INTERNATIONAL MONETARY FUND

Quota Formula Review—Additional Considerations

Prepared by the Finance Department

In consultation with other Departments

Approved by Andrew Tweedie

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I. Introduction[1]

1. **In July, the Executive Board held its second formal discussion on the quota formula review.** Directors agreed on the principles that should guide the review and the importance of meeting the January 2013 deadline, and there were indications of an emerging consensus in a few areas. However, views continued to diverge on several other key issues, and Directors stressed that completing the review will require a spirit of flexibility and compromise on all sides.[2]

2. **This paper seeks to provide a basis for the next discussion, taking account of the views expressed in July.** It begins by taking stock of the discussions to date. Based on this stock take, it seeks to highlight areas where a relatively broad consensus appears to be emerging. The paper also discusses possible options for addressing concerns raised about the openness variable and provides a range of simulations that seek to illustrate the effects of potential reforms to the formula. The simulations focus on those issues that have garnered the most attention in the discussions to date.

3. **Directors may wish to consider whether it would be possible to narrow the range of outstanding issues, even while some aspects remain to be settled, so that future discussions can focus on those areas where positions continue to diverge.** Such an outcome would help in moving the process forward, recognizing that the discussion of this paper will be the last before the Annual Meetings, leaving only about 3 months after the meetings for further discussions before the agreed deadline.

II. Stocktaking

4. **Directors have agreed that the principles underpinning the 2008 reform should continue to guide the current review.** These are that the formula should be: (i) simple and transparent; (ii) consistent with the multiple roles of quotas; (iii) produce results that are broadly acceptable to the membership; and (iv) feasible to implement statistically based on timely, high quality and widely available data. There is also significant common ground on some elements of the formula, but considerable divergence of views on others.

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[1] Prepared by a staff team led by M.S. Kumar and S. Bassett, and comprising H. Treichel, C. Janada, R. Rozenov, R. Zhang, A. Buzaushina, S. Khan, F. Bacall, and A. Perez.

[2] *The Chairman's Summing Up—Quota Formula Review—Data Update and Further Considerations* http://www.imf.org/external/np/sec/pn/2012/pn1294.htm.

A. GDP

5. **It is generally agreed that GDP should continue to have the largest weight.** GDP is viewed as the most comprehensive measure of members' economic size. It is also relevant both to members' ability to contribute to the Fund's finances and to their potential demand for Fund resources. The main outstanding issues are whether its weight should be further increased, and the composition of the GDP blend variable. On the former, many Directors prefer a higher weight for GDP with a number arguing in favor of a GDP-only formula or one that is essentially based on GDP. Only a few Directors have argued that the weight on GDP should be reduced.

6. **The GDP blend was introduced as part of the 2008 reforms.** It reflected recognition that market GDP remains the most relevant measure for the Fund's financial activities, where quotas play a central role, but that PPP GDP may be a more relevant indicator for the Fund's non-financial activities including surveillance and capacity building.[3] At the time, views differed on the appropriate future roles of PPP GDP (and compression) in the formula, and the Board agreed to include these elements for a period of 20 years, after which they would be reviewed in light of progress toward convergence between market rate and PPP GDP in EMDCs and the overall objective of ensuring adequate voice and participation for all members.[4]

7. **Views differ on the composition of the GDP blend variable.** In the discussions for the current review, many Directors have favored increasing the relative weight of PPP-GDP in the blend variable. Some others have noted that the composition was a difficult compromise and should not be reopened, while a few consider that the weight on PPP GDP should be reduced and a few have suggested that PPP GDP should be eliminated.[5]

B. Openness

8. **Openness is probably the most contentious of the current formula variables.** Openness has always been included in the formula, though its relative importance was reduced somewhat as part of the 2008 reform. It has been viewed as relevant to the roles of quotas as a measure of members' integration into the world economy (and therefore their

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[3] Consideration was also given to including population in the formula on similar grounds, but this approach did not command broad support.

[4] *Reform of Quota and Voice in the International Monetary Fund—Report of the Executive Board to the Board of Governors* (4/2/08).

[5] A few Directors have also favored using more recent GDP data. Timeliness of members' data provision to IFS is a key constraint given the practice of using official data in quota calculations where possible. The current approach of using a 3-year average was agreed as part of the 2008 reform to limit the impact on quotas of temporary fluctuations in GDP. This approach could be revisited again if there is sufficient support to do so.

stake in promoting global economic and financial stability) as well as of members' ability or willingness to contribute to the Fund's finances and of their potential demand for Fund resources. Many Directors therefore favor maintaining or increasing the weight on openness. However, many other Directors question these arguments, noting for instance that relatively closed economies also have major stakes in global stability, and view the current openness measure as flawed. A number of these Directors have argued that openness should either be substantially improved or dropped from the formula altogether.

9. **Further consideration has been given to the scope for increasing the weight of financial openness.** As part of the review, staff has revisited options to better capture financial openness in the formula, noting that significant challenges remain. Data availability is still an issue as official data coverage on members' International Investment Positions (IIP), generally considered as the most promising measure, remains partial, albeit covering most of estimated global totals. In addition, the composition of available IIP data is heavily weighted towards advanced economies, and there is also a question of how to treat international financial centers, which tend to have relatively large shares in all the possible measures of financial openness that have been considered. The last staff paper presented two main options if such an approach is to be pursued: (i) using available IIP data gap-filled by investment income flows; or (ii) using cross border investment income flows as a proxy for IIP.[6] The paper also discussed options for addressing international financial centers. While a number of Directors welcomed this work, including steps to limit the share of international financial centers, many others did not see a case for increasing the weight of financial openness given the significant measurement and conceptual problems.

C. Variability

10. **Staff work for the review has explored how well variability captures potential need for Fund resources.** While variability has always been part of the formula, there have been concerns for some time about the extent to which it captures members' underlying vulnerabilities. Considerable work was done at the time of the 2008 reform on possible reform options, none of which proved clearly superior to the current measure. The most recent staff work, which extended the earlier analysis to include data from the current crisis, failed to identify any significant relationship between variability and potential need for Fund resources. It also found that the current measure can add significant instability to the quota formula results, as highlighted by recent data updates. In the last paper, staff also explored several alternative measures, including composite vulnerability indicators, but the results of such indicators did not appear sufficiently robust to support their inclusion in the formula.

11. **At the most recent discussion, most Directors favored, or could support dropping variability from the formula**. This view reflected the shortcomings of the current

[6] *Quota Formula Review—Data Update and Further Considerations* (6/28/12) http://www.imf.org/external/np/pp/eng/2012/062812.pdf.

measure and the challenges in finding a superior alternative. A number of Directors nevertheless preferred to retain some measure in the formula, possibly with a reduced weight.

D. Reserves and Financial Contributions

12. **Recent work has revisited the case for including reserves in the formula.** Reserves provide an indicator of members' financial strength and ability to contribute to the Fund's finances. In the lead up to the 2008 reform, a number of Directors questioned their continued relevance and raised concerns about potential distortions associated with excess reserve accumulation. The consensus was to retain reserves in the formula with a relatively small weight. More recent staff work found no clear relationship between reserves and members' contributions to recent resource mobilization efforts, with a few notable exceptions. Recent work on reserve adequacy also did not provide a clear benchmark for introducing a cap on reserves. In the discussions to date, many Directors continued to support retaining reserves in the formula, with a few favoring a higher weight, while a significant minority reiterated earlier concerns about the incentive effects of rewarding countries for excessive reserve accumulation.

13. **Staff has also explored the scope for including a measure of financial contributions in the formula.** This work has highlighted the need for judgments on a number of issues, including which forms of members' diverse contributions to the Fund's finances to take into account, how to combine different types of contributions, and what data periods to consider. The last paper constructed a number of different aggregate measures for illustrative purposes. All these measures tend to heavily favor advanced economies, which have been the largest contributors in most of the categories examined. Many Directors welcomed this work, which they saw as a good basis for further work on how to include such a measure in the formula, in addition to or in place of reserves. However, many other Directors viewed the inclusion of financial contributions as inconsistent with the Fund's role as a quota-based institution. A few noted that particularly generous contributions could be recognized outside of the formula, as has been done on occasions in the past.

E. Compression

14. **Compression was introduced in the 2008 reform to moderate the role of size in the formula.** Recognizing that this involved a difficult compromise, many Directors have supported retaining the compression factor in the discussions so far, with a number seeing scope to increase its role. However, a view has also been expressed that compression distorts countries' economic weights and should be eliminated.

III. Possible Considerations in Moving Forward

15. **The discussions to date highlight a few areas where a common view appears to be emerging and others where significant differences remain.** In taking the review forward, it would seem desirable as far as possible to build on those areas where support is

most widespread, and thereby narrow the range of issues to be considered in the remaining period of the review. It is recognized that any conclusions reached at this stage may need to be tentative pending further work. The remainder of this section discusses possible considerations that could help guide future work, building on the discussions to date. In this context, it also explores possible options to address the concerns raised about the openness variable, which as noted above is one area where views continue to diverge widely.

A. General Considerations

16. **Any revisions to the formula should be consistent with the agreed principles.** As noted above, the Board has agreed that the principles underpinning the 2008 reform should continue to guide the current review. These principles were also affirmed by G-20 Leaders at their recent Summit in Los Cabos, Mexico. Thus, they provide a clear framework for considering further reforms to the formula as a result of the current review. It may not be appropriate, for example, to consider changes that add significant new complexity to the formula or rely heavily on estimated data, and any changes will require broad acceptance.

17. **The formula review is also taking place within the broader context of the 2010 quota and governance reforms.** These reforms included the agreement to bring forward the timetable for completing the 15th quota review to January 2014. In this context, the Board of Governors' Resolution noted that "any realignment is expected to result in increases in the quota shares of dynamic economies in line with their relative positions in the world economy, and hence likely in the share of EMDCs as a whole." It also noted that steps would be taken to protect the voice and representation of the poorest.[7] G-20 Leaders have also provided guidance on this issue, including most recently that "the distribution of quotas based on the formula should better reflect the relative weights of IMF members in the world economy, which have changed substantially in view of strong GDP growth in dynamic EMDCs".[8]

18. **Beyond the above general considerations, the question arises whether it is possible to reach at least tentative agreement on any more specific issues at this stage.** It is recognized that any such agreement would require significant compromise and flexibility from all sides, given the range of views discussed above.

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[7] Board of Governors Resolution No. 66-2, adopted December 15, 2010. This guidance was repeated by the IMFC at its most recent meeting in April 2012.

[8] G-20 Leaders Declaration, Los Cabos, 6/19/12.

19. **In the discussions to date, two issues have attracted relatively broad support, recognizing that some divergences of view remain in each case:**

- *Dropping variability:* Variability is the most complex of the current formula variables and does not appear to capture well what it is intended to represent, i.e., members' underlying vulnerabilities and potential need for Fund resources. The current measure tends to boost the calculated quota shares of other advanced economies more than EMDCs or LICs, and does not provide clear protection for the most vulnerable members. It also introduces a significant element of instability into the formula results. Extensive staff work in the context of the 2008 reform and more recently has not been able to identify a superior measure (see Annex I). Dropping variability would further simplify the formula and make it more transparent.

- *Higher weight for GDP:* As noted above, there is general agreement that GDP should continue to have the largest weight in the formula, and many favor increasing its weight above the current 50 percent. Among those willing to support such an increase, there is no consensus on how much, and these views may depend in part on what happens to the weight on other variables, particularly openness, and to the composition of the GDP blend. While these issues will likely require further discussions, an early consensus that the weight on GDP should be increased could help in moving the discussions forward.

B. Openness—Possible Reforms

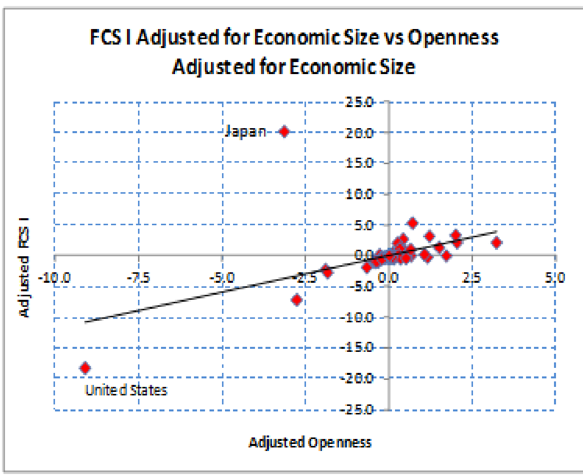
20. **As noted, views on openness differ widely.** Some argue that it provides an important measure of members' integration into the world economy, and that more open economies have a greater stake in promoting global economic and financial stability. They therefore argue that the inclusion of openness in the formula is consistent with the Fund's mandate. Others question these arguments, and also note that the reliance of the current measure on gross flows creates distortions because of a double-counting of cross-border flows (the results of recent staff work on openness as an indicator of potential need and ability to contribute to the Fund's finances are summarized in Box 1). This can distort the resulting measure of openness relative to the outcome if value added data in the tradeables sector were more readily available. In this regard, some argue that intra-currency union flows should be excluded, as these take place in a common domestic currency.

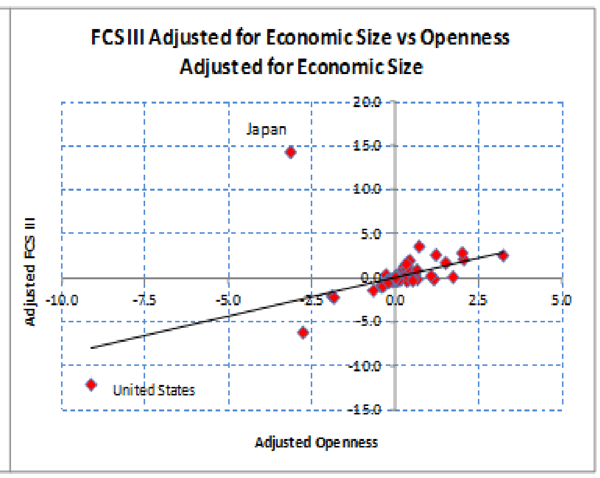
Box 1. Openness as an Indicator of Potential Use of Fund Resources and Ability to Contribute to the Fund's Finances

Conceptually, openness is relevant to both members' potential use of Fund resources as well as their ability to contribute financially to the Fund. [1] This box summarizes recent empirical analysis by the staff from both perspectives.

Earlier staff work reported in the February 2012 paper did not find any clear evidence that countries that are relatively more open are more likely to use Fund resources. Staff has also explored whether openness is closely linked to access decisions, building on earlier staff analysis of exceptional access cases since 2008.[2] This work suggests that access levels are more closely linked to openness than to quotas, but less than to GDP (the coefficient of variation is 0.32 for access relative to GDP, 0.41 for openness, and 0.73 for quota).[3] These findings thus do not suggest that openness adds significant predictive power to the formula on the likely need to use Fund resources nor on the level of access should such a need arise.

Staff has also explored whether there is any link between members' financial contributions to the Fund and openness. Using data for two of the aggregate financial contributions measures reported in the last paper, this work does find a positive relationship between openness and financial contributions (see Figure below). The correlation between FCS I and openness is 0.57 while the correlation between FCS III and openness is 0.74. Moreover, the correlations for both metrics rise sharply when Japan (a relatively closed economy that has contributed substantially to the Fund's finances) is excluded from the correlations, increasing to 0.78 and 0.94 for the two metrics, respectively. Therefore, while the role of openness as an indicator of potential demand for Fund resources is not clearly substantiated by recent data, there is some evidence to support the view that openness is a relevant indicator of members' ability to provide financial support to the Fund.





[1] See http://www.imf.org/external/np/pp/eng/2012/021012.pdf , Paragraph 26.

[2] *Quota Formula Review—Data Update and Issues*, Annex III (08/17/11) http://www.imf.org/external/np/pp/eng/2011/081711.pdf.

[3] The coefficient of variation is a normalized measure of dispersion and is calculated as the ratio of the standard deviation to the mean. The normalization allows for comparison across data with a large divergence in means. For the data presented, mean access relative to quota is 1,125.4 percent, 11 percent for openness, and 10.3 percent for GDP.

21. **These issues have been explored in the past.** As discussed in the February paper,[9] a fundamental change in the way openness is measured from a gross to a value added basis does not currently seem feasible (see Annex II for further details). The issue of the treatment of intra-currency union flows was revisited in the context of the 2008 reform.[10] As noted in the February paper, this work identified conceptual and practical difficulties with singling out intra-currency union flows for differential treatment. As regards the former, the potential distortions associated with double counting of cross border flows arise whenever there is vertical integration in the production process between two or more countries and is not limited to currency unions, though the existence of a currency union may contribute to growth of such flows.[11] On the practical side, while data for merchandise trade within currency unions are generally available, data on intra-currency union services flows are not fully available.[12] For illustrative purposes, Annex III updates earlier estimates of the impact on calculated quota shares of excluding intra-currency union trade flows—using the latest data, the result would be to lower the aggregate share of euro area members by about 3 percentage points.

22. **Staff has considered the scope for other possible reforms to help address the above concerns.** One possible approach would be to limit the additional boost that members receive from openness relative to that from GDP, given the broad agreement that GDP is the most important variable in the formula. As shown in Figure 1, the distribution of members' ratios of openness to GDP is highly skewed. This is the case in absolute terms (the ratio of openness to market GDP), where 12 members have ratios greater than 2 (the highest being close to 9) and 30 members have ratios greater than 1.5. It is also the case in terms of shares, where 28 members have openness shares that are more than double their shares in the GDP blend (the highest ratio is more than 15 times) and 64 countries have a ratio that is more than 1.5. Thus, consideration could be given to introducing a limit whereby all members with relatively open economies would still benefit from the inclusion of openness in the formula (128 members currently have openness shares above their shares in GDP) but where the extent of the gain would be constrained for members with very high ratios.

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[9] *Quota Formula Review—Initial Considerations* (2/10/12).

[10] See, for example, pp. 10-12 of *A New Quota Formula—Additional Considerations* (3/14/07) http://www.imf.org/external/np/pp/2007/eng/031407.pdf.

[11] See, for example, A. K. Rose (2000), *"One Money, One Market: Estimating the Effect of Common Currencies on Trade", Economic Policy, April;* A. Mico, E.Stein and G. Ordonez (2003), *"The Currency Union Effect on Trade: Early Evidence from EMU", Economic Policy, October;* and R. Baldwin (2006),*" The Euro's Trade Effects", ECB Working Paper No. 594, March.*

[12] Partial data for intra-currency union services for most euro area members are available starting in 2008 from Eurostat.

Figure 1a. Ratio of Openness to Market GDP

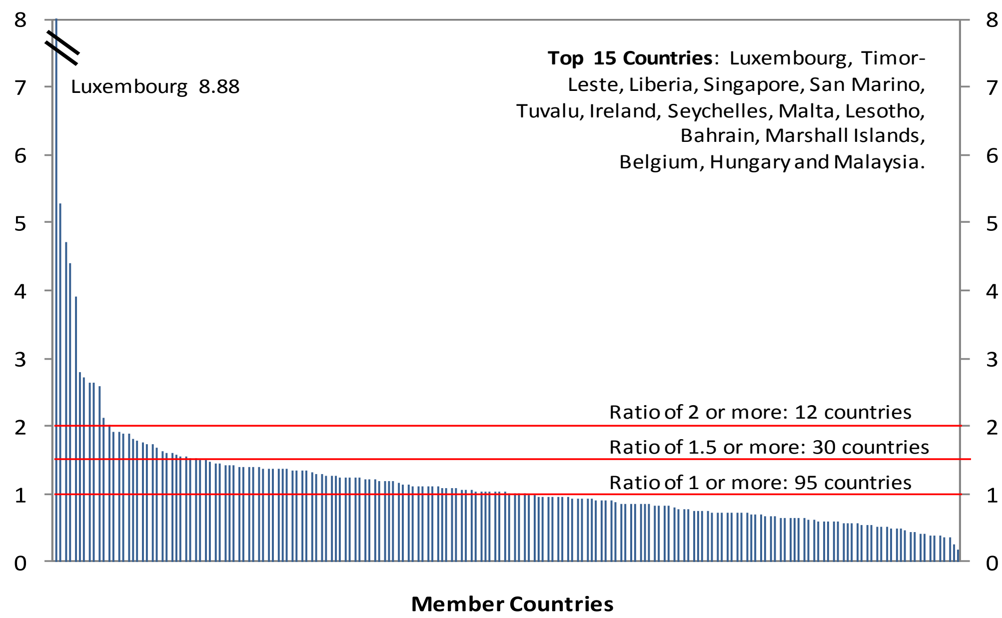
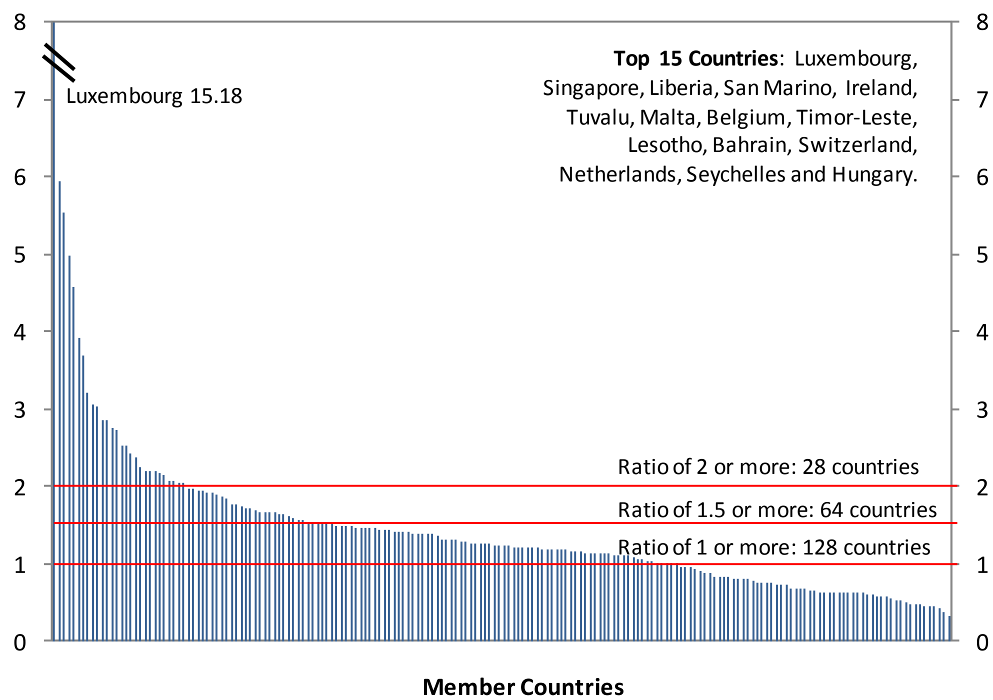


Figure 1b. Ratio of Openness Shares to GDP-Blend Shares



Source: IMF Finance Department.

23. **Several possible options along these lines could be considered.** One would be to use the ratio of openness to market GDP as a threshold. Such an approach would be akin to that illustrated in the last paper for addressing the situation of international financial centers in the context of giving a higher weight to financial openness. Thus, for example, upper thresholds for the ratio could be set at, say, the 85th or 95th percentile of the distribution for the membership as a whole (use of percentiles would allow for the likelihood that openness ratios will rise over time for most members as growth in current account flows tends to exceed that in output). A second approach that is perhaps simpler and more transparent would be to set an upper limit on the extent to which a member's share in openness can exceed its share in the GDP blend (for example, by no more than 50 or 100 percent). Staff has also explored the possibility of using a form of compression on openness similar to that used for the formula as a whole. This would need to be done on the ratio of openness to GDP rather than on the openness variable itself, as the latter is heavily influenced by economic size (members with large shares in openness would lose share under compression whether or not they are relatively more open). However, relatively large amounts of compression would be required to have a significant impact. Also, as with the first approach, a transformation would be required from the modified absolute ratios to obtain shares, which may be somewhat less transparent.

24. **The potential impact of these different options on shares in openness is discussed in Annex IV.** In order to illustrate its potential impact on calculated quota shares, staff has also included one of these options (a cap based on openness shares relative to GDP-blend shares) in some of the simulations presented in the next section.

IV. Illustrative Simulations

25. **This section presents a range of illustrative simulations of possible reforms to the quota formula.** The simulations build on those discussed in previous papers and Directors' guidance at the last meeting in July. No specific proposals are made at this stage, but it is hoped that these simulations may help in building a consensus in those areas where there has been relatively broad support to date, and thereby narrow the range of issues for future discussions.

26. **Summary results for the 35 members with the largest quotas and for major country groups are presented below.** The text table provides an overview of the results for major country groups and detailed results for all members are presented in the Statistical Appendix (issued separately). The results of some specific calculations that were requested at the July discussion are shown in the Annexes to this paper. These include: (i) an approach to reforming variability along the lines discussed previously by the G-24 (Annex I); (ii) a broader range of options for the GDP blend variable (Annex V); (iii) an approach to including a measure of financial contributions that would protect the share of EMDCs (Annex VI); (iv) the implications of using different compression factors (Annex VII); and (v) options for protecting the smallest members through the formula (Annex VIII).

Text Table 1. Illustrative Calculations: Summary

	Change in CQS (p.p)			
	Major Advanced	Other Advanced	EMDC	LIC
Set 1. Simplification of the Current Formula				
1a. Without Variability				
(a) Preserving Relative Weights	0.8	-0.8	0.0	-0.1
(b) All to GDP Blend	1.3	-1.2	-0.1	-0.1
(c) All to Openness	0.5	0.2	-0.7	-0.1
1b. GDP and Openness				
(a) Preserving Relative Weights	2.3	-0.3	-2.0	-0.1
(b) All to GDP Blend	2.7	-1.0	-1.7	0.0
1c. GDP and Reserves				
(a) Preserving Relative Weights	1.8	-4.3	2.5	0.0
(b) All to GDP Blend	2.9	-4.1	1.2	0.0
1d. GDP Only 60/40				
(a) All to GDP Blend	4.3	-3.9	-0.4	0.0
Set 2. Same as Set 1 with a 50/50 GDP Blend				
2a. Without Variability				
(a) Preserving Relative Weights	0.2	-1.0	0.8	0.0
(b) All to GDP 50/50 Blend	0.6	-1.5	0.9	0.0
(c) All to Openness	0.0	0.0	0.0	0.0
2b. GDP and Openness				
(a) Preserving Relative Weights	1.6	-0.5	-1.1	0.0
(b) All to GDP 50/50 Blend	1.9	-1.3	-0.7	0.1
2c. GDP and Reserves				
(a) Preserving Relative Weights	0.8	-4.6	3.8	0.1
(b) All to GDP 50/50 Blend	1.9	-4.5	2.5	0.1
2d. GDP Only 50/50				
(a) All to GDP Blend	3.2	-4.3	1.0	0.2
Set 3. Same as Set 1 but with a Cap of 2 on Openness				
3a. Without Variability				
(a) Preserving Relative Weights	1.8	-2.0	0.2	0.0
(b) All to GDP Blend	2.2	-2.3	0.1	0.0
(c) All to Openness	1.8	-1.4	-0.4	0.0
3b. GDP and Openness				
(a) Preserving Relative Weights	3.4	-1.7	-1.7	0.0
(b) All to GDP Blend	3.6	-2.1	-1.5	0.0
Set 4. Same as Set 2 but with a Cap of 2 on Openness				
4a. Without Variability				
(a) Preserving Relative Weights	1.3	-2.4	1.1	0.1
(b) All to GDP 50/50 Blend	1.6	-2.7	1.1	0.1
(c) All to Openness	1.4	-1.8	0.4	0.1
4b. GDP and Openness				
(a) Preserving Relative Weights	2.8	-2.0	-0.8	0.1
(b) All to GDP 50/50 Blend	2.9	-2.5	-0.4	0.1
Set 5. 50/50 Openness (IIP Capped at 95th) and 50/50 GDP Blend				
5a. Without Variability				
(a) Preserving Relative Weights	3.0	-1.1	-1.9	-0.2
(b) All to GDP 50/50 Blend	3.0	-1.6	-1.4	-0.2
(c) All to Openness	3.5	-0.1	-3.4	-0.3
5b. GDP and Openness				
(a) Preserving Relative Weights	4.6	-0.6	-4.0	-0.2
(b) All to GDP 50/50 Blend	4.3	-1.4	-3.0	-0.1
Set 6. Financial Contributions (FCS III) and 50/50 GDP Blend				
6a. Without Variability				
(a) Preserving Relative Weights	1.2	-0.6	-0.5	-0.1
(b) All to GDP 50/50 Blend	1.4	-1.0	-0.4	-0.1
(c) All to Openness	0.9	0.0	-0.9	-0.1
6b. GDP, Openness and Financial Contributions				
(a) Preserving Relative Weights	2.6	-0.2	-2.4	-0.1
(b) All to GDP Blend	2.7	-0.8	-1.9	-0.1
(c) All to Openness	2.0	0.7	-2.7	-0.1

Source: Finance Department.

Set 1 – Simplification of the current formula (Table 1 and A1)

Table 1 updates the simulations presented in the last paper on different options for simplifying the formula using the existing quota variables. The only addition is to show the impact of reallocating the weight of variability fully to openness.

The results highlight the sensitivity of the outcome of dropping variability to decisions on where to allocate the available weight. In particular, for the first two approaches where part or all of the weight is reallocated to the GDP blend, there is little impact on the aggregate shares of advanced economies and EMDCs as a group and the main effect is on shares within these two groups. If all the weight is reallocated to openness, on the other hand, advanced economies as a group would gain about 0.6 percentage points. The aggregate share of LICs would decline slightly from 2.7 to 2.6 percent in the absence of other changes (it would be unchanged if both openness and variability were dropped, or under a GDP only formula).

Set 2 – Same as Set 1 but with a larger weight on PPP GDP in the blend (Table 2 and A2)

If the simulations in Set 1 are combined with a higher weight on PPP GDP of 50 percent (rather than the current 40 percent) in the GDP blend, the aggregate share of EMDCs increases relative to existing calculated quota shares in most cases except for the simulations where both variability and reserves are dropped. The aggregate share of LICs is unchanged or increases in all cases.

Sets 3 and 4 – Same as Sets 1 and 2, respectively, but with a cap of 2 on the ratio of openness to GDP shares (Tables 3 and 4 and A3 and A4).

These simulations illustrate the possible impact of introducing a cap on the ratio of openness shares to GDP shares. As discussed above, such a cap may be the simplest and most transparent approach if it was desired to limit the impact of openness in the formula for those members' with very high levels of current account flows in relation to GDP. A cap of 2 would mean that no member's share in openness could be more than double its share in the GDP blend (other thresholds could be considered). The effect of such a change combined with dropping variability at the aggregate level would be a modest overall increase in the share of EMDCs, and a shift in shares from other advanced to major advanced economies. However, such a cap would result in large declines in shares for a number of small highly open economies. The aggregate share of LICs would be unchanged.

The simulations also illustrate the impact of combining several reforms. For example, if such a cap was combined with dropping variability and increasing the weight on PPP GDP, the aggregate share of EMDCs would increase by 0.4 – 1.1 percent, depending on how much of the available weight was reallocated to the GDP blend. If reserves was also dropped, however, the aggregate share of EMDCs would decline. In all the simulations with a higher weight on PPP GDP, the share of LICs would increase slightly.

Set 5 – Increasing the weight on financial openness (Tables 5 and A5)

The last paper illustrated the impact of modifying the openness variable to give equal weight to trade and financial openness, where the latter was proxied by IIP (with data gaps filled with investment income data and applying a cap at the 95th percentile to the ratio of IIP to GDP to limit the shares for international financial centers).

Set 5 illustrates the impact of combining such a change with a shift to 50/50 in the composition of the GDP blend. As illustrated previously using a 60/40 GDP blend, the result is still a significant shift in shares towards advanced economies as the higher weight for PPP GDP is not sufficient to offset the effects of giving more weight to financial openness.

Set 6 – Including Financial Contributions (Tables 6 and A6)

These simulations build on those presented in the last paper to illustrate the impact of incorporating a measure of financial contributions into the formula (Box 2 summarizes an approach followed by the World Bank in 2010 to take contributions into account outside of the formula). The previous simulations suggested that the overall impact would be to significantly increase the share of advanced economies. In the new simulations, this approach is combined with a higher share of PPP GDP. The results are shown for one of the measures of financial contributions presented in the last paper (FCS III); as discussed in that paper, other measures could be considered including ones that seek to differentiate according to members' ability to contribute.[13]

In all these simulations, EMDCs as a group still lose share. The decline is more pronounced when financial contributions replace reserves in the formula (last 3 columns of the tables) rather than being added to the formula with reserves still retained (first 3 simulations). The decline is moderated somewhat when financial contributions are combined with a higher share of PPP GDP. It would also be possible to explore other combinations, such as combining a higher weight for PPP GDP, an openness cap, and a measure of financial contributions. Alternatively, an approach could be explored along the lines suggested by one Director that would explicitly protect the share of EMDCs as illustrated in Annex VI.

[13] FCS III is a weighted average of contribution shares in the NAB and new bilateral pledges (0.3), FTP participation (0.3), PRGT loans and subsidies combined (0.2), and TA activities (0.2).

Box 2: World Bank 2010 Shareholding Realignment and Financial Contributions

At the July discussion, a question was raised about the approach used by the World Bank in its 2010 shareholding realignment to take account of past and future financial contributions. The approach was done through adjustments to donors' shares based on three categories: economic weight, IDA contributions, and "development" contributions. Adjustments for economic weight were based on the GDP blend in the IMF's formula. Separate adjustments were made for contributions akin to ad hoc adjustments outside of the formula (see below).

At the aggregate level, 75% of the total increase in shares was allocated to members based on economic weight and 25 percent was allocated based on contributions (20% based on IDA contributions and 5% on "development contributions"). Both current, past, and future contributions to IDA were taken into account via separate adjustments[1]:

- ***IDA contributions in the last three IDA rounds*** (about 8.3% of the total increase in shares). A member was eligible if its total contributions in the last three IDA rounds (IDA13-15) exceeded its share relative to all IDA donors' shares or relative to an alternative measure based on economic size and per capita income levels. Eligible members received a 2 percent increase in their IBRD shares, but at least 500 shares, capped at a 10 percent increase for smaller shareholders (below 5,000 shares held).

- ***Past IDA contributions*** (about 9.2% of the total). One time recognition for IDA contributions over the past 50 years was given to members whose share in historical IDA contributions was higher than their share of donors' IBRD shareholding (calculated separately for Developed members and for DTCs (equivalent to the IMF's EMDCs)). These members were allocated a 1% increase in IBRD shares, with an additional increase of 0.5% for members with an historical ratio over 2.0, when calculated for all donors.

- ***Future IDA contributions*** (about 9.2% of the total). As an incentive to provide future contributions, this component allocated shares sufficient to maintain the existing voting shares of new or returning DTC members as well as current DTC donors that agreed to increase their IDA 16 financing commitments. New and returning DTC donors were eligible if they pledged to contribute an amount commensurate with a measure based on the size of their economy and per capita income. Current DTC donors were eligible if they pledged to contribute at least 50% more than their IDA 15 contribution.

"Development contributions" were to take account of the different ways DTCs contribute to the World Bank Group. In 2010, the 5% of shares allocated to this component encompassed the additional protection of the voting power of the smallest poor members.

This approach only applied to the World Bank's 2010 shareholding realignment. Principles were agreed for the future realignment that would include economic weight, financial contributions and development contributions. It was agreed that there would be further work to develop a benchmark for a dynamic formula for the 2015 review.

1/ *World Bank Group Voice Reform: Enhancing Voice and Participation of Developing and Transition Countries in 2010 and Beyond* (DC2010-0006/1, 4/25/10).

V. Concluding Remarks

27. **This paper has explored a number of possible reforms to the quota formula, building on the Board discussions and guidance provided to date.** These reforms include simplifying the formula by dropping one or more variables, possible modifications to the GDP and openness variables, and the introduction of a measure of financial contributions. Several different combinations of these options are also explored, recognizing that other combinations could be considered. As noted, it is hoped that this work could help provide a basis for tentative agreement in one or two areas, as a means of narrowing the range of issues to be considered in the remaining time available.

28. **A few broad conclusions can be drawn:**

- As noted in the last paper, staff sees a case for dropping variability from the formula, given the shortcomings in the current measure, including the lack of any clear link with potential need for Fund resources, and the challenges in finding a superior alternative. This would further simplify the formula. The impact on shares would depend on how the existing weight of variability is reallocated.

- Other simplification options would have varied impacts on shares. For example, dropping openness as well as variability would generally favor larger economies but would also increase the aggregate share of EMDCs. Dropping reserves would reduce the share of EMDCs. Moving to a GDP-only formula would have a limited effect on the overall share of advanced economies vs EMDCs but lead to sizable shifts within groups in favor of larger economies.

- Raising the share of PPP GDP within the GDP blend would benefit EMDCs and LICs.

- A fundamental change in the way openness is measured from a gross to a value added basis does not currently seem feasible given available data. Options that limit the additional boost that some individual members obtain from openness relative to GDP would tend to raise the aggregate share of EMDCs and lead to sizable declines in shares for small highly open economies.

- Giving a higher weight to financial openness would favor advanced economies over EMDCs, even if this was combined with a higher weight for PPP GDP and a cap on the ratio of modified openness shares to GDP shares. Steps would also need to be agreed on how to address the positions of international financial centers.

- Introducing a measure of financial contributions into the formula will also generally favor advanced economies unless it was designed to explicitly protect EMDCs.

VI. Issues for Discussion

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

- Do Directors agree that dropping variability from the formula should be one of the outcomes of the review?
- Do Directors agree that this should be combined with a higher weight for GDP?
- What are Directors' views on the approach discussed in this paper of capping the openness variable as a means of at least partially addressing the concerns that have been raised about this variable? Would Directors support further work along these lines as a possible means of bridging the current divergence of views on the role of openness?
- Do Directors see any merit in further work on increasing the weight of financial openness given the data issues and its overall impact on shares?
- In light of the illustrative simulations presented in this paper, is there any change in Directors' views on the composition of the GDP blend variable?
- What are Directors' views on retaining reserves in the formula with a small weight?
- Do they see merits in introducing a measure of financial contributions into the formula, either in place of or in addition to reserves, or is this issue better addressed through ad hoc increases outside of the formula? What are Directors' views on the particular measures of financial contributions discussed in this and the previous paper?
- What are Directors' views on the compression factor?
- Is protection for the poorest better handled through the formula or through ad hoc increases outside of the formula? Should this protection be extended to the smallest members?

Table 1. Illustrative Calculations—Simplifying the Formula
(In percent)

			Without Variability			GDP and Openness		GDP and Reserves		
	14th General Review Quotas	Calculated Quota Shares	Preserving Relative Weights	All to GDP 60/40 Blend	All to Openness	Preserving Relative Weights	All to GDP 60/40 Blend	Preserving Relative Weights	All to GDP 60/40 Blend	GDP Only 60/40
Advanced economies	57.6	56.1	56.1	56.1	56.7	58.0	57.7	53.6	54.9	56.5
Major advanced economies	43.4	40.6	41.4	41.9	41.1	42.9	43.3	42.4	43.6	44.9
United States	17.4	15.8	16.2	16.8	15.5	17.0	17.7	18.5	19.2	20.1
Japan	6.5	6.2	6.4	6.5	6.0	6.1	6.3	7.6	7.4	7.2
Germany	5.6	5.7	5.7	5.6	6.0	6.0	5.7	4.5	4.7	4.9
France	4.2	3.6	3.8	3.8	3.9	4.0	4.0	3.5	3.6	3.8
United Kingdom	4.2	4.1	4.0	4.0	4.2	4.2	4.1	3.3	3.4	3.5
Italy	3.2	3.0	3.1	3.1	3.1	3.2	3.2	2.9	3.0	3.1
Canada	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.1	2.2	2.2
Other advanced economies	14.3	15.4	14.7	14.2	15.6	15.1	14.4	11.1	11.3	11.5
Spain	2.0	2.2	2.2	2.3	2.3	2.4	2.4	2.1	2.2	2.3
Netherlands	1.8	2.0	1.9	1.8	2.1	2.0	1.8	1.2	1.2	1.2
Australia	1.4	1.4	1.4	1.5	1.4	1.5	1.5	1.5	1.6	1.6
Belgium	1.3	1.3	1.3	1.2	1.4	1.3	1.2	0.7	0.7	0.8
Switzerland	1.2	1.2	1.3	1.2	1.4	1.2	1.1	0.9	0.8	0.7
Sweden	0.9	1.0	0.9	0.9	1.0	0.9	0.9	0.7	0.7	0.7
Austria	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.6
Norway	0.8	0.8	0.7	0.7	0.8	0.7	0.7	0.6	0.6	0.6
Ireland	0.7	0.9	0.8	0.7	0.9	0.8	0.7	0.3	0.4	0.4
Denmark	0.7	0.7	0.7	0.6	0.7	0.7	0.6	0.5	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	43.9	43.9	43.9	43.3	42.0	42.3	46.4	45.1	43.5
Africa	4.4	3.3	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.1
South Africa	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Nigeria	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Asia	16.0	19.6	20.4	20.3	20.0	19.1	19.2	21.8	20.9	19.8
China 2/	6.4	9.4	10.1	10.1	9.7	9.1	9.3	11.6	10.9	10.1
India	2.7	2.6	2.8	2.9	2.6	2.8	2.9	3.4	3.4	3.5
Korea	1.8	2.0	2.1	2.0	2.1	2.0	1.9	1.9	1.8	1.8
Indonesia	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.2
Singapore	0.8	1.3	1.1	1.0	1.3	1.0	0.9	0.6	0.5	0.4
Malaysia	0.8	0.8	0.7	0.7	0.8	0.7	0.6	0.6	0.5	0.5
Thailand	0.7	0.9	0.8	0.8	0.9	0.8	0.8	0.8	0.7	0.7
Middle East, Malta and Turkey	6.7	6.2	5.9	5.9	5.9	5.6	5.6	6.1	5.8	5.5
Saudi Arabia	2.1	1.4	1.2	1.1	1.2	0.9	0.9	1.2	1.0	0.8
Turkey	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.3
Iran, Islamic Republic of	0.7	0.7	0.8	0.8	0.7	0.7	0.8	0.9	0.9	0.9
Western Hemisphere	7.9	7.1	7.2	7.4	6.9	7.2	7.4	8.2	8.3	8.3
Brazil	2.3	2.2	2.3	2.4	2.1	2.3	2.4	3.0	3.0	3.0
Mexico	1.9	1.7	1.7	1.8	1.7	1.8	1.8	1.9	1.9	1.9
Venezuela, República Bolivariana de	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
Argentina	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Transition economies	7.2	7.7	7.3	7.2	7.3	7.1	7.0	7.1	6.9	6.8
Russian Federation	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.9	2.8	2.7
Poland	0.9	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:										
EU27	30.2	30.9	30.2	29.6	31.8	31.5	30.4	24.4	25.1	25.9
LICs 3/	4.0	2.7	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7
Coefficients for quota variables										
GDP		0.30	0.35	0.39	0.30	0.38	0.42	0.55	0.57	0.60
PPP GDP		0.20	0.24	0.26	0.20	0.25	0.28	0.36	0.38	0.40
Openness		0.30	0.35	0.30	0.45	0.38	0.30	0.00	0.00	0.00
Variability		0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reserves		0.05	0.06	0.05	0.05	0.00	0.00	0.09	0.05	0.00
Compression Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95

Source: IMF Finance Department.

1/ Including Czech Republic, Estonia, Korea, Malta, Singapore, Slovak Republic, and Slovenia.
2/ Including China, P.R., Hong Kong SAR, and Macao SAR.
3/ PRGT-eligible countries.

Table 2. Illustrative Calculations—Simplifying the Formula with 50/50 GDP Blend (In percent)

			Without Variability			GDP and Openness		GDP and Reserves		
	14th General Review Quotas	Calculated Quota Shares	Preserving Relative Weights	All to GDP 50/50 Blend	All to Openness	Preserving Relative Weights	All to GDP 50/50 Blend	Preserving Relative Weights	All to GDP 50/50 Blend	GDP Only 50/50
Advanced economies	57.6	56.1	55.2	55.2	56.0	57.1	56.7	52.3	53.5	55.0
Major advanced economies	43.4	40.6	40.8	41.2	40.6	42.2	42.6	41.5	42.6	43.9
United States	17.4	15.8	16.0	16.6	15.4	16.9	17.4	18.2	18.9	19.8
Japan	6.5	6.2	6.2	6.3	5.9	5.9	6.1	7.4	7.2	6.9
Germany	5.6	5.7	5.6	5.5	5.9	5.9	5.6	4.4	4.6	4.7
France	4.2	3.6	3.8	3.7	3.8	3.9	3.9	3.4	3.5	3.7
United Kingdom	4.2	4.1	4.0	3.9	4.2	4.2	4.0	3.2	3.3	3.5
Italy	3.2	3.0	3.0	3.0	3.1	3.2	3.1	2.8	2.9	3.0
Canada	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.0	2.1	2.2
Other advanced economies	14.3	15.4	14.4	14.0	15.4	14.9	14.1	10.8	11.0	11.2
Spain	2.0	2.2	2.2	2.2	2.3	2.3	2.3	2.1	2.1	2.2
Netherlands	1.8	2.0	1.9	1.8	2.1	2.0	1.8	1.1	1.2	1.2
Australia	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.6
Belgium	1.3	1.3	1.2	1.2	1.4	1.3	1.2	0.7	0.7	0.7
Switzerland	1.2	1.2	1.2	1.2	1.3	1.2	1.1	0.8	0.8	0.7
Sweden	0.9	1.0	0.9	0.9	1.0	0.9	0.9	0.7	0.7	0.7
Austria	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.6
Norway	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6
Ireland	0.7	0.9	0.8	0.7	0.9	0.8	0.7	0.3	0.3	0.4
Denmark	0.7	0.7	0.7	0.6	0.7	0.6	0.6	0.5	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	43.9	44.8	44.8	44.0	42.9	43.3	47.7	46.5	45.0
Africa	4.4	3.3	3.2	3.2	3.2	3.1	3.1	3.3	3.3	3.2
South Africa	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Nigeria	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4
Asia	16.0	19.6	21.0	20.9	20.5	19.7	19.9	22.7	21.8	20.8
China 2/	6.4	9.4	10.4	10.4	9.9	9.3	9.5	12.0	11.3	10.4
India	2.7	2.6	3.0	3.1	2.8	3.0	3.1	3.7	3.7	3.7
Korea	1.8	2.0	2.1	2.0	2.1	2.0	2.0	1.9	1.9	1.8
Indonesia	1.0	1.0	1.0	1.1	1.0	1.0	1.1	1.2	1.2	1.2
Singapore	0.8	1.3	1.1	1.0	1.3	1.0	0.9	0.6	0.5	0.4
Malaysia	0.8	0.8	0.7	0.7	0.8	0.7	0.7	0.6	0.5	0.5
Thailand	0.7	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.7	0.7
Middle East, Malta and Turkey	6.7	6.2	6.0	5.9	5.9	5.6	5.6	6.1	5.9	5.6
Saudi Arabia	2.1	1.4	1.2	1.1	1.2	1.0	0.9	1.2	1.1	0.8
Turkey	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3
Iran, Islamic Republic of	0.7	0.7	0.8	0.8	0.7	0.8	0.8	1.0	1.0	1.0
Western Hemisphere	7.9	7.1	7.3	7.4	7.0	7.3	7.5	8.3	8.4	8.5
Brazil	2.3	2.2	2.3	2.4	2.1	2.3	2.4	3.0	3.0	3.0
Mexico	1.9	1.7	1.8	1.8	1.7	1.8	1.8	1.9	1.9	2.0
Venezuela, República Bolivariana de	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6
Argentina	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8
Transition economies	7.2	7.7	7.4	7.3	7.4	7.2	7.2	7.2	7.1	6.9
Russian Federation	2.7	2.6	2.6	2.7	2.6	2.5	2.6	3.0	2.9	2.8
Poland	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:										
EU27	30.2	30.9	29.8	29.2	31.5	31.1	30.0	23.8	24.4	25.3
LICs 3/	4.0	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.9
Coefficients for quota variables										
GDP		0.30	0.29	0.33	0.25	0.31	0.35	0.45	0.48	0.50
PPP GDP		0.20	0.29	0.33	0.25	0.31	0.35	0.45	0.48	0.50
Openness		0.30	0.35	0.30	0.45	0.38	0.30	0.00	0.00	0.00
Variability		0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reserves		0.05	0.06	0.05	0.05	0.00	0.00	0.09	0.05	0.00
Compression Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95

Source: IMF Finance Department.

1/ Including Czech Republic, Estonia, Korea, Malta, Singapore, Slovak Republic, and Slovenia.
2/ Including China, P.R., Hong Kong SAR, and Macao SAR.
3/ PRGT-eligible countries.

Table 3. Illustrative Calculations—Simplifying the Formula with Openness Capped at 2
(In percent)

	14th General Review Quotas	Calculated Quota Shares	Without Variability: Preserving Relative Weights	Without Variability: All to GDP 60/40 Blend	Without Variability: All to Openness	GDP and Openness: Preserving Relative Weights	GDP and Openness: All to GDP 60/40 Blend
Advanced economies	57.6	56.1	55.8	55.9	56.5	57.8	57.5
Major advanced economies	43.4	40.6	42.5	42.8	42.5	44.0	44.2
United States	17.4	15.8	16.5	17.0	15.9	17.4	17.9
Japan	6.5	6.2	6.5	6.6	6.2	6.2	6.4
Germany	5.6	5.7	5.9	5.7	6.2	6.2	5.9
France	4.2	3.6	3.9	3.9	4.1	4.1	4.1
United Kingdom	4.2	4.1	4.2	4.1	4.4	4.4	4.2
Italy	3.2	3.0	3.2	3.2	3.2	3.3	3.3
Canada	2.3	2.3	2.3	2.3	2.4	2.4	2.4
Other advanced economies	14.3	15.4	13.4	13.1	14.0	13.8	13.3
Spain	2.0	2.2	2.3	2.3	2.4	2.4	2.4
Netherlands	1.8	2.0	1.6	1.5	1.7	1.7	1.6
Australia	1.4	1.4	1.5	1.5	1.5	1.5	1.6
Belgium	1.3	1.3	1.0	0.9	1.0	1.0	1.0
Switzerland	1.2	1.2	1.1	1.0	1.1	1.0	0.9
Sweden	0.9	1.0	0.9	0.9	1.0	0.9	0.9
Austria	0.8	0.8	0.8	0.8	0.9	0.8	0.8
Norway	0.8	0.8	0.7	0.7	0.8	0.8	0.7
Ireland	0.7	0.9	0.5	0.5	0.5	0.5	0.5
Denmark	0.7	0.7	0.7	0.6	0.7	0.6	0.6
Emerging Market and Developing Countries 1/	42.4	43.9	44.2	44.1	43.5	42.2	42.5
Africa	4.4	3.3	3.2	3.2	3.2	3.1	3.1
South Africa	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Nigeria	0.5	0.5	0.4	0.4	0.4	0.4	0.4
Asia	16.0	19.6	20.3	20.2	19.9	18.9	19.1
China 2/	6.4	9.4	10.3	10.3	10.0	9.3	9.4
India	2.7	2.6	2.8	2.9	2.7	2.8	3.0
Korea	1.8	2.0	2.1	2.1	2.2	2.1	2.0
Indonesia	1.0	1.0	1.0	1.1	1.0	1.0	1.1
Singapore	0.8	1.3	0.6	0.6	0.7	0.5	0.5
Malaysia	0.8	0.8	0.7	0.7	0.7	0.7	0.6
Thailand	0.7	0.9	0.9	0.8	0.9	0.8	0.8
Middle East, Malta and Turkey	6.7	6.2	6.0	5.9	5.9	5.6	5.6
Saudi Arabia	2.1	1.4	1.2	1.2	1.2	1.0	0.9
Turkey	1.0	1.1	1.1	1.2	1.1	1.1	1.2
Iran, Islamic Republic of	0.7	0.7	0.8	0.8	0.7	0.8	0.8
Western Hemisphere	7.9	7.1	7.3	7.5	7.1	7.3	7.5
Brazil	2.3	2.2	2.3	2.4	2.2	2.3	2.4
Mexico	1.9	1.7	1.8	1.8	1.8	1.8	1.8
Venezuela, República Bolivariana de	0.8	0.5	0.5	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Transition economies	7.2	7.7	7.4	7.3	7.5	7.2	7.1
Russian Federation	2.7	2.6	2.7	2.7	2.6	2.5	2.6
Poland	0.9	1.0	1.0	1.0	1.0	1.0	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:							
EU27	30.2	30.9	29.6	29.0	31.0	30.9	29.9
LICs 3/	4.0	2.7	2.7	2.7	2.7	2.7	2.7
Coefficients for quota variables							
GDP		0.30	0.35	0.39	0.30	0.38	0.42
PPP GDP		0.20	0.24	0.26	0.20	0.25	0.28
Openness		0.30	0.00	0.00	0.00	0.00	0.00
Variability		0.15	0.00	0.00	0.00	0.00	0.00
Reserves		0.05	0.06	0.05	0.05	0.00	0.00
Openness Shares Capped at 2		0.00	0.35	0.30	0.45	0.38	0.30
Compression Factor		0.95	0.95	0.95	0.95	0.95	0.95

Source: IMF Finance Department.

1/ Including Czech Republic, Estonia, Korea, Malta, Singapore, Slovak Republic, and Slovenia.
2/ Including China, P.R., Hong Kong SAR, and Macao SAR.
3/ PRGT-eligible countries.

Table 4. Illustrative Calculations—Simplifying the Formula with Openness Capped at 2 and 50/50 GDP Blend
(In percent)

	14th General Review Quotas	Calculated Quota Shares	Without Variability: Preserving Relative Weights	Without Variability: All to GDP 50/50 Blend	Without Variability: All to Openness	GDP and Openness: Preserving Relative Weights	GDP and Openness: All to GDP 50/50 Blend
Advanced economies	57.6	56.1	54.9	54.9	55.7	56.8	56.5
Major advanced economies	43.4	40.6	41.9	42.2	42.0	43.4	43.5
United States	17.4	15.8	16.3	16.8	15.8	17.2	17.7
Japan	6.5	6.2	6.4	6.4	6.1	6.0	6.2
Germany	5.6	5.7	5.8	5.6	6.2	6.1	5.8
France	4.2	3.6	3.9	3.8	4.0	4.1	4.0
United Kingdom	4.2	4.1	4.1	4.0	4.4	4.3	4.2
Italy	3.2	3.0	3.1	3.1	3.2	3.3	3.2
Canada	2.3	2.3	2.3	2.3	2.4	2.4	2.4
Other advanced economies	14.3	15.4	13.0	12.8	13.7	13.4	13.0
Spain	2.0	2.2	2.3	2.3	2.4	2.4	2.4
Netherlands	1.8	2.0	1.5	1.5	1.7	1.6	1.5
Australia	1.4	1.4	1.4	1.5	1.4	1.5	1.5
Belgium	1.3	1.3	0.9	0.9	1.0	1.0	0.9
Switzerland	1.2	1.2	1.0	1.0	1.1	0.9	0.9
Sweden	0.9	1.0	0.9	0.8	0.9	0.9	0.9
Austria	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Norway	0.8	0.8	0.7	0.7	0.8	0.7	0.7
Ireland	0.7	0.9	0.5	0.4	0.5	0.5	0.5
Denmark	0.7	0.7	0.6	0.6	0.7	0.6	0.6
Emerging Market and Developing Countries 1/	42.4	43.9	45.1	45.1	44.3	43.2	43.5
Africa	4.4	3.3	3.3	3.3	3.3	3.2	3.2
South Africa	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Nigeria	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Asia	16.0	19.6	20.9	20.9	20.4	19.6	19.8
China 2/	6.4	9.4	10.6	10.6	10.2	9.5	9.7
India	2.7	2.6	3.0	3.1	2.8	3.0	3.1
Korea	1.8	2.0	2.2	2.1	2.2	2.1	2.0
Indonesia	1.0	1.0	1.1	1.1	1.0	1.1	1.1
Singapore	0.8	1.3	0.6	0.6	0.7	0.5	0.5
Malaysia	0.8	0.8	0.7	0.7	0.8	0.7	0.6
Thailand	0.7	0.9	0.9	0.9	0.9	0.8	0.8
Middle East, Malta and Turkey	6.7	6.2	6.0	6.0	6.0	5.7	5.7
Saudi Arabia	2.1	1.4	1.2	1.2	1.2	1.0	1.0
Turkey	1.0	1.1	1.1	1.2	1.1	1.2	1.2
Iran, Islamic Republic of	0.7	0.7	0.8	0.8	0.8	0.8	0.8
Western Hemisphere	7.9	7.1	7.4	7.6	7.2	7.4	7.6
Brazil	2.3	2.2	2.3	2.4	2.2	2.3	2.4
Mexico	1.9	1.7	1.8	1.8	1.8	1.9	1.9
Venezuela, República Bolivariana de	0.8	0.5	0.5	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.6	0.6	0.6	0.6	0.7
Transition economies	7.2	7.7	7.5	7.4	7.6	7.3	7.2
Russian Federation	2.7	2.6	2.7	2.7	2.6	2.6	2.6
Poland	0.9	1.0	1.0	1.0	1.0	1.0	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:							
EU27	30.2	30.9	29.2	28.6	30.6	30.4	29.4
LICs 3/	4.0	2.7	2.8	2.8	2.8	2.8	2.8
Coefficients for quota variables							
GDP		0.30	0.29	0.33	0.25	0.31	0.35
PPP GDP		0.20	0.29	0.33	0.25	0.31	0.35
Openness		0.30	0.00	0.00	0.00	0.00	0.00
Variability		0.15	0.00	0.00	0.00	0.00	0.00
Reserves		0.05	0.06	0.05	0.05	0.00	0.00
Openness Capped Shares at 2 (50.50 GDP Blend)		0.00	0.35	0.30	0.45	0.38	0.30
Compression Factor		0.95	0.95	0.95	0.95	0.95	0.95

Source: IMF Finance Department.

1/ Including Czech Republic, Estonia, Korea, Malta, Singapore, Slovak Republic, and Slovenia.
2/ Including China, P.R., Hong Kong SAR, and Macao SAR.
3/ PRGT-eligible countries.

Table 5. Illustrative Calculations—Simplifying the Formula using 50/50 Openness (IIP Capped at 95th) and 50/50 GDP Blend 1/
(In percent)

			Without Variability			GDP and Openness	
	14th General Review Quotas	Calculated Quota Shares	Preserving Relative Weights	All to GDP 50/50 Blend	All to Openness	Preserving Relative Weights	All to GDP 50/50 Blend
Advanced economies	57.6	56.1	57.9	57.5	59.5	60.0	59.0
Major advanced economies	43.4	40.6	43.6	43.6	44.2	45.2	45.0
United States	17.4	15.8	17.2	17.6	17.0	18.2	18.5
Japan	6.5	6.2	6.5	6.5	6.2	6.2	6.3
Germany	5.6	5.7	5.6	5.5	5.9	5.9	5.7
France	4.2	3.6	4.1	4.1	4.3	4.3	4.2
United Kingdom	4.2	4.1	5.1	4.9	5.7	5.4	5.0
Italy	3.2	3.0	2.9	2.9	3.0	3.1	3.1
Canada	2.3	2.3	2.1	2.1	2.1	2.2	2.2
Other advanced economies	14.3	15.4	14.3	13.9	15.3	14.8	14.1
Spain	2.0	2.2	2.2	2.2	2.3	2.3	2.3
Netherlands	1.8	2.0	1.9	1.8	2.1	2.0	1.9
Australia	1.4	1.4	1.5	1.5	1.5	1.5	1.5
Belgium	1.3	1.3	1.2	1.2	1.4	1.3	1.2
Switzerland	1.2	1.2	1.4	1.3	1.5	1.3	1.2
Sweden	0.9	1.0	0.9	0.9	1.0	0.9	0.9
Austria	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Norway	0.8	0.8	0.7	0.7	0.8	0.7	0.7
Ireland	0.7	0.9	0.7	0.6	0.7	0.7	0.6
Denmark	0.7	0.7	0.6	0.6	0.7	0.6	0.6
Emerging Market and Developing Countries 2/	42.4	43.9	42.1	42.5	40.5	40.0	41.0
Africa	4.4	3.3	3.0	3.0	2.9	2.9	2.9
South Africa	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Nigeria	0.5	0.5	0.4	0.4	0.4	0.4	0.4
Asia	16.0	19.6	19.9	20.0	19.1	18.5	19.0
China 3/	6.4	9.4	10.1	10.2	9.6	9.1	9.3
India	2.7	2.6	2.8	3.0	2.6	2.8	3.0
Korea	1.8	2.0	1.9	1.9	1.9	1.8	1.8
Indonesia	1.0	1.0	1.0	1.0	0.9	1.0	1.0
Singapore	0.8	1.3	1.0	0.9	1.1	0.9	0.8
Malaysia	0.8	0.8	0.6	0.6	0.6	0.6	0.6
Thailand	0.7	0.9	0.8	0.8	0.8	0.7	0.7
Middle East, Malta and Turkey	6.7	6.2	5.5	5.5	5.3	5.1	5.2
Saudi Arabia	2.1	1.4	1.1	1.1	1.1	0.9	0.9
Turkey	1.0	1.1	1.1	1.1	1.0	1.1	1.1
Iran, Islamic Republic of	0.7	0.7	0.7	0.8	0.7	0.7	0.8
Western Hemisphere	7.9	7.1	7.0	7.2	6.6	7.0	7.3
Brazil	2.3	2.2	2.3	2.4	2.2	2.3	2.4
Mexico	1.9	1.7	1.6	1.7	1.6	1.7	1.7
Venezuela, República Bolivariana de	0.8	0.5	0.5	0.5	0.4	0.5	0.5
Argentina	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Transition economies	7.2	7.7	6.8	6.8	6.6	6.6	6.6
Russian Federation	2.7	2.6	2.5	2.6	2.4	2.4	2.5
Poland	0.9	1.0	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:							
EU27	30.2	30.9	30.7	29.8	32.5	32.0	30.7
LICs 4/	4.0	2.7	2.5	2.5	2.4	2.5	2.5
Coefficients for quota variables							
GDP		0.30	0.29	0.33	0.25	0.31	0.35
PPP GDP		0.20	0.29	0.33	0.25	0.31	0.35
Openness		0.30	0.00	0.00	0.00	0.00	0.00
Variability		0.15	0.00	0.00	0.00	0.00	0.00
Reserves		0.05	0.06	0.05	0.05	0.00	0.00
Openness 50/50 (IIP Capped at 95th) 5/		0.00	0.35	0.30	0.45	0.38	0.30
Compression Factor		0.95	0.95	0.95	0.95	0.95	0.95

Source: IMF Finance Department.

1/ The traditional openness variable is replaced with Openness 50/50, defined as trade openness and gap-filled International Investment Position capped at 95th percentile, weighed equally. Using a 50/50 GDP Blend.
2/ Including Czech Republic, Estonia, Korea, Malta, Singapore, Slovak Republic, and Slovenia.
3/ Including China, P.R., Hong Kong SAR, and Macao SAR.
4/ PRGT-eligible countries.
5/ Openness 50/50 is defined as trade openness and gap-filled International Investment Position capped at 95th percentile, weighed equally.

Table 6. Illustrative Calculations—Simplifying the Formula including Financial Contributions (FCS III) and 50/50 GDP Blend 1/
(In percent)

	14th General Review Quotas	Calculated Quota Shares	Without Variability: Preserving Relative Weights	Without Variability: All to GDP 50/50 Blend	Without Variability: All to Openness	GDP, Openness and Financial Contributions: Preserving Relative Weights	GDP, Openness and Financial Contributions: All to GDP 50/50 Blend	GDP, Openness and Financial Contributions: All to Openness
Advanced economies	57.6	56.1	56.6	56.4	57.0	58.5	57.9	58.8
Major advanced economies	43.4	40.6	41.8	42.0	41.6	43.2	43.3	42.7
United States	17.4	15.8	15.6	16.0	15.3	16.4	16.9	15.8
Japan	6.5	6.2	7.0	7.0	6.7	6.8	6.8	6.4
Germany	5.6	5.7	5.7	5.6	5.9	6.0	5.8	6.2
France	4.2	3.6	3.9	3.9	4.0	4.1	4.1	4.2
United Kingdom	4.2	4.1	4.1	4.0	4.2	4.3	4.2	4.4
Italy	3.2	3.0	3.1	3.1	3.1	3.2	3.2	3.2
Canada	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.5
Other advanced economies	14.3	15.4	14.8	14.4	15.4	15.2	14.6	16.1
Spain	2.0	2.2	2.2	2.2	2.3	2.3	2.3	2.4
Netherlands	1.8	2.0	1.9	1.9	2.1	2.0	1.9	2.2
Australia	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5
Belgium	1.3	1.3	1.3	1.2	1.4	1.4	1.3	1.5
Switzerland	1.2	1.2	1.3	1.3	1.4	1.3	1.2	1.4
Sweden	0.9	1.0	0.9	0.9	1.0	1.0	0.9	1.0
Austria	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9
Norway	0.8	0.8	0.8	0.7	0.8	0.8	0.7	0.8
Ireland	0.7	0.9	0.7	0.7	0.8	0.8	0.7	0.9
Denmark	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7
Emerging Market and Developing Countries 2/	42.4	43.9	43.4	43.6	43.0	41.5	42.1	41.2
Africa	4.4	3.3	3.1	3.1	3.1	3.0	3.0	3.0
South Africa	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Nigeria	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Asia	16.0	19.6	20.3	20.3	20.1	19.0	19.3	18.8
China 3/	6.4	9.4	10.0	10.1	9.8	9.0	9.2	8.8
India	2.7	2.6	2.9	3.0	2.7	2.9	3.0	2.7
Korea	1.8	2.0	2.1	2.0	2.1	2.0	2.0	2.0
Indonesia	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Singapore	0.8	1.3	1.1	1.0	1.2	1.0	0.9	1.2
Malaysia	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Thailand	0.7	0.9	0.8	0.8	0.8	0.8	0.8	0.8
Middle East, Malta and Turkey	6.7	6.2	5.9	5.9	5.9	5.6	5.6	5.6
Saudi Arabia	2.1	1.4	1.3	1.2	1.2	1.0	1.0	1.0
Turkey	1.0	1.1	1.1	1.1	1.0	1.1	1.1	1.0
Iran, Islamic Republic of	0.7	0.7	0.7	0.8	0.7	0.7	0.8	0.7
Western Hemisphere	7.9	7.1	7.0	7.2	6.8	7.0	7.2	6.8
Brazil	2.3	2.2	2.2	2.3	2.1	2.2	2.3	2.0
Mexico	1.9	1.7	1.7	1.8	1.7	1.8	1.8	1.7
Venezuela, República Bolivariana de	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Transition economies	7.2	7.7	7.1	7.1	7.2	7.0	7.0	7.1
Russian Federation	2.7	2.6	2.6	2.6	2.5	2.4	2.5	2.4
Poland	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:								
EU27	30.2	30.9	30.4	29.9	31.4	31.6	30.7	33.0
LICs 4/	4.0	2.7	2.6	2.6	2.6	2.6	2.6	2.6
Coefficients for quota variables								
GDP		0.30	0.28	0.30	0.25	0.29	0.33	0.25
PPP GDP		0.20	0.28	0.30	0.25	0.29	0.33	0.25
Openness		0.30	0.33	0.30	0.40	0.35	0.30	0.45
Variability		0.15	0.00	0.00	0.00	0.00	0.00	0.00
Reserves		0.05	0.06	0.05	0.05	0.00	0.00	0.00
Financial Contributions FCS III		0.00	0.06	0.05	0.05	0.06	0.05	0.05
Compression Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95

Source: IMF Finance Department.

1/ Except for 0.05 of the weight of the dropped variable(s), which goes to financial contributions, the remaining weight is distributed as indicated. FCS III is a weighted average of contribution shares in the NAB and new bilateral pledges (0.3), FTP participation (0.3), PRGT loans and subsidies combined (0.2), and TA activities (0.2).
2/ Including Czech Republic, Estonia, Korea, Malta, Singapore, Slovak Republic, and Slovenia.
3/ Including China, P.R., Hong Kong SAR, and Macao SAR.
4/ PRGT-eligible countries.