund resources, see Box 1 in *Adequacy of Fund Resources—Further Considerations* (7/31/17).

[7] See *IMF Response to the Financial and Economic Crisis*, Independent Evaluation Office (IEO), October 27, 2014. In earlier discussions, many Directors stressed the importance of having resources available ex ante, while a few noted that the Fund had been able to raise funds in the past, as the need arose.

- **Rebalance the mix of Fund resources more in line with past practice.** As a quota-based institution, the Fund has historically financed most of its non-concessional lending with quota resources.[8] This reflects the role of quotas in governance and in transactions with members and the advantages of quotas relative to borrowing, such as the broad burden sharing of quota resources, and accessibility to resources based on decisions by the Executive Board.[9]

- **Continue the process of realigning members' quota shares** in line with their evolving relative positions in the world economy. This would build on the 2008 and 2010 reforms, thus further strengthening the Fund's governance and legitimacy.

B. The Two-Pillar Framework for Assessing the Adequacy of Fund Resources: An Update

6. This section revisits and expands on the quantitative and qualitative pillars of the 2017 paper on resource adequacy.[10] Directors welcomed the two-pillar framework for assessing the adequacy of Fund resources and underscored the important role for judgment. They suggested two areas to help advance the discussions: (1) updating the quantitative pillar to include alternative assumptions and providing a longer-term perspective as the outcome of the 15th Review will likely determine the Fund's permanent resources through at least the middle of the next decade; and (2) revisiting the qualitative pillar to give more prominence to factors that could reduce the demand on Fund resources.

Quantitative Pillar

7. Staff explored several considerations following feedback from Directors (Table 1 and Annexes I-III). In particular:

- **Traditional metrics.**[11] Staff explores an alternative weighting of metrics that assigns greater weight to more recent reviews.[12] This refinement narrows the range of outcomes for the reference period 2015-19, which is used considering the deadline for completing the 15th Review in 2019. It modestly increases the quota resources needed to restore the ratio to GDP, as the

[8] Quotas have accounted for about 84 percent of the Fund's overall resources over the 30 years prior to the GFC. While the share of quotas fell sharply following the increase in borrowed resources after the GFC, the quota increases under the 14th Review raised this share to about 50 percent of total resources, albeit still well short of the historical average.

[9] For more details see Section on Considerations on the Composition of Fund Resources in *Adequacy of Fund Resources—Further Considerations* (7/31/17).

[10] *Adequacy of Fund Resources—Further Considerations* (7/31/17).

[11] The use of an outdated WEO BPM6 database generated errors in some of the traditional metrics analysis presented in the Adequacy of Fund Resources papers issued in March 2016 and August 2017. The corrected data do not affect the GDP-based metrics but lower the remaining measures, without altering the earlier papers' overall conclusions.

[12] A weighted average of the ratios at the time of the last four quota reviews with quota increases is used. Weights are increasing over time, determined as the inverse of the number of years since the quota review took place (normalized). Annex I presents the updated results using the traditional methodology based on simple averages.

reference ratio to GDP increased slightly as the higher ratio at the time of the 14th General Review is assigned more weight under this refinement. At the same time, it reduces the quota increases needed to restore quota ratios relative to external variables, as reference ratios to external variables have been declining over time.[13]

- **Access-based approach.** Rather than the top 12 borrowers assumed in the 2017 paper, the refinement assumes that the top six borrowers approach the Fund at the same time—in line with the average number of top borrowers in past crises. Assumed program sizes remained unchanged between 4 to 8 percent of GDP as in the 2017 paper. This refinement lowers the demand for Fund resources to SDR 279-559 billion.

- **Global scenarios.** Reserve drawdowns of up to 40 percent of reserves are now allowed as long as they remain above 80 percent of the Assessing Reserve Adequacy (ARA) metric for emerging market economies, compared with 25 and 100 percent, respectively, in the 2017 paper.[14] In addition, the model now includes active RMB swap lines as an additional source of non-Fund financing.[15] The additional non-Fund financing modestly lowers the demand for Fund financing during 2017-18 to SDR 133-1,065 billion.

Table 1. Impact of Refinements on Potential Demand for Fund Resources[1/]
(In SDR billions)

Approach	2017 Paper	Refinement
Metric-based [2/] (To restore quota ratios)	222-636 (revised data) [3/]	251-596
Access-based [4/] Top borrowers	371-743	279-559
Global scenarios [5/]	143-1,391	133-1,065

1/ The metric-based results are assessed with respect to quotas (as in previous quota reviews). The access-based and global shock scenarios are assessed with respect to total lending capacity, excluding BBAs.

2/ Additional quotas needed to restore quotas relative to economic indicators (GDP, current payments, capital inflows to EMDCs, and external financing needs). See Annex I for details.

3/ The numbers for August 2017 were revised with data from the April 2017 WEO to correct data errors for external variables generated by the use of an outdated WEO BPM6 database.

4/ Assumes program sizes of 4 to 8 percent of GDP as in the 2017 paper. See Annex II for details.

5/ Results using shocks at the 65th-90th percentile of past crises, and crisis country identification using crisis probabilities of 1-10 percent from the IMF Vulnerability Exercise. See Annex III for details.

[13] Annex I includes an additional assessment based only on quotas and the NAB in response to many Directors' remarks not to pre-suppose future discussions on the renewal of the BBAs.

[14] The assumption is in line with the average plus one standard deviation of reserve usage for emerging markets and advanced economies during the GFC.

[15] Beyond these swap agreements, no additional bilateral borrowing is assumed.

8. Applying a longer-term perspective—used as any quota increase will likely determine the Fund's permanent resources through at least the middle of the next decade—leads to much higher resource demands than in the 2017 paper (Table 2 and Annexes II-III):[16] Specifically, extending the analysis with refinements through 2025 increases the demand for Fund financing in the top borrowers approach to SDR 465-931 billion, and nearly doubles the estimates under the panel logit (to SDR 439-1,870 billion) and the global scenario analysis (to SDR 231-1,984 billion).

Table 2. Impact of a Longer-term Perspective on Potential Demand for Fund Resources
(In SDR billions)

Approach	2017 Paper	Refinement and longer-term perspective
Access-based [1/]		
Top borrowers [2/]	371-743	465-931
Panel logit model	282-1,176	439-1,870
Global scenarios [3/]	143-1,391	231-1,984

1/ Assumes program sizes of 4 to 8 percent of GDP as discussed in the 2017 paper. For details, see Annex II.

2/ The top 12 borrowers in the 2017 paper and the top 6 borrowers in the last column.

3/ Results using shocks at the 65th-90th percentile of past crises, and crisis country identification using crisis probabilities of 1-10 percent from the IMF Vulnerability Exercise. For details, see Annex III.

9. An additional approach suggests that potential demand for Fund financing in a moderate crisis could exhaust the Fund's lending capacity (Box 1). This approach draws on past crises and a similar approach used in the context of the 14th Review. In a crisis where borrowers' GDP as a share of global GDP is in line with the average during past crises since the 1980s excluding the GFC (10.8 percent of global GDP), and where the average program size is 6 percent of members' GDP, financing needs would reach SDR 548 billion.[17]

[16] Since the metric-based approach has traditionally been backward-looking, this is assessed for the reference period 2015-2019 and not extended to 2025.

[17] For comparison, the average of the global GDP coverage of borrowers during past crises including the GFC (when large buffers reduced the need for Fund financing) was 8.8 percent.

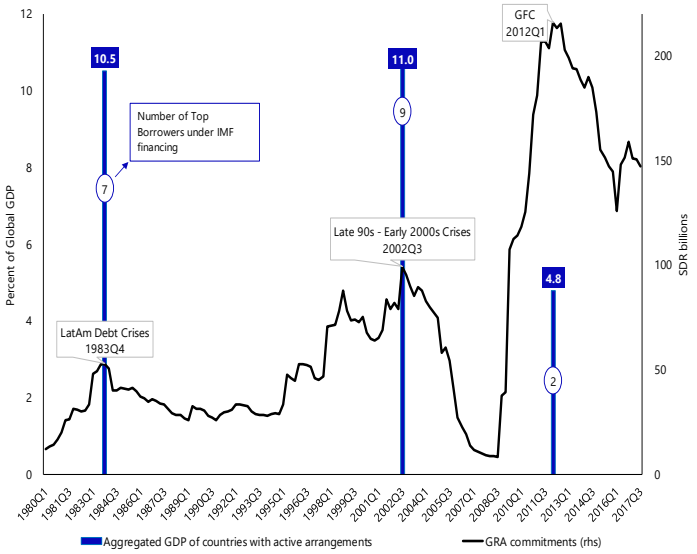
Box 1. An Additional Approach to Estimate Potential Calls for Fund Financing

This Box provides an additional approach, drawing on past crisis resource needs and building on an approach used in the 14th Review:[1/]

The approach illustrates a crisis where borrowers' GDP as a share of global GDP is in line with the average during past crises since the 1980s (blue bars of the Text Figure). As noted in the 2017 paper, during the GFC the global GDP coverage of members availing of Fund resources was much lower than the average in past crises, given larger buffers and the prolonged boom in commodity prices. However, there is no assurance that this will be repeated in the next crisis. If there was a new crisis and the size of countries needing Fund resources was closer to the average of past crises, excluding the GFC (10.8 percent of global GDP), financing needs based on an average access of 6 percent of their GDP would reach SDR 548 billion. This would be beyond the Fund's current lending capacity based on quotas and the NAB.

Peak of GRA commitments during Past Crises, 1980-2017[1/2/]

(In billions of SDR, in percent (RHS))



Source: Staff calculations based on IMF data.

1/ The blue bars show the borrowers' share of global GDP. Borrowers are countries that had an active GRA arrangement at the time of the peak of past crises (both precautionary and non-precautionary arrangements).

2/ The circles indicate the number of the top 12 past borrowers with active arrangements at the peak of the crisis. The top 12 past borrowers are selected from the list of all members that had a Fund GRA arrangement or requested outright disbursements since 1990, ranked by their projected 2025 GDP as a proxy for their size.

1/ See *Fourteenth General Review of Quotas—The Size of the Fund—Initial Considerations* (3/15/10).

Qualitative Pillar

10. This section responds to Directors' request to refine the qualitative pillar. In the September 15th discussion, Directors appreciated the analysis of qualitative considerations to complement the quantitative approach. They generally shared the analysis in staff's background paper that ongoing global transitions, together with increased interconnectedness, are creating uncertainty and could lead to spillovers, contagion, and systemic risks, thereby having implications for the adequacy of Fund resources. Many Directors considered that the discussion of the qualitative considerations should give more prominence to factors that could reduce the demand on Fund resources, such as the significant expansion of the GFSN and the reforms implemented since the GFC.

11. As outlined in the 2017 paper, increasing interconnectedness and other global economic transitions create risks and uncertainties for the global economy. Global integration yields many benefits to countries, including more efficient allocation of resources and risk

diversification. But it also exposes them to spillovers, contagion, and systemic risks. And countries are vulnerable to risks from other medium- and long-term transitions, including from demographic trends, climate change, and technological change. These transitions could use up buffers needed to withstand shocks and even develop into financial crises, if an unfavorable set of circumstances occur. For instance, financial crises could develop in a world where the Fund is under-resourced, Regional Financial Arrangements (RFAs) are not prepared to deal with the magnitude of the shock, and reaching a multilateral agreement in a multipolar world to shore up the Fund and other institutions takes time (see Annex IV for examples of such scenarios).

12. Post-crisis reforms have enhanced the resilience of countries and the international monetary system (IMS) but significant vulnerabilities remain. The international community initiated reforms and made significant progress in enhancing the global economy's resilience to systemic shocks: strengthening IMF surveillance, implementing the financial regulatory reform agenda, enhancing the global financial safety net and IMF lending toolkit, and updating the frameworks for sovereign debt restructuring. Nonetheless, some reforms have yet to be completed and gaps remain. Ongoing reforms remain focused on vulnerabilities exposed by the last crisis, while new challenges are emerging. Moreover, after nearly a decade of building support for ambitious reforms since the GFC, some reforms remain incomplete and the risk of reform fatigue—along with pressures to relax standards and regulation—could rise.

- **Fund surveillance.** In response to perceived weaknesses in IMF surveillance exposed by the GFC, the IMF upgraded its surveillance framework: with deeper assessments of risk, spillovers and interconnections; renewed emphasis on external stability: the regular publication of the External Sector Report; and greater focus on financial stability.[18] A survey conducted in the context of the ongoing Interim Surveillance Review finds that members believe Fund surveillance has improved since 2014. Yet, IMF surveillance is only impactful if the Fund's policy advice is implemented. And surveillance must be upgraded periodically, with the landscape continuing to evolve at a rapid pace, as a result of global trends, challenges, and opportunities.

- **Financial regulatory reforms.** The Fund has stepped up its coverage of financial sector issues and the G-20 launched an extensive program of reforms. As a result, banks have continued to build higher and better quality capital and liquidity buffers and the implementation of the frameworks for global systemically important banks as well as derivatives are advancing. That said, work is not yet complete. The FSB has noted that progress has been uneven[19], and there are pushbacks on the horizon, including to postpone implementation, dilute prudential standards, lower capital requirements, replace the risk-based framework with a leverage ratio, and reduce the independence and power of supervisory bodies. Other challenges include the need for further strengthening national resolution regimes and developing cross-border resolution. Reforms on regulation of shadow banking entities remain at an early stage. Moreover, the financial sector is evolving rapidly and new risks are emerging, such as from

[18] See the *2011 Triennial Surveillance Review—Overview Paper* (8/26/11) and the *2014 Triennial Surveillance Review—Overview Paper* (7/30/14).

[19] See Financial Stability Board, *Implementation and Effects of the G20 Financial Regulatory Reforms*, July 2017.

cybersecurity, or will likely emerge, including from fintech. Regulated institutions will continue to adapt to tighter regulations, including through innovations, and risks could shift to other areas—while financial regulations could be slow to respond.[20]

- **GFSN.**[21] Reserves remain high compared to the pre-GFC average, as countries value their predictability and reliability as a form of self-insurance. Resources under existing RFAs have increased and new RFAs and facilities have been established. Bilateral swap lines between central banks expanded dramatically during the crisis and have since evolved, with core advanced economies (AEs) maintaining their network of swaps indefinitely. The effectiveness of the 14th General Review of Quotas has doubled the Fund's permanent resources, while the NAB was renewed for a further five years through November 2022 and a new set of BBAs agreed through 2019-2020. Yet, the GFSN needs further reforms. Overaccumulation of reserves has systemic costs as it supports external imbalances, diverts resources from more productive investments, and potentially increases volatility. And RFAs are mostly untested at the time of a systemic shock and coordination with other layers of the GFSN could pose problems.

- **IMF lending toolkit.** The Fund doubled access limits, streamlined conditionality, introduced new financing instruments that can be treated as precautionary (Flexible Credit and Precautionary Liquidity Lines), or rapid financial assistance (Rapid Financing Instruments and Rapid Credit Facility), or to signal commitment to reforms and catalyze financing (Policy Coordination Instrument). However, the use of precautionary instruments has been limited, owing in part to stigma associated with the need to approach the Fund.[22] Other proposals to further strengthen the Fund's crisis prevention role, such as the short-term liquidity swap (SLS) for potential short-term, frequent, and moderate balance of payments need, did not receive sufficient support.

- **Sovereign debt restructuring frameworks.** The Fund has reviewed its legal and policy framework for sovereign debt restructuring, particularly introducing more flexibility into its lending framework for exceptional access, to assist members return to medium-term viability, while avoiding unnecessary costs to the country, its creditors, and the overall system. Major reforms in the U.S. and Europe since the GFC have also made policies regarding the bail-in of bank creditors significantly clearer. In addition, the Fund revised its policy on arrears to official bilateral creditors to permit Fund financing in the presence of arrears in certain carefully circumscribed circumstances to strengthen incentives for collective action. The Fund also endorsed enhanced provisions for international sovereign bonds to strengthen the contractual framework to address collective action problems in sovereign debt restructuring, avoid protracted negotiations, and secure creditor participation. Substantial progress continues to be made in incorporating enhanced collective action clauses in international sovereign bond issuances. However, the outstanding stock of bonds without enhanced clauses remains a challenge. Moreover, further work is needed to strengthen the IMF's framework for supporting

[20] See Levin and Lo, *A new approach to financial regulation*, October 2015.

[21] See *Adequacy of the Global Financial Safety Net* (3/10/16).

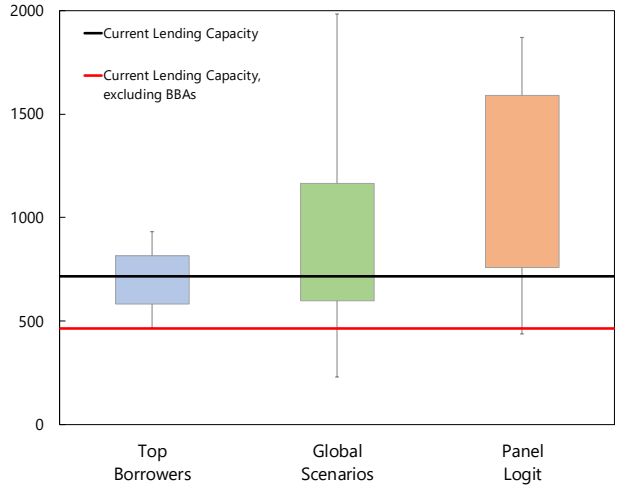
[22] See *Adequacy of the GFSN—Considerations for Fund Toolkit Reform* (9/30/17).

debtor-creditor engagement, enhance official creditor coordination, especially against the backdrop of rising debt vulnerability in low-income countries, and improve data standards and reporting requirements of public debt from debtors and creditors.

C. Conclusions from the Pillars

13. The two-pillar framework continues to make a case for at least maintaining existing Fund resources. While the quantitative estimates are somewhat lower after factoring in refinements suggested by Directors, these reductions tend to be more than outweighed when the analysis is extended through the middle of the next decade. These estimates suggest that at least maintaining the size of the Fund will ensure that the potential financing needs of members are covered over a wide range of scenarios. In particular, allowing the 2016 BBAs to expire without any offsetting increase in quota resources would leave the Fund under-resourced to meet the needs of crisis countries in more than half of the access-based and global scenarios (Text Figure). Qualitative considerations remain important to help the membership form a judgment on the appropriate size of the Fund and quota increases, and the updated analysis presented in the previous section, and summarized in Table 3, highlights not only reforms since the GFC but also uncertainties in the global environment and IMS. The analysis suggests that reforms since the GFC are not sufficient to offset risks and uncertainties facing members. Taken together, the two-pillar analysis continues to make a case that the Fund's resources, which constitute a reliable and central pillar of the GFSN, should not decline.

Potential Calls on IMF Financing[1/]
(in SDR billion)



Source: IMF staff calculations.
1/ Access-based and global scenarios assessed at 2025.

Table 3. Overall Assessment of the Qualitative Considerations

Qualitative Consideration		Potential Impact on the Size of Fund Resources	*Explanation*
Global Environment			
Interconnectedness	Impact on efficiency and growth	↓	*Greater economic integration enables more efficient allocation of resources and the transfer of technologies, that in turn supports growth. Growth enhances countries' resilience, reducing the need for Fund financing.*
	Diversification of risks	↓	*Capital flows allow countries with excess savings to reduce risks by diversifying their lending and investment.*
	Spillovers and contagion	↑	*Increasing cross-border spillovers expose countries to financial stability risks and macroeconomic volatility boom-bust cycles, complicating macroeconomic management, and increasing the potential need for Fund financing.*
Long-term uncertainties		↑↓	*The global environment is changing rapidly. Previous financial crises highlighted the difficulty of recognizing the build-up of new risks and vulnerabilities in a timely manner. A more fragmented world could reduce support for multilateral institutions.*
Resilience of the System			
Country Level			
Country buffers	Reserve accumulation	↓↑	*Reserve accumulation allows holders to adjust to external shocks, reducing the need for Fund financing. However, overaccumulation also reinforces external imbalances and increases financial flow volatility and systemic risk, increasing the need for Fund financing.*
	Macro policies, instruments, and financial supervision and regulation.	↑	*Policy space remains low in many advanced economies. Real exchange rate adjustment has played a limited role in facilitating adjustment. Countries are still learning on how to best calibrate macroprudential tools. This increases the need for Fund financing.*
	Potential growth and productivity	↑	*Potential growth prospects are weighted down by demographic trends and modest recovery of total factor productivity growth, reducing countries' resilience, and increasing the need for Fund financing.*
Country level surveillance		↓	*The Fund upgraded its surveillance framework, reducing the need for Fund financing. That said, outcomes depend on countries' implementation of Fund policy advice.*
Multilateral Level			
Global financial safety net	RFA and BSA expansion	↓	*RFAs and BSAs have increased resources and introduced new instruments. While access remains unpredictable, coverage is uneven, and coordination among layers of the GFSN untested, this reduces the need for Fund financing.*
	Fund lending toolkit reform	↑	*The Fund lending toolkit was upgraded to increase coverage of member needs, increasing potential use of Fund financing. However, stigma in approaching the Fund remains.*
	Sovereign debt restructuring reforms	↓	*Policy frameworks that guide restructuring should help reduce financial spillovers from situations of sovereign debt distress.*
Multilateral surveillance	Fund multilateral surveillance	↓	*The 2012 ISD clarified the Fund's role in multilateral surveillance, while not expanding members' obligations. The impact depends on countries' implementation of Fund policy advice.*
	Post-crisis reform agenda	↓↑	*Reforms to build resilient financial institutions, end too-big-to-fail, make derivatives market safer, and transform shadow banking into resilient market-based finance are ongoing but progress is uneven and the financial sector is rapidly evolving.*
	Other fora: G7, G20	↓	*These fora facilitate multilateral cooperation, notably in the aftermath of the GFC. In the absence of a crisis, policy coordination has been more challenging.*
↑↑↑ Increasing the size of Fund resources		↓↓↓ Decreasing the size of Fund resources	

D. Illustrative Scenarios and Simulations

14. Three illustrative quota increases are presented, centered on broadly maintaining Fund resources, assuming the NAB stays at its current level and the BBAs expire over 2019-20. To maintain the Fund's current resource envelope, as suggested as a minimum by the two-pillar framework, an increase in quotas of somewhat above 75 percent would be needed.[23] Against this backdrop the illustrative scenarios on quota increases used in simulations in the following sections on realignment of quota shares center on a quota increase of 75 percent plus/minus 25 percentage points for symmetric alternative scenarios (Table 4). To put these increases into context, excluding the "lost" 2000 decade when no general quota increase took place, the average quota increase was 86 percent per decade for the previous 50 years, and over 100 percent per decade during 1970-2000.

Table 4. Illustrative Quota Increase[1/ 2/ 3/]
(In SDR billions, in percent)

	Total Resources	Total Quotas	Quotas share in Total resources	Total Lending Capacity
December 2017 (Current)	977	477	49	715
Mid-2020s (Quotas +NAB)				
No quota increase	659	477	72	463
50 percent quota increase	898	716	80	623
75 percent quota increase	1017	835	82	702
100 percent quota increase	1136	954	84	782

Sources: Staff estimates based on IMF data.
1/ Current total resources comprise quotas, the NAB, and BBAs; it is assumed that all the commitments under the 2016 BBAs as of end-November become effective by end-April 2018.
2/ The projections for the mid-2020s assume that the NAB is renewed at its current level for another five-year period from November 2022 and the BBAs are permitted to expire.
3/ Total resources refer to all quotas and effective borrowing agreements under both the NAB and the BBAs. Lending capacity represents the usable resources (both quota and borrowing) potentially available for non-concessional lending, net of prudential balance. For further details see Box 1 in the 2017 paper.

- A **75 percent quota increase** would broadly maintain the Fund's overall lending capacity by replacing the BBAs after they expire, allowing the Fund to cover the central top borrowers scenarios and a part of the central range of the global scenarios. It would, however, only cover the lower range of the panel logit approach (Figure 1, left panel). A 75 percent quota increase would not achieve the levels needed to restore historical ratios of quotas to traditional external indicators (Figure 1, right panel). The share of quotas to total Fund resources would also remain below the long-term average of 84 percent over 1978-2008.

[23] The required size of the quota increase to replace the lending capacity of the 2016 BBAs is 79 percent given the larger amount of commitments due to new participants (the required increase to replace the lending capacity of the 2012 BBAs was 70 percent).

- A **100 percent quota increase** would cover more central global scenarios and some panel logit scenarios though it would still not allow the Fund to cover bigger crises. The increase would raise quotas to just below historical levels relative to current payments, but fall short by a larger margin relative to other external indicators. It would also bring the share of quotas in total resources to its long-term average.

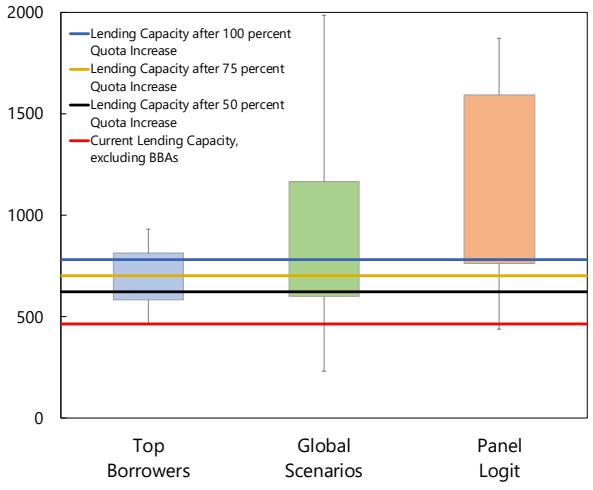
- A **50 percent quota increase** could be seen as the floor suggested by the traditional metrics for the reference period 2015-19 as it would bring quotas to just about the historical levels relative to GDP. However, it would leave the share of quotas to total Fund resources significantly below its long-term average. Such an increase would also not be sufficient to allow the Fund to cover some financing calls under the central top borrowers scenarios and the coverage of the global and logit panel scenarios is rather limited.

- While not part of the illustrative scenarios of quota increases below, a **125 percent quota increase** could help cover additional scenarios and restore the resource envelope of quotas relative to global indicators for the reference period 2015-19 (namely, 112 percent using the simple average of reference ratios). See Annex I for details.

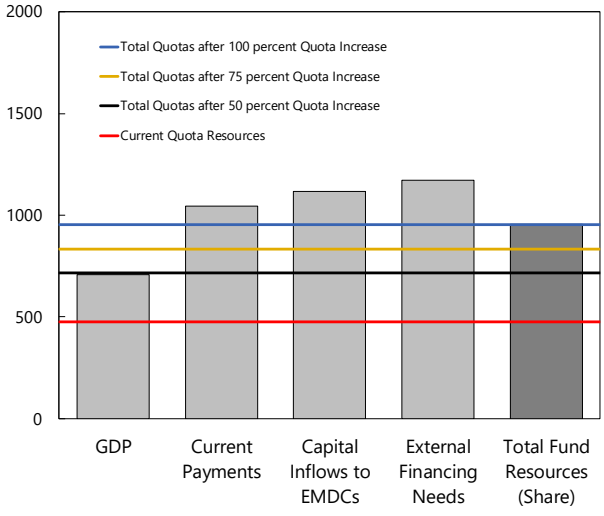
Figure 1. Illustrative Quota Increases Compared to Different Benchmarks[1/]

(In SDR billions)

Lending capacity: *After quota increases, the lending capacity excluding BBAs would cover more scenarios but fall short of covering bigger crises.*



Quota resources: *A 50-percent quota increase should be seen as the floor as it would bring quotas to just about the historical levels relative to GDP.*



Source: IMF staff estimates.
1/ Left side chart is based on estimates from access-based and global scenarios for 2025 and lending capacity excluding BBAs after quota increases. Right side chart refers to required quota resources in metrics-based analysis, using the traditional simple average reference level for period 2015-19 and implied quotas after quota increases.

E. Composition of Resources

15. The Fund has traditionally handled most crises using its permanent quota resources. Quota resources have several advantages over borrowing, including permanence (and reliability), broader burden-sharing, and greater operational flexibility. Moreover, while quota resources are

readily available for use based on majority decisions that rest with the Executive Board, activation of the NAB (and, by extension, BBAs) requires a higher bar—support from a supermajority of lenders, under conditions that threaten the stability of the IMS.[24] Also, mobilizing new borrowed resources traditionally takes considerable time even under the best of circumstances.[25] More generally, concerns have been raised in the past that excessive reliance on borrowing from a subset of members could raise fundamental issues about the cooperative character and governance of the Fund.

16. Previous occasions where the Fund has relied on borrowing have typically signaled a need for and preceded general quota increases. For instance, the Fund borrowed under the GAB in July 1998, in connection with the augmentation of the Extended Arrangement for Russia, and subsequently, under the NAB in December 1998, in connection with the Stand-By Arrangement for Brazil. The amounts borrowed in both cases were fully repaid in early 1999, when the quota increases under the 11th Review took effect. Similarly, the Fund's extensive reliance on BBAs and the NAB in the wake of the GFC preceded the quota increases under the 14th Review. The Fund also previously relied heavily on borrowing between 1974 and 1984, reflecting strong demand for Fund resources and the need to bridge to quota increases under the 7th and 8th Reviews.[26]

17. Overall, staff believes that the Fund's traditional model of relying primarily on its permanent quota resources, supplemented by standing borrowing arrangements, has served the membership well. It has provided the Fund with the flexibility to respond quickly to a wide range of shocks, in line with the Fund's central role in the GFSN. While the appropriate mix between quotas and borrowed resources is a matter of judgment, previous decisions on quotas and the NAB/GAB in the three decades preceding the GFC point to a consistent preference for a structure where quotas constitute the predominant share.

QUOTA FORMULA

The September 1st discussion highlighted that significant differences of view remain on many key issues for a new quota formula. This section briefly takes stock of these views and summarizes the findings of additional staff work responding to requests by Directors.

18. In their report to the Board of Governors, Directors noted that the 15th Review provides an opportunity to continue the process of realigning members' quota shares in line with their evolving relative positions in the world economy.[27] The quota formula seeks to

[24] For further details on the composition of Fund Resources see *Adequacy of Fund Resources—Further Considerations* (7/31/17).

[25] For example, it still took about one year to mobilize the needed resources under the GFC, even when there was a broad consensus in the international community on the need for urgent action.

[26] See *Borrowing in the Fund—A Chronological Review* (7/25/95).

[27] *Progress on the Fifteenth General Review of Quotas—Report of the Executive Board to the Board of Governors* (10/4/17). See also *The Chairman's Concluding Remarks—Fifteenth General Review of Quotas—Quota Formula and Realigning Shares* (9/7/17).

provide a reasonable measure of members' relative economic positions and thereby serves as a guide, rather than a mechanical rule, to changes in the structure of quotas.

19. Considerable support was expressed for the view that the principles that have guided previous deliberations on the formula remain valid. Specifically, the formula should (i) be simple and transparent; (ii) be consistent with the multiple roles of quotas; (iii) produce results that are broadly acceptable to the membership; and (iv) be feasible to implement statistically based on timely, high quality and widely available data.

20. However, views differed on the extent to which the current quota formula conforms to these principles. One view is that the formula is working well and continues to deliver higher calculated quota shares to dynamic economies. Another view is that the current formula fails to reflect realities in the global economy and requires a major overhaul toward a GDP-centered formula.

21. It was recognized that the formula has already been discussed extensively, including under the 2013 Quota Formula Review (QFR), and many Directors expressed a willingness to build on the progress already made. This included general support for the view that GDP should remain the most important variable, though views continued to differ on its weight and the composition of the GDP blend. There was also continued support from most Directors for dropping variability (though for a number of them, this support was conditional on other elements of the reform package), while a few were still not convinced. Openness remains important for many, but views varied on its appropriate weight and measurement. Views ranged from increasing the weight of openness and maintaining the current methodology, to lowering its weight, introducing a cap, and excluding intra-currency union trade. Views also remained divergent on whether reserves and compression should be maintained at their current levels, adjusted, or eliminated.

22. Staff's technical exercise to identify reforms that yield results near the midpoint of those implied by the current formula and a GDP-only formula attracted a range of views.[28] A number of Directors found this a useful exercise to illustrate possible pathways toward a middle ground. Many others, while welcoming staff's attempts to look for areas of consensus, felt that it does not adequately represent the range of views being expressed, gives too much prominence to a GDP-only formula, and, in their view, is not in line with the 2013 QFR.

23. Views also remained divided on whether, and if so how, to take account of voluntary financial contributions. Many Directors supported, or were open to, taking account of such contributions in quota adjustments under the 15th Review, with a few preferring their inclusion in the quota formula. Many other Directors continued to oppose or express reservations about such approaches.

[28] Using different parameter restrictions, this technical exercise identified formulas that would most closely approximate the "midpoint", i.e., the distribution based on a simple average of members' shares in the current quota formula and members' shares based on the current GDP blend variable.

24. Directors reiterated their commitment to protect the quota and voting share of the poorest members under the 15th Review. Views varied on the precise definition of poor countries to be protected, and many Directors called for protection also for small member states.

25. In response to Directors' requests, staff has conducted further technical work in two areas. First, staff has updated its earlier analysis of the relationship between variability and balance of payments difficulties using the most recent data. On the relationship between variability and Fund arrangements, staff has also explored the impact of breaking up the dataset into different country groups. In both studies, reported in more detail in Annex V, the calculated correlations are very weak and sometimes negative. These results are consistent with earlier staff work that suggests that variability does not capture its intended purposes in the formula. Second, staff also assessed the extent to which market exchange rate (MER) GDP and PPP GDP have converged since PPP GDP was included in the GDP blend in 2008. While convergence between the levels of MER and PPP GDP (i.e., price level convergence) has been modest, the ratio of MER to PPP GDP shares for EMDCs as a whole has converged more markedly, mainly driven by higher GDP growth in EMDCs relative to AEs as a whole (more details in Annex VI).

REALIGNING QUOTA SHARES

This section first discusses the approaches to quota adjustments that have facilitated the required broad consensus for changes in quotas in previous general reviews. It then presents a limited set of purely illustrative simulations to show how different quota formulas, sizes of overall increases, and allocation methods may interact to determine changes in the distribution of members' actual quota shares.

A. Quota Adjustments in Past Reviews

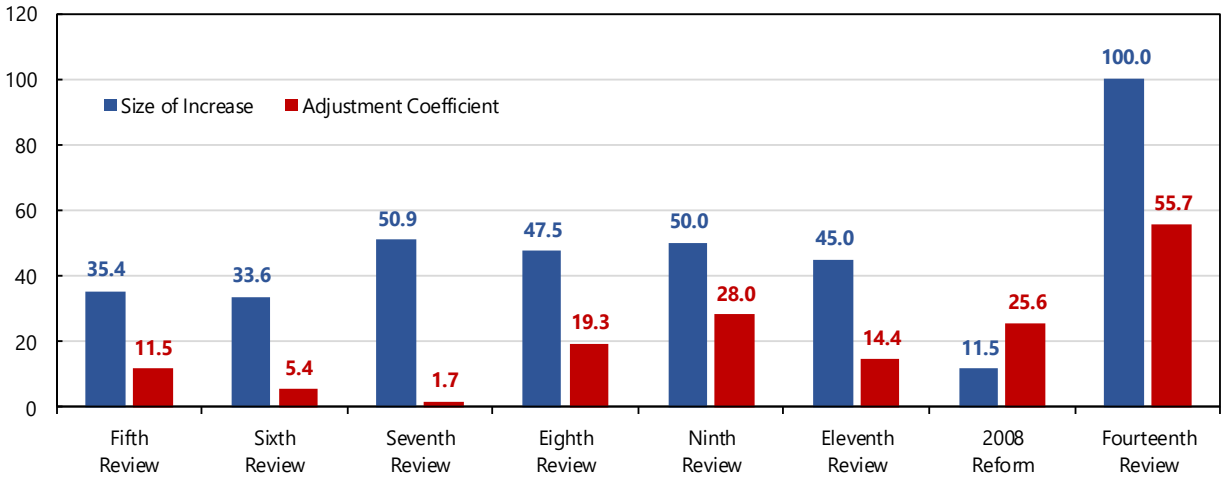
26. Achieving the necessary broad support for quota increases requires significant compromise. An 85 percent majority of total voting power is required in the Board of Governors for any change in quotas. Garnering this broad support typically requires a willingness to compromise from all sides on both the size of the overall quota increase as well as the extent and distribution of adjustments in quota shares. In the context of the 15th Review, the objective of agreeing on a new quota formula adds a further element to the needed compromises.

27. In practice, the agreed shifts in actual quota shares toward calculated quota shares in previous reviews have been only partial. The overall degree of adjustment can be measured by the degree in which deviations between actual quota shares (AQS) and quota formula based calculated quota shares (CQS) are reduced. In past reviews, convergence toward CQS was expressed in terms of the adjustment coefficient,[29] which ranged between 1.7 and 28.0 percent from the 5th to

[29] The adjustment coefficient is calculated as the relative reduction in the "root mean-squared deviation" between AQS and CQS across all members; a full realignment toward CQS yields a coefficient of 100 percent. An alternative measure is the relative reduction in aggregate out-of-lineness (OOL, sum of positive deviations between CQS and AQS, or half of the sum of absolute deviations). Both measures tend to yield broadly similar results. For instance, the 2008 Reform resulted in an adjustment coefficient of 25.6 percent and a reduction of 28.9 percent in OOL (from 15.0

the 11th Reviews, and reached 55.7 percent in the 14th Review, given its heavy focus on governance reform (Figure 2).

Figure 2. Previous Quota Increases – Size and Realignment
(In percent)



Sources: External Review of the Quota Formulas—Annex (4/28/00) and Finance Department.

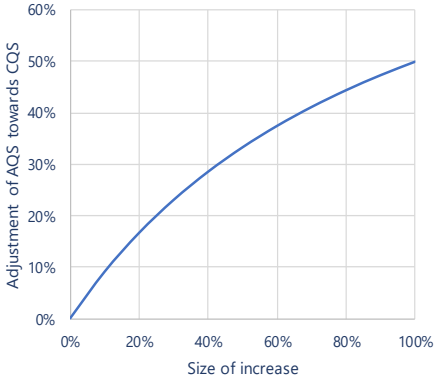
28. This pattern of partial adjustments reflects several factors, including:

- First, as noted above, a broad consensus is needed for any change in quotas, including from members whose quota shares stand to decline as part of a general review. This means that the scope for reducing under-representation typically needs to be balanced against potential limits on the extent to which over-represented members' quota shares are diluted.

- Second, as a purely technical matter, the use of selective increases based on the quota formula results in a partial adjustment, with the new quota shares reflecting a weighted average of existing quota shares and those produced by the formula. For example, a 100 percent quota increase distributed solely based on the formula results in a 50 percent adjustment toward calculated quota shares (Text Figure).

- Third, the quota formula only serves as a guide, and questions about the reasonableness of the results generated by the formula may limit its role in actual quota adjustments.

Quota Adjustment Resulting from Purely Selective Increases



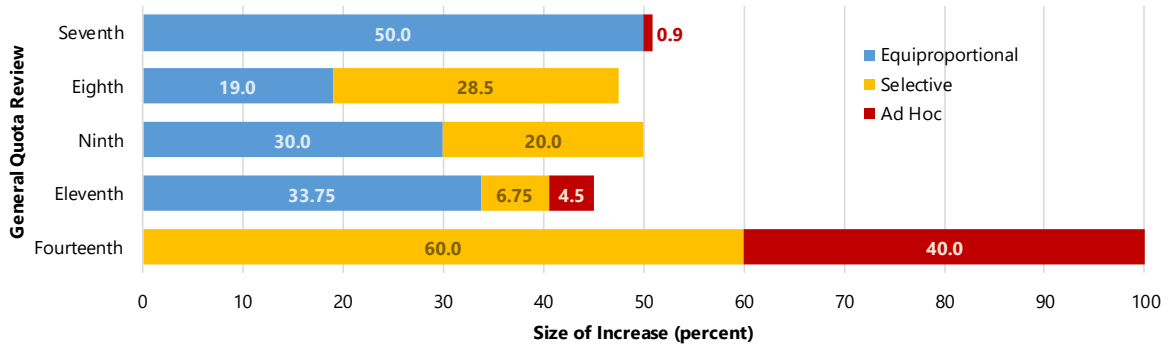
to 10.6 percentage points). The 14th Review resulted in an adjustment coefficient of 55.7 percent and a reduction of 50.6 percent in OOL (from 10.7 to 5.3 percentage points).

- Fourth, other considerations, such as the need to increase the Fund's overall resource base or concerns about preserving members' voice and access to Fund resources may play a role in allocation decisions.

- Fifth, some members may choose to voluntarily forego part of the quota share increase to which they may otherwise be eligible.

29. A number of options are available to limit the extent to which members' shares are diluted. As discussed in the August 2017 paper on the quota formula and realigning shares, three broad elements have been used to distribute previous general quota increases: (i) *equiproportional increases*, which go to all members and leave existing quota shares unchanged; (ii) *selective increases*, which also go to all members in proportion to their calculated quota shares under the formula; and (iii) *ad hoc increases*, which are distributed to a subset of members based on agreed criteria (Figure 3). In previous reviews prior to the 14th Review, a sizable equiproportional element was typically included, which had the effect of dampening the adjustment in quota shares. Ad hoc increases have also been used to protect some members (e.g., the poorest) against any decline in quota share, or to limit the maximum size of any member's decline in shares.

Figure 3. Allocation of Quota Increases in Recent General Reviews



Source: Finance Department.

30. While larger quota increases can provide more room for potential share adjustments, the relationship is not automatic and depends on how the increase is distributed. For example, as illustrated in Figure 2, the size of the quota increases from the 7th to the 11th Reviews was broadly similar (45 to 51 percent), but the adjustment coefficient varied considerably (from 1.7 to 28 percent). This primarily reflected changes in the relative size of the equiproportional element. In contrast, a sizeable adjustment (25.6 percent) was achieved with a relatively small overall increase under the 2008 Quota and Voice Reform ("2008 Reform"), which involved targeted ad hoc increases for 54 under-represented members.

31. Ad hoc increases can also be used to further boost the shares of selected members or to introduce an alternative distribution metric to the quota formula. Examples of the former include targeted increases for particularly under-represented members or members expected to

contribute to the Fund's liquidity over the medium term.[30] The 14th Review was a notable example of the latter, as 40 percent of the overall increase was distributed primarily to members that were under-represented relative to the compressed GDP blend variable, rather than the results of the quota formula. This approach reflected the widespread misgivings about the formula and the urgency of agreeing on a quota increase in the wake of the GFC, which led to the timetable for the review being advanced by two years and did not allow time for possibly protracted discussions on a new formula.

32. The remainder of this section presents some purely illustrative simulations of quota increases under the 15th Review. These simulations seek to illustrate some of the above points and the potential impact of different quota formulas on the distribution of actual quota shares, building on work presented previously in the August 2017 paper. These simulations aim to facilitate the ongoing discussions on the formula and the possible parameters of any quota increase, recognizing that any agreement on a quota increase and a new quota formula is expected to be reached as a package. This means that all elements could potentially contribute to reaching the necessary broad consensus on any individual element.

B. Illustrative Simulations[31]

33. The illustrative simulations are based on quota increases ranging from 50-100 percent and three alternative quota formulas. As discussed earlier, simulations are presented for quota increases of 50, 75 and 100 percent, centered on broadly maintaining Fund resources assuming that the NAB is maintained at its current level and the BBAs expire. Three illustrative formulas from the August 2017 paper are used, seeking to capture some of the divergences in views expressed in previous discussions, and to illustrate how different formulas may impact the distribution of actual quota shares in a general quota increase. It should be stressed that these approaches are intended to be purely illustrative and that many alternatives are possible, recognizing that views have yet to converge in any significant manner.

- **Formula 1.2** eliminates variability and redistributes two-thirds of its weight to GDP and one-third to openness, broadly in proportion to the current weights of the two variables. As such, this formula could be seen to represent one broad view that the current formula is working well, while recognizing continued support from most Directors for dropping variability.

- **Formula 3.2.c** has the same weights for formula variables as Formula 1.2, but includes a cap on openness (the ratio of openness shares to GDP blend shares is capped at 1.8). This illustrates an approach that seeks to address one possible concern about openness by limiting the overall boost that individual countries receive from the variable.

[30] For an overview of selective and ad hoc increases prior to the 2008 Reform, see Box A.2 in *Quota Distribution—Selected Issues* (7/17/03). For more details on the allocation in the 2008 Reform and in the 14th Review, see Annex VII.

[31] This section presents summary results for the main country groups and the largest members. Detailed results by member are presented in a separate Statistical Appendix.

- **Midpoint Set C Formula** is the formula resulting from the least restrictive set of constraints in the midpoint approach illustrated in the August 2017 paper. This formula illustrates possible reforms that generate shares near the midpoint of the range of views expressed so far.

34. All simulations presented below include an ad hoc element to protect the quota and voting shares of the poorest members. As in the August 2017 paper, the simulations are based on the updated definition of the poorest used in the 14th Review (i.e., the 37 PRGT-eligible countries that meet the IDA per capita GNI cut-off). As discussed previously, alternative eligibility lists for protection can be considered. These include the full list of PRGT-eligible countries (70 members) and adding small member states as called for by many Directors in the September 1 discussion. Annex VIII discusses these alternative definitions, presents a possible list of small developing states, and illustrates the impact of using such a broader list on the overall distribution of actual quota shares.[32]

Selective Increases

35. The first set of simulations shows purely selective increases (except for the small share allocated to protection of the poorest). As noted previously, selective increases based on the formula have played an important role in previous general quota reviews, notably the 8th, 9th and 14th Reviews (Figure 3). This method results in a uniform and proportional adjustment of the actual quota shares of all members toward calculated quota shares. Purely selective increases result in new quota shares for each member that are within the range of their respective AQS and CQS, avoiding "anomalies" such as an over-represented member becoming under-represented, or an under-represented member having a decline in its quota share.

36. The main findings, summarized in Tables 5 and 6, are:

- The increase in quota shares for EMDCs as a group ranges from 2.7 to 4.4 pp, mostly depending on the size of the overall increase, and is only modestly affected by the formula used.

- The distribution of the corresponding decline in the shares of AEs between major and other AEs differs significantly depending on the formula: for Formula 1.2, major AEs bear nearly 90 percent of the loss; for formulas 3.2.c and Midpoint Set C, major AEs account for about two-thirds of the decline (by comparison, major AEs represent 75 percent of current AQS of AEs).

- The aggregate share of low-income countries (LICs) declines modestly (0.1 to 0.2 pp), reflecting net declines for the group of LICs that are not eligible for protection under the updated 14th

[32] For example, under the updated 14th Review criteria for protection, approximately 99.2 percent of the increase is made in a selective manner using formula 1.2 and the remainder (0.8 percent) is allotted for protection. For an overall quota increase of 100 percent, this translates into a reduction in quota shares of non-protected members of up to 0.06 pp in absolute terms, or up to 0.54 percent in relative terms. If the protection list is expanded to the broadest definition (PRGT-eligible countries plus small developing states), the share of the selective increase is reduced to 98.6 percent, and the maximum decline in quota shares for non-protected members is 0.11 pp in absolute terms, or 0.99 percent in relative terms.

Review list. This decline would be avoided using a broader protection list of PRGT-eligible countries or PRGT-eligible plus small developing states (see Annex VIII).

- Aggregate out-of-lineness (currently about 12 percentage points under all formulas) is reduced by one-third, two-fifths and one-half for quota increases of 50, 75 and 100 percent, respectively. In other words, with a doubling of quotas, such an approach could achieve a similar overall adjustment toward CQS to that in the 14th Review.

Table 5. Summary Results – Selective Increase[1/]
(In percentage points, unless otherwise indicated)

	Formula 1.2			Formula 3.2.c			Midpoint Set C Formula		
	50%	75%	100%	50%	75%	100%	50%	75%	100%
Changes in quota shares									
Major Advanced Economies	-2.4	-3.1	-3.6	-2.0	-2.6	-3.0	-1.8	-2.3	-2.7
Other Advanced Economies	-0.3	-0.4	-0.5	-0.9	-1.2	-1.4	-0.9	-1.2	-1.4
Emerging Market and Developing Countries	2.8	3.5	4.1	2.9	3.8	4.4	2.7	3.5	4.1
of which: Low Income Countries	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.1	-0.2	-0.2
Overall quota shares realignment									
Initial Aggregate Out-of-lineness (p.p.)	12.1	12.1	12.1	12.0	12.0	12.0	12.2	12.2	12.2
Final Aggregate Out-of-lineness (p.p.)	8.2	7.0	6.2	8.1	7.0	6.1	8.3	7.1	6.3
Reduction in Out of-lineness (percent)	32%	42%	49%	33%	42%	49%	32%	41%	48%

Source: Finance Department.

1/ Specifications of illustrative formulas:

Formula 1.2: (0.60*GDP + 0.35*Openness + 0.05*Reserves)^0.95, with 60/40 GDP blend (MER/PPP).

Formula 3.2.c: (0.60*GDP + 0.35*Openness + 0.05*Reserves)^0.95, with 60/40 GDP blend (MER/PPP) and the ratio of openness shares to GDP blend shares capped at 1.8.

Midpoint Set C Formula: (0.775*GDP + 0.200*Openness + 0.025*Reserves)^0.975, with 60/40 GDP blend (MER/PPP).

Table 6. Illustrative Allocations – Selective Increase[1/]

(In percent)

	14th Review	Current Formula	Formula 1.2	Overall Increase			Formula 3.2.c	Overall Increase			Midpoint Set C Formula	Overall Increase		
				50%	75%	100%		50%	75%	100%		50%	75%	100%
Advanced economies	**57.6**	**50.2**	**49.8**	**54.9**	**54.1**	**53.5**	**49.2**	**54.7**	**53.9**	**53.2**	**49.9**	**54.9**	**54.1**	**53.5**
Major advanced economies	**43.4**	**35.7**	**36.4**	**40.9**	**40.2**	**39.7**	**37.7**	**41.4**	**40.8**	**40.4**	**38.3**	**41.6**	**41.1**	**40.7**
United States	17.4	14.5	15.2	16.6	16.4	16.2	15.6	16.8	16.6	16.5	17.4	17.3	17.3	17.3
Japan	6.5	5.1	5.1	6.0	5.9	5.8	5.3	6.1	5.9	5.9	5.3	6.1	5.9	5.9
Germany	5.6	5.0	4.9	5.4	5.3	5.2	5.1	5.4	5.4	5.3	4.7	5.3	5.2	5.1
France	4.2	3.2	3.2	3.9	3.8	3.7	3.4	3.9	3.9	3.8	3.2	3.9	3.8	3.7
United Kingdom	4.2	3.6	3.4	4.0	3.9	3.8	3.6	4.0	3.9	3.9	3.4	3.9	3.8	3.8
Italy	3.2	2.4	2.4	2.9	2.8	2.8	2.5	2.9	2.9	2.8	2.4	2.9	2.8	2.8
Canada	2.3	2.0	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.0	2.2	2.2	2.2
Other advanced economies	**14.3**	**14.5**	**13.4**	**14.0**	**13.9**	**13.8**	**11.5**	**13.3**	**13.1**	**12.9**	**11.5**	**13.3**	**13.1**	**12.9**
Spain	2.0	1.8	1.7	1.9	1.9	1.8	1.8	1.9	1.9	1.9	1.7	1.9	1.9	1.8
Netherlands	1.8	2.1	1.9	1.8	1.9	1.9	1.2	1.6	1.6	1.5	1.5	1.7	1.7	1.7
Australia	1.4	1.4	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.4
Belgium	1.3	1.1	1.1	1.2	1.2	1.2	0.8	1.1	1.1	1.1	0.8	1.2	1.1	1.1
Switzerland	1.2	1.7	1.5	1.3	1.3	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Sweden	0.9	0.9	0.8	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.7	0.9	0.8	0.8
Austria	0.8	0.7	0.7	0.8	0.8	0.7	0.6	0.8	0.7	0.7	0.6	0.7	0.7	0.7
Norway	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.6	0.7	0.7	0.7
Ireland	0.7	0.8	0.7	0.7	0.7	0.7	0.4	0.6	0.6	0.6	0.5	0.7	0.6	0.6
Denmark	0.7	0.6	0.6	0.7	0.7	0.6	0.5	0.7	0.6	0.6	0.5	0.6	0.6	0.6
EMDCs 2/	**42.4**	**49.8**	**50.2**	**45.1**	**45.9**	**46.5**	**50.8**	**45.3**	**46.1**	**46.8**	**50.1**	**45.1**	**45.9**	**46.5**
Africa	**4.4**	**3.7**	**3.6**	**4.4**	**4.3**	**4.3**	**3.7**	**4.4**	**4.4**	**4.4**	**3.4**	**4.3**	**4.3**	**4.3**
South Africa	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.6	0.6	0.6
Asia	**16.0**	**24.2**	**25.4**	**19.1**	**20.0**	**20.7**	**25.6**	**19.2**	**20.1**	**20.8**	**26.1**	**19.3**	**20.3**	**21.0**
China 3/	6.4	12.6	13.3	8.7	9.3	9.8	13.7	8.8	9.5	10.0	14.3	9.0	9.7	10.3
India	2.7	3.1	3.4	3.0	3.0	3.1	3.5	3.0	3.1	3.1	3.8	3.1	3.2	3.3
Korea, Republic of	1.8	2.0	2.2	1.9	1.9	2.0	2.3	1.9	2.0	2.0	2.0	1.9	1.9	1.9
Indonesia	1.0	1.3	1.4	1.1	1.2	1.2	1.4	1.1	1.2	1.2	1.5	1.2	1.2	1.2
Singapore	0.8	1.3	1.2	0.9	1.0	1.0	0.7	0.8	0.7	0.7	0.9	0.8	0.8	0.8
Malaysia	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7
Thailand	0.7	1.0	0.9	0.8	0.8	0.8	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.8
Middle East, Malta and Turkey	**6.7**	**7.2**	**6.7**	**6.7**	**6.7**	**6.7**	**6.7**	**6.7**	**6.7**	**6.7**	**6.3**	**6.6**	**6.6**	**6.5**
Saudi Arabia	2.1	1.7	1.5	1.9	1.8	1.8	1.5	1.9	1.8	1.8	1.3	1.8	1.8	1.7
Turkey	1.0	1.2	1.2	1.0	1.1	1.1	1.2	1.1	1.1	1.1	1.2	1.1	1.1	1.1
Iran, I.R. of	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Western Hemisphere	**7.9**	**7.4**	**7.6**	**7.8**	**7.7**	**7.7**	**7.8**	**7.8**	**7.8**	**7.8**	**7.8**	**7.8**	**7.8**	**7.8**
Brazil	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.6	2.4	2.4	2.4
Mexico	1.9	1.7	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.6	0.6	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.6	0.7	0.7	0.7
Argentina	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Transition economies	**7.2**	**7.3**	**7.0**	**7.1**	**7.1**	**7.1**	**7.0**	**7.1**	**7.1**	**7.1**	**6.5**	**7.0**	**6.9**	**6.9**
Russia	2.7	2.6	2.6	2.7	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Poland	0.9	0.9	0.9	0.9	0.9	0.9	1.0	0.9	0.9	0.9	0.8	0.9	0.8	0.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Memorandum Items:														
EU-28	30.4	27.0	26.0	28.8	28.4	28.1	24.8	28.4	27.9	27.5	23.8	28.1	27.5	27.0
LICs 4/	3.3	2.3	2.2	3.2	3.2	3.1	2.3	3.2	3.2	3.2	2.1	3.2	3.1	3.1
Updated 14th Review Poorest 5/	1.7	1.1	1.0	1.7	1.8	1.8	1.1	1.7	1.8	1.8	1.0	1.7	1.8	1.8

Source: Finance Department.

1/ All simulations show distributions based on the quota formula (i.e., selective increases) plus ad hoc increases where needed to protect the shares of the poorest members.
2/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.
3/ Including China, P.R., Hong Kong SAR, and Macao SAR.
4/ Currently PRGT-eligible countries.
5/ Updated 14th Review list to include countries that are PRGT-eligible and meet the FY 2017 IDA per capita GNI cut-off of US$1,185 (data through 2015) and twice that amount for small states, as defined by the IMF. Currently includes 37 member countries.

Equiproportional Increases

37. Equiproportional increases played a significant role in general quota increases prior to the 14th Review. On occasions, they comprised more than half or even the predominant share of the overall increase (Figure 3). However, no equiproportional element was included in the 14th Review given its strong focus on governance reform. As reported in the August 2017 paper, based on economic developments since the 14th Review, out-of-lineness has increased again to levels that now slightly exceed those prevailing prior to the 14th Review, depending on the formula used. Such out-of-lineness is also now more concentrated, with one member—China—accounting for half to two-thirds of total under-representedness, compared with just over one-third prior to the 14th Review.[33] Against this background, judgment will be needed on whether an equiproportional element should play any role in the 15th Review.

38. Pending further discussions, staff is not at this stage presenting simulations including an equiproportional element. However, it may be noted that the impact on AQS of a combination of equiproportional and selective increases is equivalent to the impact of a smaller overall increase that is distributed on a purely selective basis. This can be seen by separating the increase in two stages: first the equiproportional increase expands aggregate quotas, keeping the same structure; then the selective increase is added over the expanded base with an impact on AQS equivalent to a smaller increase over the original base. Table 7 illustrates this equivalence for different combinations of equiproportional and selective increases. For example, a 50 percent overall increase distributed on a fully selective basis would yield the same AQS as a 75 percent increase with a 22/78 equiproportional/selective split, and a 100 percent increase with a 33/67 split (Figure 4).

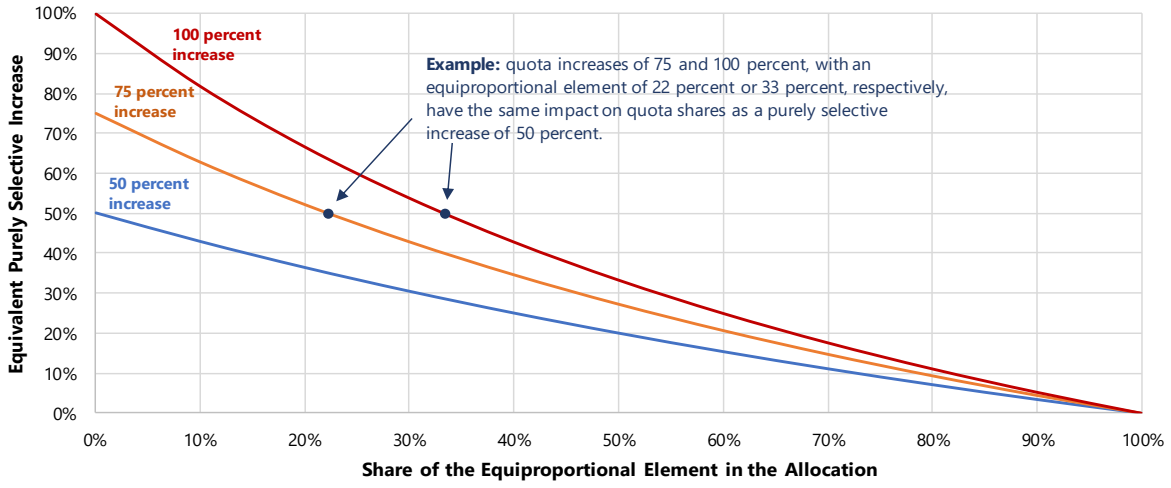
Table 7. Illustrative Combinations of Equiproportional and Selective Increases

Combination of Equiproportional and Selective Elements	50 percent increase		75 percent increase		100 percent increase	
	Resulting Split	Equivalent Purely Selective Increase	Resulting Split	Equivalent Purely Selective Increase	Resulting Split	Equivalent Purely Selective Increase
0/100 (all selective)	0/50	50.0	0/75	75.0	0/100	100.0
20/80	10/40	36.4	15/60	52.2	20/80	66.7
40/60	20/30	25.0	30/45	34.6	40/60	42.9
60/40	30/20	15.4	45/30	20.7	60/40	25.0
80/20	40/10	7.1	60/15	9.4	80/20	11.1
100/0 (all equiproportional)	50/0	0.0	75/0	0.0	100/0	0.0

Source: Finance Department.

[33] See Annex I of *Fifteenth General Review of Quotas—Quota Formula and Realigning Shares* (8/2/17).

Figure 4. Illustrative Combinations of Equiproportional and Selective Increases



Source: Finance Department.

Ad Hoc Increases

39. Ad hoc increases can help achieve the necessary broad support for a quota increase. In addition to protecting the poorest, ad hoc increases can be used to facilitate convergence toward the formula or any other agreed metric (as was the case for GDP in the 14th Review) and can also focus the increases more on specific member groups than would result from a purely selective increase. Moreover, ad hoc elements can be used to set constraints on the maximum size of any individual member's quota share increase or decline. While providing significant flexibility, ad hoc increases can also create certain "anomalies" in the resulting quota shares, which may then need to be corrected with additional ad hoc adjustments.

Voluntary financial contributions

40. One example of the possible use of ad hoc increases discussed to date is to recognize significant voluntary financial contributions. The simulations below update those presented previously by including an ad hoc element to allocate 5 percent of the overall quota increase in proportion to a measure of members' voluntary financial contributions to the Fund.[34] The remaining elements are the same as in the simulations presented above.

41. The results for this set of simulations are summarized in Tables 8 and 9. The ad hoc element to recognize voluntary financial contributions dampens the decline in quota share for some members that have made substantial voluntary contributions to the Fund's finances, and leads to a

[34] Annex IX updates staff's earlier work on possible composite measures of voluntary financial contributions. As in *Fifteenth General Review of Quotas—Quota Formula and Realigning Shares* (8/1/17), the version used here is VFCS II, which aggregates each member's share across four types of contributions, with weights of 0.3 for the NAB, 0.3 for BBAs, 0.2 for PRGT loans and concessional financing subsidies combined, and 0.2 for capacity development (technical assistance and training). Annex IX illustrates also two alternative composite measures of voluntary financial contributions, and staff could conduct further work on this topic based on Directors' guidance.

larger increase in quota shares for other such members than would result from a purely selective increase. In this way, it could be seen as providing explicit recognition of members' contributions. In aggregate, given that AEs provide a large share of voluntary financial contributions, the impact is to reduce the size of the shifts from AEs to EMDCs, by between 0.4 and 0.7 pp for the simulations presented here. The relative distribution of the shifts between major AEs and other AEs is broadly the same as in the simulations above. The resulting out-of-lineness is 0.3 to 0.6 pp higher for formulas 1.2 and 3.2.c, and 0.6 to 0.9 pp higher for the Midpoint Set C formula.

Table 8. Summary Results – Selective Increase with Ad Hoc Element in Proportion to Measure of Voluntary Financial Contributions (5 percent of total increase)

(In percentage points, unless otherwise indicated)

	Formula 1.2			Formula 3.2.c			Midpoint Set C Formula		
	50%	75%	100%	50%	75%	100%	50%	75%	100%
Changes in quota shares									
Major Advanced Economies	-2.1	-2.7	-3.2	-1.7	-2.2	-2.5	-1.5	-1.9	-2.2
Other Advanced Economies	-0.2	-0.3	-0.3	-0.8	-1.0	-1.2	-0.8	-1.0	-1.2
Emerging Market and Developing Countries	2.3	3.0	3.5	2.5	3.2	3.7	2.3	2.9	3.4
of which: Low Income Countries	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2
Overall quota shares realignment									
Initial Aggregate Out-of-lineness (p.p.)	12.1	12.1	12.1	12.0	12.0	12.0	12.2	12.2	12.2
Final Aggregate Out-of-lineness (p.p.)	8.5	7.4	6.7	8.5	7.5	6.7	8.8	7.9	7.2
Reduction in Out of-lineness (percent)	30%	39%	45%	30%	39%	45%	28%	35%	41%

Source: Finance Department.

Table 9. Illustrative Allocations – Selective Increase with Ad Hoc Element in Proportion to Measure of Voluntary Financial Contributions (5 percent of total increase)[1/ 2/]

(In percent)

	14th Review	Current Formula	VFCS II	Formula 1.2	Overall Increase			Formula 3.2.c	Overall Increase			Midpoint Set C Formula	Overall Increase		
					50%	75%	100%		50%	75%	100%		50%	75%	100%
Advanced economies	**57.6**	**50.2**	**76.7**	**49.8**	**55.3**	**54.7**	**54.2**	**49.2**	**55.2**	**54.5**	**53.9**	**49.9**	**55.4**	**54.7**	**54.2**
Major advanced economies	**43.4**	**35.7**	**55.7**	**36.4**	**41.3**	**40.7**	**40.2**	**37.7**	**41.7**	**41.2**	**40.8**	**38.3**	**41.9**	**41.4**	**41.1**
United States	17.4	14.5	5.3	15.2	16.4	16.2	16.0	15.6	16.6	16.4	16.2	17.4	17.1	17.1	17.0
Japan	6.5	5.1	21.3	5.1	6.3	6.2	6.2	5.3	6.3	6.3	6.3	5.3	6.3	6.3	6.3
Germany	5.6	5.0	7.4	4.9	5.4	5.3	5.3	5.1	5.4	5.4	5.4	4.7	5.3	5.2	5.2
France	4.2	3.2	6.9	3.2	3.9	3.9	3.8	3.4	4.0	3.9	3.9	3.2	3.9	3.8	3.8
United Kingdom	4.2	3.6	6.3	3.4	4.0	3.9	3.9	3.6	4.1	4.0	4.0	3.4	4.0	3.9	3.8
Italy	3.2	2.4	4.5	2.4	2.9	2.9	2.8	2.5	3.0	2.9	2.9	2.4	2.9	2.9	2.8
Canada	2.3	2.0	4.1	2.1	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.0	2.2	2.2	2.2
Other advanced economies	**14.3**	**14.5**	**21.0**	**13.4**	**14.1**	**14.0**	**14.0**	**11.5**	**13.5**	**13.3**	**13.1**	**11.5**	**13.5**	**13.3**	**13.1**
Spain	2.0	1.8	2.6	1.7	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.7	1.9	1.9	1.9
Netherlands	1.8	2.1	3.4	1.9	1.9	1.9	1.9	1.2	1.7	1.6	1.6	1.5	1.8	1.7	1.7
Australia	1.4	1.4	1.6	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.4
Belgium	1.3	1.1	2.3	1.1	1.3	1.2	1.2	0.8	1.2	1.1	1.1	0.8	1.2	1.2	1.1
Switzerland	1.2	1.7	4.0	1.5	1.3	1.4	1.4	1.2	1.2	1.3	1.3	1.2	1.2	1.2	1.2
Sweden	0.9	0.9	1.6	0.8	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.7	0.9	0.9	0.8
Austria	0.8	0.7	0.9	0.7	0.8	0.8	0.8	0.6	0.8	0.7	0.7	0.6	0.7	0.7	0.7
Norway	0.8	0.7	1.8	0.7	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.6	0.7	0.7	0.7
Ireland	0.7	0.8	0.0	0.7	0.7	0.7	0.7	0.4	0.6	0.6	0.6	0.5	0.6	0.6	0.6
Denmark	0.7	0.6	1.2	0.6	0.7	0.7	0.7	0.5	0.7	0.6	0.6	0.5	0.6	0.6	0.6
EMDCs 3/	**42.4**	**49.8**	**23.3**	**50.2**	**44.7**	**45.3**	**45.8**	**50.8**	**44.8**	**45.5**	**46.1**	**50.1**	**44.6**	**45.3**	**45.8**
Africa	**4.4**	**3.7**	**1.6**	**3.6**	**4.3**	**4.3**	**4.3**	**3.7**	**4.4**	**4.3**	**4.3**	**3.4**	**4.3**	**4.3**	**4.2**
South Africa	0.6	0.5	0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.6
Nigeria	0.5	0.7	0.0	0.7	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.6	0.6	0.6
Asia	**16.0**	**24.2**	**11.7**	**25.4**	**18.9**	**19.7**	**20.3**	**25.6**	**19.0**	**19.8**	**20.4**	**26.1**	**19.1**	**20.0**	**20.6**
China 4/	6.4	12.6	6.5	13.3	8.6	9.2	9.6	13.7	8.7	9.3	9.8	14.3	8.8	9.5	10.1
India	2.7	3.1	1.7	3.4	2.9	3.0	3.0	3.5	3.0	3.0	3.1	3.8	3.1	3.1	3.2
Korea, Republic of	1.8	2.0	2.4	2.2	1.9	1.9	2.0	2.3	1.9	2.0	2.0	2.0	1.9	1.9	1.9
Indonesia	1.0	1.3	0.0	1.4	1.1	1.1	1.1	1.4	1.1	1.1	1.2	1.5	1.1	1.2	1.2
Singapore	0.8	1.3	0.4	1.2	0.9	1.0	1.0	0.7	0.8	0.7	0.7	0.9	0.8	0.8	0.8
Malaysia	0.8	0.8	0.2	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Thailand	0.7	1.0	0.3	0.9	0.7	0.8	0.8	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.7
Middle East, Malta and Turkey	**6.7**	**7.2**	**3.9**	**6.7**	**6.7**	**6.7**	**6.7**	**6.7**	**6.7**	**6.7**	**6.7**	**6.3**	**6.6**	**6.5**	**6.5**
Saudi Arabia	2.1	1.7	2.3	1.5	1.9	1.8	1.8	1.5	1.9	1.9	1.8	1.3	1.8	1.8	1.7
Turkey	1.0	1.2	0.3	1.2	1.0	1.0	1.1	1.2	1.0	1.1	1.1	1.2	1.0	1.1	1.1
Iran, I.R. of	0.7	0.7	0.0	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7
Western Hemisphere	**7.9**	**7.4**	**3.5**	**7.6**	**7.7**	**7.7**	**7.6**	**7.8**	**7.8**	**7.7**	**7.7**	**7.8**	**7.8**	**7.7**	**7.7**
Brazil	2.3	2.3	1.7	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.6	2.4	2.4	2.4
Mexico	1.9	1.7	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.6	0.0	0.6	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.6	0.7	0.7	0.7
Argentina	0.7	0.6	0.0	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Transition economies	**7.2**	**7.3**	**2.5**	**7.0**	**7.1**	**7.0**	**7.0**	**7.0**	**7.1**	**7.0**	**7.0**	**6.5**	**6.9**	**6.8**	**6.8**
Russia	2.7	2.6	1.5	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.6	2.7	2.7	2.7	2.6
Poland	0.9	0.9	0.7	0.9	0.9	0.9	0.9	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Memorandum Items:															
EU-28	30.4	27.0	39.4	26.0	29.1	28.7	28.4	24.8	28.7	28.2	27.8	23.8	28.4	27.8	27.4
LICs 5/	3.3	2.3	0.6	2.2	3.2	3.1	3.1	2.3	3.2	3.1	3.1	2.1	3.2	3.1	3.1
Updated 14th Review Poorest 6/	1.7	1.1	0.2	1.0	1.7	1.7	1.8	1.1	1.7	1.8	1.8	1.0	1.7	1.7	1.7

Source: Finance Department.

1/ All simulations show distributions based on the quota formula (i.e., selective increases) plus ad hoc increases where needed to protect the shares of the poorest members and with 5 percent of the overall increase allocated as ad hoc increases based on voluntary financial contributions.
2/ Voluntary financial contributions are based on VFCS II, which is the weighted average of contribution shares, with weights of 0.3 for NAB, 0.3 for BBAs, 0.2 for PRGT loans and concessional financing subsidies combined, and 0.2 for capacity development. See Annex IX for details.
3/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.
4/ Including China, P.R., Hong Kong SAR, and Macao SAR.
5/ Currently PRGT-eligible countries.
6/ Updated 14th Review list to include countries that are PRGT-eligible and meet the FY 2017 IDA per capita GNI cut-off of US$1,185 (data through 2015) and twice that amount for small states, as defined by the IMF. Currently includes 37 member countries.

Maximum changes in quota shares

42. The 14th Review included limits on maximum changes in quota shares in both directions. Maximum declines in quota shares were limited to 30 percent or 0.85 percentage points, and maximum nominal increases were limited to 220 percent, which translated into a maximum quota share increase of 60 percent, given the overall quota increase of 100 percent under the 14th Review.

43. Whether including any such limits in the 15th Review would be helpful in achieving a broad consensus would need to be considered in light of the other elements. As illustrated in Table 10, the specific limits applied in the 14th Review would not have been binding in the simulations considered in this paper for a 50 percent overall increase but would have affected a small number of members with a 75 percent increase and between 6 and 18 members with a 100 percent increase.

Table 10. Illustrative Allocations – Maximum Changes in Quota Shares[1/]

(In percent)

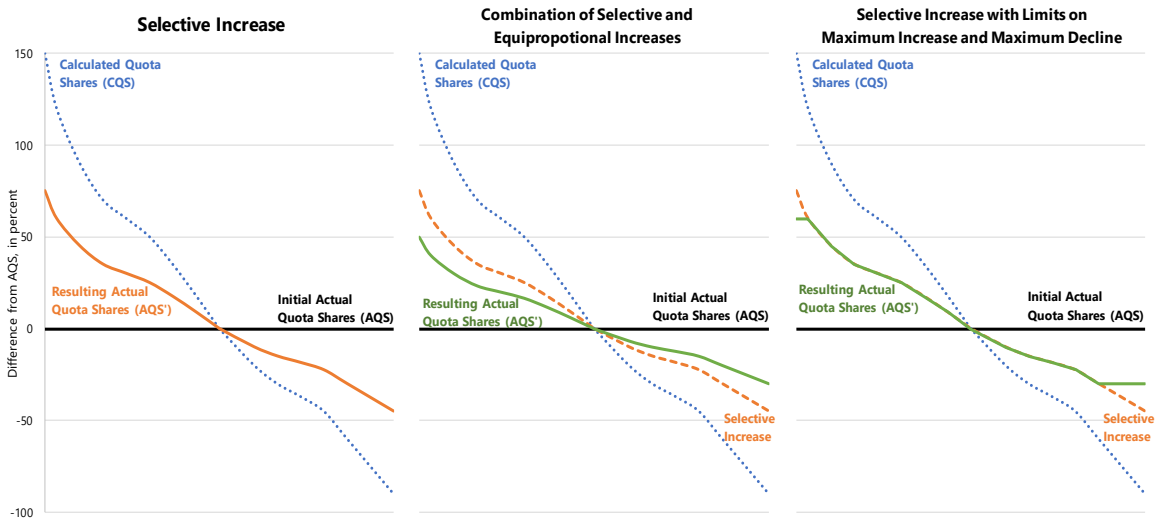
		Formula 1.2			Formula 3.2.c			Midpoint Set C Formula		
		50%	75%	100%	50%	75%	100%	50%	75%	100%
Selective Increase	*Absolute change (in pp)*									
	Maximum increase	2.28	2.93	3.42	2.41	3.10	3.62	2.58	3.32	3.88
	Maximum decline	-0.79	-1.01	-1.18	-0.63	-0.81	-0.94	-0.40	-0.52	-0.60
	Relative change (in percent)									
	Maximum increase	44%	57%	66%	48%	62%	72%	40%	52%	61%
	Maximum decline	-26%	-34%	-39%	-27%	-34%	-40%	-28%	-36%	-42%
	Number of members with decline greater than 30%	0	2	6	0	3	10	0	7	15
Selective Increase with Ad Hoc Element based on VFCS II (5 percent)	*Absolute change (in pp)*									
	Maximum increase	2.17	2.79	3.25	2.29	2.94	3.43	2.45	3.15	3.68
	Maximum decline	-0.95	-1.22	-1.43	-0.80	-1.03	-1.20	-0.29	-0.38	-0.44
	Relative change (in percent)									
	Maximum increase	41%	53%	62%	45%	58%	67%	38%	49%	58%
	Maximum decline	-26%	-34%	-39%	-27%	-34%	-40%	-28%	-36%	-42%
	Number of members with decline greater than 30%	0	2	8	0	3	10	0	8	18

Source: Finance Department.

1/ Cells shaded in gray reflect maximum declines greater than the limits used in the 14th Review (0.85 pp or 30 percent) or maximum increase greater than the limit implied by the 14th Review (60 percent). The 14th Review limits for a maximum absolute decline (0.85 pp) and a maximum relative increase (60 percent) would affect at most one member.

44. The possible "need" for limits on maximum changes is more likely to arise when the overall adjustment in shares is relatively large. If an equiproportional element is included, the distribution of gains and losses in quota shares will already be dampened, which could reduce the case for introducing additional limits. In this regard, such limits can act as an alternative approach, which is specifically targeted at capping the largest increases or declines while still preserving a more sizable degree of adjustment in shares across the bulk of the membership. In contrast, with an equiproportional element, the shift in shares is dampened in both directions across the full range of the membership. Figure 5 provides a stylized illustration of these two different approaches.

Figure 5. Stylized Allocation Methods[1/]



Source: Finance Department.

1/ This stylized presentation is based on a purely hypothetical distribution of CQS. The illustrative allocations are based on a quota increase of 100 percent. The first panel is based on a purely selective increase. The second panel is a combination of equiproportional and selective increases with a 1:2 ratio (producing a result equivalent to a purely selective increase of 50 percent). The third panel shows a selective increase with limits on maximum relative increase (60 percent) and maximum relative decline (30 percent), assuming that the amounts of quota shares freed by limiting increases and required to limit declines broadly offset each other.

Correcting "anomalies"

45. The inclusion of ad hoc elements can lead to some "anomalies" that may need to be corrected through additional ad hoc adjustments. Ad hoc increases for a sub-set of members have the effect of reducing the share of the overall increase available for other members. For members with current AQS and CQS very close to each other and that do not benefit from the ad hoc elements, this reduction may result in a loss of quota share for some under-represented members, or in some over-represented members falling below their calculated quota shares. The extent and size of such possible "anomalies" vary according to the specification of the ad hoc element, though they typically only affect a relatively small number of members.[35]

46. In the 14th Review, these "anomalies" were addressed through the design of the ad hoc element. Over-represented members were protected from falling below their CQS (or the compressed GDP blend). For under-represented members, the gains from the selective increase were at least preserved in the ad hoc round, guaranteeing that their resulting actual quota shares would be above their initial AQS.

[35] In the selective increases with protection of the poorest, the number of members affected by these anomalies ranges from one to four, depending on the formula used, and the relative distance from the "natural floor" (AQS for under-represented or CQS for over-represented) is at most 0.4 percent of the floor. The inclusion of a VFCS-based ad hoc increase has a larger impact: up to 14 members are affected, with maximum distortions close to 3 percent of the "floor."

SUMMARY AND ISSUES FOR DISCUSSION

47. This paper seeks to provide background for a further discussion on the 15th Review. Building on staff's earlier work and in response to Directors' feedback at two meetings of the CoW in September 2017, the paper presents additional work on the adequacy and composition of Fund resources, on selected issues related to the quota formula, and on issues related to the distribution of quotas. Recognizing that these issues are closely interlinked and will ultimately need to be agreed as a package, the paper presents a limited set of purely illustrative simulations to show how the distribution of actual quota shares may vary, depending on the size of the overall quota increase, the agreed quota formula, and the specific approaches used in distributing the quota increase.

48. No proposals are presented at this stage, pending further Board guidance on possible approaches to narrowing the current differences of views. The paper discusses approaches that have in the past facilitated reaching an agreement on quota adjustments, and illustrates the impact that some of these approaches could have in the current context. Based on Directors' guidance, staff will undertake further work in line with the Executive Board's agreed work plan for the 15th Review.

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

- Do Directors agree that the updated two-pillar framework provides a useful basis for further discussions on the adequacy and composition of the Fund's resources?
- Do Directors agree that the Fund's traditional model of relying primarily on its permanent quota resources, supplemented by standing borrowing arrangements, has served the membership well over several decades?
- In light of the additional analysis presented in this paper, do Directors have preliminary views on the size of the Fund's permanent resources that would allow it to continue to play its central role in the GFSN through at least the middle of the next decade?
- Are there other possible reforms of the quota formula beyond those considered to date that staff should explore to help narrow remaining differences of views?
- What are Directors' views on the possible approaches to realigning quota shares, and what do they see as the most promising areas for further work? What types of allocation mechanisms, or other elements that have a bearing on the distribution of quota increases, should be explored?
- Do Directors have any further views on how to define the list of the poorest members (discussed in Annex VIII) that would be eligible for protection under the 15th Review? What are Directors' views on extending protection also to small developing states?
- What are Directors' views on whether, and if so how, to recognize voluntary financial contributions in the context of the 15th Review?