



QUOTAS—DATA UPDATE AND SIMULATIONS

September 2016

IMF staff regularly produces papers proposing new IMF policies, exploring options for reform, or reviewing existing IMF policies and operations. The following documents have been separately released:

- The **Staff Report** Quotas—Data Update and Simulations, prepared by IMF staff and completed on August 9, 2016.
- **Staff Supplement** on Quotas—Data Update and Simulations—Statistical Appendix, completed on August 10, 2016.

These documents were prepared by IMF staff and were presented to the Executive Board in an informal session on September 9, 2016. Such informal sessions are used to brief Executive Directors on policy issues, and to receive feedback from them. No decisions are taken at these informal sessions. The views expressed in this paper are those of the IMF staff and do not necessarily present the views of the IMF's Executive Board.

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International Monetary Fund
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QUOTAS—DATA UPDATE AND SIMULATIONS

August 9, 2016

EXECUTIVE SUMMARY

The quota database has been updated by one year through 2014. Overall, the results of the update continue the broad trends observed in previous updates, but the shifts between the main country groups are generally smaller. Using the current quota formula, the calculated quota share of Emerging Market and Developing Countries (EMDCs) as a group increases by 0.6 percentage points relative to the 2015 update to 49.3 percent, which is about half the increase in the last update.

The paper takes stock of recent discussions on the quota formula, including the outcome of the Quota Formula Review in 2013 and subsequent discussions in the context of the annual quota data updates. It also updates the illustrative simulations of possible reforms of the quota formula presented previously, using the latest data. These simulations have sought to capture possible reforms that would be broadly in line with the conclusions of the Quota Formula Review and Directors' guidance is sought on the relative merits of these reforms and the most productive areas for future work.

Initial simulations are also presented to show how possible changes in the quota formula might feed through into shifts in actual quota shares in the context of the 15th Review. Given the very early stage of discussions, these simulations are purely illustrative and no proposals are made. Rather the goal is to help inform the discussions and seek feedback from Directors on the direction of future work.

The paper also proposes to update the current country groupings used in quota work, and seeks guidance on how to define the poorest members for the purpose of providing protection under the 15th Review.

Approved By
Andrew Tweedie

Prepared by the Finance Department
(In collaboration with the Statistics Department)
The FIN team comprised H. Hatanpaa (lead), M. Albino-War,
R. Bhattacharya, E. Ozturk, R. Zhang, D. Mikhail, and S. Rodriguez-Apolinar.
T. Krueger (FIN) provided guidance.

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Acronyms

AEs	Advanced Economies
AQS	Actual Quota Share
CQS	Calculated Quota Share
EMDCs	Emerging Market and Developing Countries
FCS	Financial Contributions
FTP	Financial Transactions Plan
ICP	International Comparison Program
IDA	International Development Association
LDCs	Least Developed Countries
LICs	Low Income Countries
LIDCs	Low Income Developing Countries
OOL	Out-of-lineness
PP	Percentage Points
PPP	Purchasing Power Parity
PRGT	Poverty Reduction and Growth Trust
QFR	Quota Formula Review
VFCS	Voluntary Financial Contributions

INTRODUCTION

1. **This paper provides background for an informal discussion of issues relating to the quota formula and the distribution of any quota increases under the Fifteenth General Review of Quotas (hereafter the 15th Review).** In Resolution No. 71-2, the Board of Governors called on the Executive Board to work expeditiously on the 15th Review in line with previous Executive Board understandings, and with the aim of completing the 15th Review by the 2017 Annual Meetings. The IMFC has also called on the Executive Board to work expeditiously toward completion of the 15th Review, including a new quota formula.¹

2. **Executive Directors have discussed the quota formula on a number of occasions since the completion of the 14th Review.** Extensive discussions took place in 2012-13 as part the Quota Formula Review (QFR), and important progress was made in identifying key elements that could form the basis for a final agreement on a new quota formula. At the conclusion of the QFR, the Board agreed that achieving broad consensus on a new quota formula would best be done in the context of the 15th Review, and that the discussions on this issue would be integrated and move in parallel with the discussion on the 15th Review. Directors have subsequently revisited these issues in the context of the annual updates of the quota database.²

3. **The paper is organized as follows.** The results of updating the quota database by one year to 2014 are presented in the next section. The paper then recalls the outcome of the QFR and takes stock of the discussions on the formula to date. The following section presents some purely illustrative simulations of possible reforms of the formula, building on the outcome of the QFR and using the new data. Some initial simulations of alternative quota allocations are also presented to illustrate the potential implications for actual quota shares of reforms of the quota formula. It is recognized that extensive further discussions of the distribution of any quota increase will be needed in parallel with discussions on the appropriate future size of Fund quotas. The paper also proposes aligning the analytical country groupings used for quota purposes with the WEO country groups. Directors' feedback is also sought on how to define the poorest members for the purpose of protection under the 15th Review and on the alternative approaches to measuring voluntary financial contributions to the Fund. The final section concludes and presents issues for discussion.

¹ See the *Board of Governors Resolution No. 71-2 on the Fifteenth General Review of Quotas* (2/19/16) and the *Communiqué of the Thirty-Third Meeting of the IMFC*, April 16, 2016, Washington, D.C.

² See *Outcome of the Quota Formula Review—Report of the Executive Board to the Board of Governors* (1/31/13), *Quota Formula—Data Update* (6/22/15), *Quota Formula—Data Update and Further Considerations* (7/2/14), and *Quota Formula—Data Update and Further Considerations* (6/6/13).

UPDATED QUOTA DATABASE

A. Developments in Calculated Quota Shares

4. **Staff has updated the quota database through 2014.** The update advances by one year the data presented last June, using the same sources as in past updates (see Box 1 and the Statistical Appendix).³ The new data continue the broad trends observed previously, but the shifts between the main country groups are generally smaller. Calculated quota shares (CQS) for the main country groups and individual members are shown in Tables 1a and A1.⁴ These results and those presented in the rest of this section are based on the current quota formula and country group classifications, pending further discussions.^{5,6}

5. **The data update results in a further modest increase in the CQS of EMDCs as a group.** Their aggregate share increases by 0.6 percentage points (pp) to 49.3 percent (Tables 1a and 1b), which is about half the increase in the last update (1.3 pp) and constitutes the smallest overall gain for EMDCs since the current quota formula was agreed in 2008. Gains in EMDC shares continue to be recorded in Asia, driven by China. EMDC shares in other regions remain broadly stable. Among the advanced economies (AEs), the share of the major advanced economies declines by 0.7 pp—with all countries (except for the UK) recording a decline. The share of other advanced economies as a group increases by 0.1 pp, compared to a decline of 0.1 pp in the previous update.

6. **The CQS shifts have been more sizable over a longer timeframe:**

- *The aggregate shift to EMDCs has been 13.1 pp since the current quota formula was agreed in 2008, based on data through 2005* (Figure 1 and Table 1a). China has accounted for over 40 percent (5.6 pp) of this increase, with India (1.0 pp), Saudi Arabia (0.9 pp), Russia (0.7 pp), and Brazil (0.6 pp) also recording sizable gains. The aggregate share of low income countries (LICs) increased by more than one third.⁷ Among AEs, the major advanced economies' share declined by 11.5 pp, with the US and Japan accounting for about two thirds of this decline. Over the same period, the share of other advanced economies as a group declined by 1.6 pp.
- *The CQS of EMDCs has increased by 7.5 pp since the 14th Review, which was based on data through 2008.* Over this 6-year period, the largest increase was recorded by China (4.1 pp). India (0.6 pp), Saudi Arabia (0.4 pp), and Indonesia (0.4 pp) also recorded sizable gains. Driven by

³ [Quota Formula—Data Update](#) (6/22/15).

⁴ Individual country data and simulation results, as well as some additional technical material, are presented in the Statistical Appendix (circulated separately).

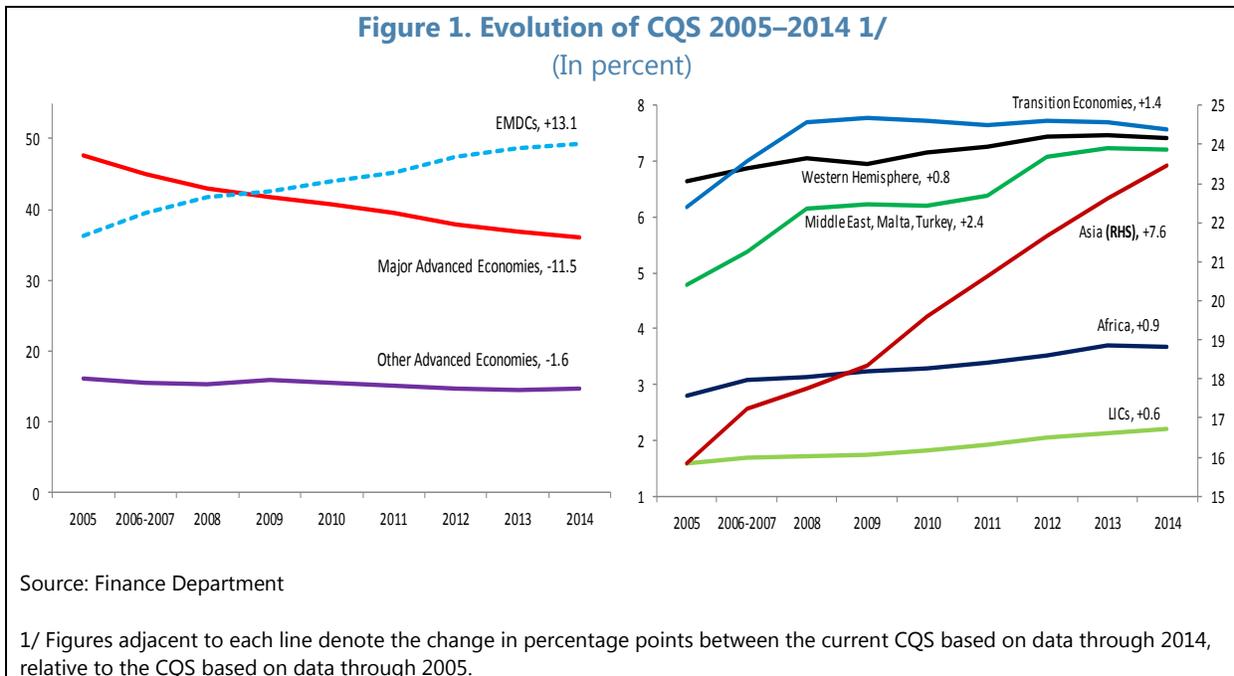
⁵ The country classifications used in this paper have remained unchanged since the 11th Review and have become increasingly outdated (see below and Annex II).

⁶ The current formula is $CQS = (0.50 \cdot GDP + 0.30 \cdot Openness + 0.15 \cdot Variability + 0.05 \cdot Reserves)^K$. GDP is blended using 60 percent market and 40 percent PPP exchange rates; K is a compression factor of 0.95; see Box 2.

⁷ LICs are defined as countries that are currently PRGT eligible plus Zimbabwe, which was removed from the PRGT list by a Board decision in connection with its overdue obligations to the PRGT.

China, Asia accounted for about three-quarters of the total gains for EMDCs. The CQS of LICs increased by 0.5 pp. Among AEs, the combined CQS of the major advanced economies declined by 6.8 pp. All countries in this group lost CQS, with the US (-2.7 pp), Japan (-1.2 pp), and the UK (-1.1 pp) experiencing the largest falls. The share of other advanced economies declined by 0.7 pp.

- CQS changes in relative terms, i.e., measured in percent, have varied widely (Table 1b). Among the larger economies, China saw the largest relative increase in its CQS since the 14th Review (51.9 percent), followed by Indonesia (43.6 percent) and Nigeria (39.8 percent). In addition, the CQS for Switzerland, Saudi Arabia, India, and Thailand increased by more than a quarter. The CQS declines for major advanced economies ranged from 23.5 percent for the UK to 9.5 percent for Canada. Among other advanced economies the declines for Ireland and Spain were also relatively large.



Box 1. Data Sources and Methodology 1/

The data sources and methodology remain closely in line with past practice. The primary data source is the Fund's *International Financial Statistics (IFS)*. Missing data were supplemented in the first instance by the *World Economic Outlook (WEO)* database. Remaining missing data were computed based on staff reports and, in very few instances, country desk data. As is customary, a cutoff date of January 31, 2016 for incorporating new data in the quota database was employed for *IFS*; consistent with this cutoff, the Fall 2015 publication was used for *WEO* data.

The PPP GDP data are calculated by dividing a country's nominal GDP in its own currency by its corresponding PPP factor. The *2011 International Comparison Program (ICP)* PPP factors were extended to include 2012, 2013, and 2014 using *WEO* methodology.

Data for openness and variability reflect the ongoing implementation of BPM6, introduced in the 2013 quota data update. Country coverage has broadened with this update to include 120 BPM6-data reporting members compared with 81 previously. Under the BPM6 methodology, the full value of goods for processing is no longer counted under the reported (gross) exports and imports (these are goods processed under contract for an explicit fee by a non-resident processing entity, where the goods being processed do not change ownership); rather only the fees from processing are recorded under services. As discussed in Annex I of *Quota Formula—Data Update and Further Consideration (6/6/13)*, the overall impact of this change is relatively modest.

1/ See the Statistical Appendix for additional details.

Table 1a. Distribution of Quotas and Calculated Quotas
(In percent)

	Quota Shares		Calculated Quota Shares 1/			
	2008 Reform 2/	14th Review 3/	2008 Reform (2005) 4/	14th Review (2008)	Previous (2013)	Current (2014)
Advanced economies	60.4	57.6	63.8	58.2	51.3	50.7
Major advanced economies	45.3	43.4	47.6	42.9	36.8	36.1
United States	17.7	17.4	19.0	17.0	14.5	14.3
Japan	6.6	6.5	8.0	6.5	5.6	5.3
Germany	6.1	5.6	6.2	5.7	5.1	5.1
France	4.5	4.2	4.0	3.8	3.4	3.3
United Kingdom	4.5	4.2	4.4	4.7	3.4	3.6
Italy	3.3	3.2	3.3	3.0	2.6	2.5
Canada	2.7	2.3	2.6	2.3	2.1	2.1
Other advanced economies	15.1	14.3	16.2	15.3	14.5	14.6
Spain	1.7	2.0	2.3	2.2	1.9	1.8
Netherlands	2.2	1.8	1.9	1.9	1.8	2.1
Australia	1.4	1.4	1.3	1.4	1.5	1.5
Belgium	1.9	1.3	1.5	1.3	1.2	1.1
Switzerland	1.5	1.2	1.2	1.2	1.6	1.6
Sweden	1.0	0.9	1.0	0.9	1.0	0.9
Austria	0.9	0.8	0.9	0.8	0.8	0.7
Norway	0.8	0.8	0.8	0.8	0.8	0.8
Ireland	0.5	0.7	1.2	1.1	0.7	0.7
Denmark	0.8	0.7	0.9	0.7	0.6	0.6
Emerging Market and Developing Countries 5/	39.6	42.4	36.2	41.8	48.7	49.3
Africa	5.0	4.4	2.8	3.1	3.7	3.7
South Africa	0.8	0.6	0.6	0.6	0.6	0.5
Nigeria	0.7	0.5	0.3	0.5	0.7	0.7
Asia	12.6	16.0	15.8	17.7	22.6	23.4
China 6/	4.0	6.4	6.4	7.9	11.3	12.0
India	2.4	2.7	2.0	2.4	3.0	3.0
Korea, Republic of	1.4	1.8	2.2	2.1	2.0	2.0
Indonesia	0.9	1.0	0.9	0.9	1.3	1.3
Singapore	0.6	0.8	1.0	1.2	1.3	1.3
Malaysia	0.7	0.8	0.9	0.8	0.8	0.8
Thailand	0.6	0.7	0.8	0.8	1.0	1.0
Middle East, Malta & Turkey	7.2	6.7	4.8	6.2	7.2	7.2
Saudi Arabia	2.9	2.1	0.8	1.3	1.7	1.7
Turkey	0.6	1.0	1.0	1.1	1.1	1.1
Iran, Islamic Republic of	0.6	0.7	0.6	0.7	0.8	0.8
Western Hemisphere	7.7	7.9	6.6	7.0	7.5	7.4
Brazil	1.8	2.3	1.7	2.2	2.3	2.3
Mexico	1.5	1.9	2.0	1.8	1.7	1.7
Venezuela, República Bolivariana de	1.1	0.8	0.4	0.5	0.5	0.5
Argentina	0.9	0.7	0.6	0.6	0.7	0.6
Transition economies	7.1	7.2	6.2	7.7	7.7	7.6
Russian Federation	2.5	2.7	2.1	2.9	2.8	2.7
Poland	0.7	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum Item:						
EU 28	32.0	30.4	33.1	31.5	27.6	27.5
LICs 7/	3.3	3.3	1.6	1.7	2.1	2.2

Source: Finance Department

1/ These results are based on the current quota formula: $CQS = (0.50 * GDP + 0.30 * Openness + 0.15 * Variability + 0.05 * Reserves) ^ K$. GDP blend using 60 percent market and 40 percent PPP exchange rates. K is a compression factor of 0.95. The quota formula is typically used to inform discussions on the allocation of quota increases, but other considerations are also taken into account.

2/ The "2008 Reform" reflects quotas after the "second round" ad hoc quota increases for 54 members agreed in 2008, following the "first round" ad hoc increases for four members agreed in 2006. Includes South Sudan and Nauru which became members on April 18, 2012 and April 12, 2016, respectively. For the two countries, Somalia and Sudan, that have not yet consented to and paid for their quota increases, 11th Review proposed quotas are used.

3/ Includes South Sudan and Nauru which became members on April 18, 2012 and April 12, 2016, respectively; reflects their quota increases proposed in their respective membership resolutions after the effectiveness of the 14th Review.

4/ Reflects the impact of adjustments to current receipts and payments for re-exports, international banking interest, and non-monetary gold.

5/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

6/ Including China, P.R., Hong Kong SAR and Macao SAR.

7/ Currently PRGT-eligible countries plus Zimbabwe.

Table 1b. Changes in Distribution of Calculated Quotas
(In percent)

	Calculated Quota Shares 1/			Changes w.r.t Previous CQS		Changes w.r.t 14th Review CQS	
	14th Review (2008)	Previous (2013)	Current (2014)	Absolute Change (2014 vs 2013) (in pp)	Relative Change (2014 vs 2013) (in percent)	Absolute Change (2014 vs 2008) (in pp)	Relative Change (2014 vs 2008) (in percent)
Advanced economies	58.2	51.3	50.7	-0.6	-1.2	-7.5	-12.9
Major advanced economies	42.9	36.8	36.1	-0.7	-1.9	-6.8	-15.9
United States	17.0	14.5	14.3	-0.2	-1.5	-2.7	-15.7
Japan	6.5	5.6	5.3	-0.3	-5.8	-1.2	-18.3
Germany	5.7	5.1	5.1	0.0	-0.4	-0.6	-10.9
France	3.8	3.4	3.3	-0.1	-3.8	-0.5	-14.2
United Kingdom	4.7	3.4	3.6	0.1	3.4	-1.1	-23.5
Italy	3.0	2.6	2.5	-0.1	-3.7	-0.5	-16.6
Canada	2.3	2.1	2.1	0.0	-2.2	-0.2	-9.5
Other advanced economies	15.3	14.5	14.6	0.1	0.6	-0.7	-4.7
Spain	2.2	1.9	1.8	-0.1	-5.2	-0.4	-19.8
Netherlands	1.9	1.8	2.1	0.3	17.7	0.3	13.6
Australia	1.4	1.5	1.5	0.0	-3.0	0.1	7.4
Belgium	1.3	1.2	1.1	0.0	-3.8	-0.2	-14.4
Switzerland	1.2	1.6	1.6	0.1	4.2	0.4	33.1
Sweden	0.9	1.0	0.9	0.0	-2.7	0.0	-1.2
Austria	0.8	0.8	0.7	0.0	-2.4	-0.1	-12.3
Norway	0.8	0.8	0.8	0.0	-2.5	0.0	-5.8
Ireland	1.1	0.7	0.7	0.0	0.3	-0.3	-31.2
Denmark	0.7	0.6	0.6	0.0	-3.8	-0.1	-20.1
Emerging Market and Developing Countries 2/	41.8	48.7	49.3	0.6	1.3	7.5	18.0
Africa	3.1	3.7	3.7	0.0	-0.6	0.5	16.6
South Africa	0.6	0.6	0.5	0.0	-2.9	0.0	-7.1
Nigeria	0.5	0.7	0.7	0.0	2.2	0.2	39.8
Asia	17.7	22.6	23.4	0.9	3.8	5.7	32.2
China 3/	7.9	11.3	12.0	0.8	6.8	4.1	51.9
India	2.4	3.0	3.0	0.0	-0.2	0.6	26.1
Korea, Republic of	2.1	2.0	2.0	0.0	0.2	-0.1	-6.9
Indonesia	0.9	1.3	1.3	0.0	2.8	0.4	43.6
Singapore	1.2	1.3	1.3	0.0	-1.1	0.1	9.6
Malaysia	0.8	0.8	0.8	0.0	-3.2	0.0	-1.1
Thailand	0.8	1.0	1.0	0.0	0.4	0.2	25.1
Middle East, Malta & Turkey	6.2	7.2	7.2	0.0	-0.3	1.1	17.1
Saudi Arabia	1.3	1.7	1.7	0.0	-0.9	0.4	26.4
Turkey	1.1	1.1	1.1	0.0	-1.5	0.0	-2.5
Iran, Islamic Republic of	0.7	0.8	0.8	0.0	-3.3	0.1	16.3
Western Hemisphere	7.0	7.5	7.4	0.0	-0.6	0.4	5.2
Brazil	2.2	2.3	2.3	0.0	0.1	0.2	8.4
Mexico	1.8	1.7	1.7	0.0	0.0	-0.1	-3.2
Venezuela, República Bolivariana de	0.5	0.5	0.5	0.0	-0.6	0.0	-2.9
Argentina	0.6	0.7	0.6	-0.1	-7.3	0.0	5.7
Transition economies	7.7	7.7	7.6	-0.1	-1.8	-0.1	-1.6
Russian Federation	2.9	2.8	2.7	-0.1	-2.9	-0.2	-7.7
Poland	0.9	0.9	0.9	0.0	-2.0	0.0	-3.0
Total	100.0	100.0	100.0				
Memorandum Item:							
EU 28	31.5	27.6	27.5	-0.1	-0.3	-4.0	-12.7
LICs 4/	1.7	2.1	2.2	0.1	3.4	0.5	29.6

Source: Finance Department

1/ These results are based on the current quota formula: $CQS = (0.50 \cdot GDP + 0.30 \cdot Openness + 0.15 \cdot Variability + 0.05 \cdot Reserves) \cdot K$. GDP blend using 60 percent market and 40 percent PPP exchange rates. K is a compression factor of 0.95. The quota formula is typically used to inform discussions on the allocation of quota increases, but other considerations are also taken into account.

2/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

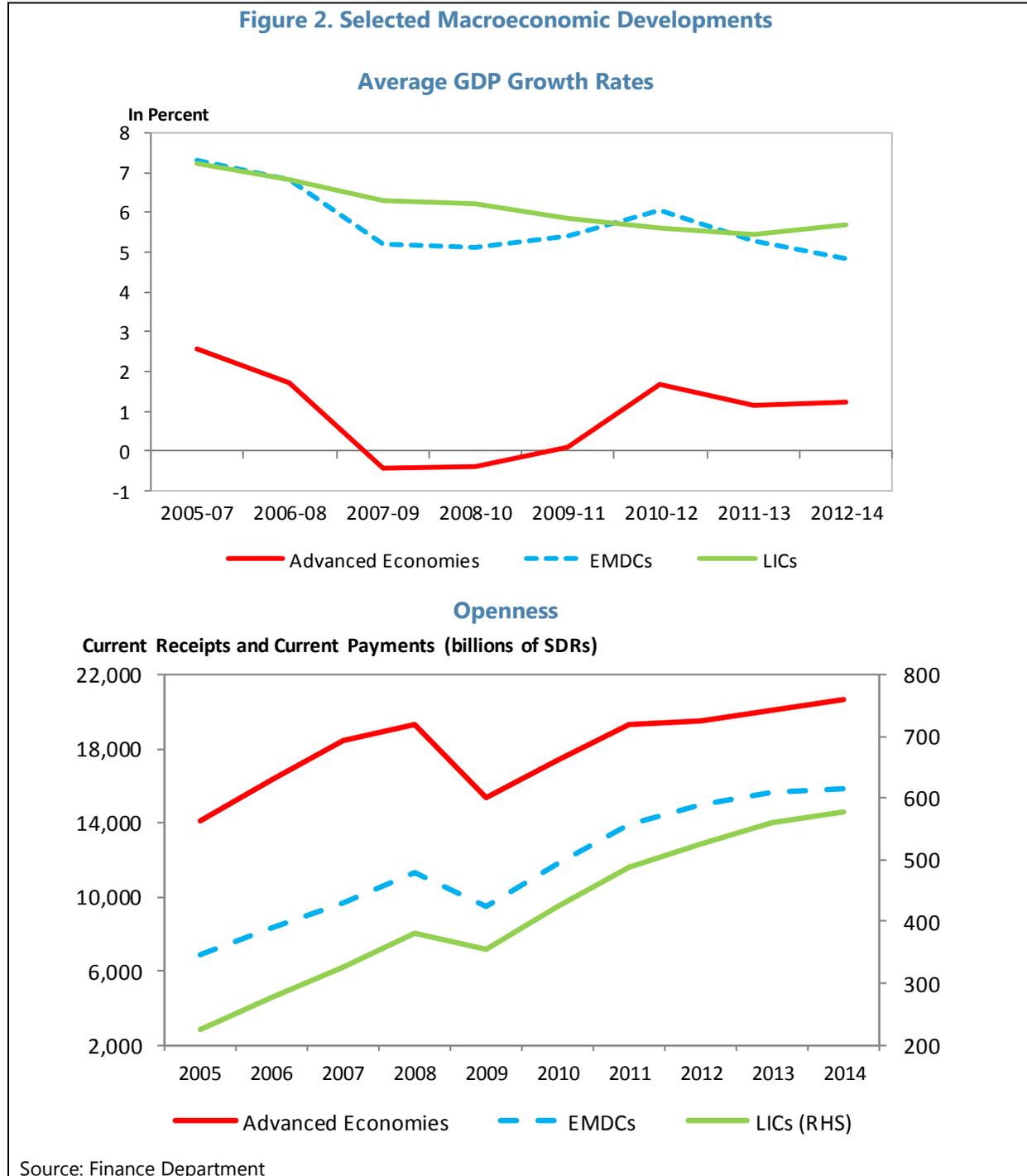
3/ Including China, P.R., Hong Kong SAR and Macao SAR.

4/ Currently PRGT-eligible countries plus Zimbabwe.

7. The most recent gain in CQS for EMDCs reflects increases in their shares of all quota formula variables, particularly GDP, consistent with continued divergence in global growth rates. With the slowdown in the growth rate in EMDCs since the latest update, the growth divergence has narrowed further but nonetheless remains sizable (Figure 2 upper panel). As a result,

the aggregate share of EMDCs in the GDP blend increased by 0.9 pp (Tables 2a and 2b). With external flows flattening, EMDCs recorded modest gains in their shares of global openness and variability (Figure 2 lower panel, and Table 2a). The share of EMDCs in global reserves rose slightly to 76.7 percent from 76.1 percent. This increase reflects a 1.7 pp gain in China’s share, largely offset by declining shares in several EMDCs across regions, and particularly in Russia (-0.7 pp).

Figure 2. Selected Macroeconomic Developments

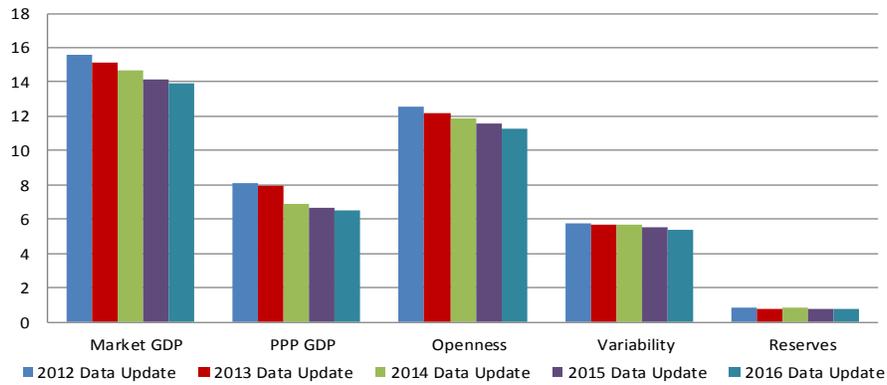


8. **Figure 3 shows the contributions of the five quota variables to CQS for major groups during the last five data updates.**⁸ For EMDCs as a group, the rising shares of market GDP, PPP GDP and openness have been the main contributors to the increases in their CQS (Figure 3, bottom panel). For the major advanced countries, the reverse applies as this group has steadily lost share across all three variables. Market GDP continues to make the most important contribution to CQS for this group, whereas for EMDCs, the contributions of market GDP, PPP GDP and openness are broadly similar (reflecting their larger share of PPP GDP, which has a lower weight in the formula). Openness and variability combined contribute roughly 60 percent of the CQS for other advanced economies as a group (for a more comprehensive discussion on the relationship between openness and variability, see Annex I).

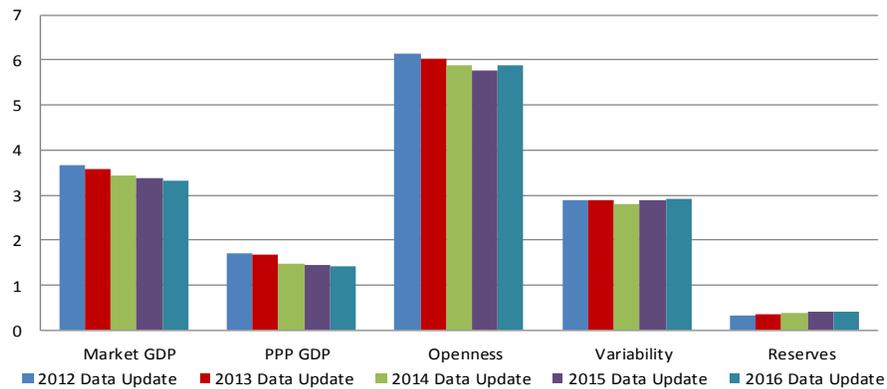
⁸ The contribution of each quota variable is defined as each major group's aggregate share multiplied by its coefficient in the quota formula (e.g., 0.3 for market GDP and 0.2 for PPP GDP). The contributions will not equal the corresponding CQS due to compression.

Figure 3. Contributions of Quota Variables to CQS
(In percent)

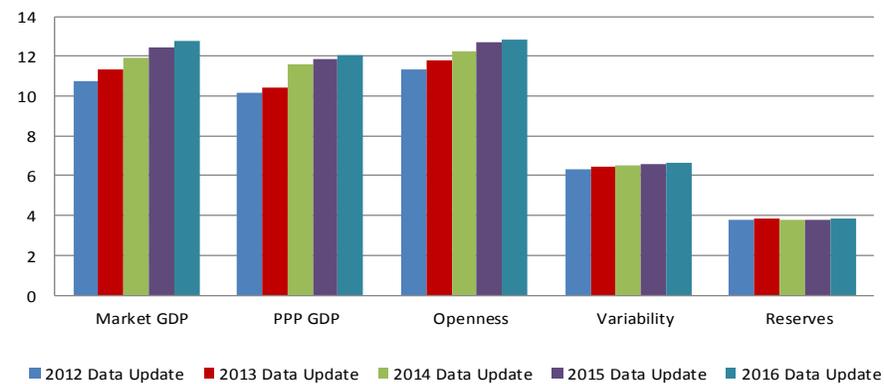
Major Advanced Economies--CQS 36.1 Percent



Other Advanced Economies--CQS 14.6 Percent



EMDCs--CQS 49.3 Percent



Source: Finance Department

Table 2a. Distribution of Quotas and Updated Quota Variables
(In percent)

	14th General Review Quota Shares 1/	GDP Blend 4/		Openness		Variability 5/		Reserves	
		Current 2/	Previous 3/	Current 2/	Previous 3/	Current 2/	Previous 3/	Current 2/	Previous 3/
Advanced economies	57.6	50.5	51.4	57.3	57.7	55.6	56.2	23.3	23.9
Major advanced economies	43.4	41.0	41.8	37.7	38.5	36.1	37.1	15.0	15.5
United States	17.4	19.8	20.0	12.6	12.7	13.1	13.9	1.2	1.3
Japan	6.5	5.9	6.5	4.2	4.2	5.1	5.5	10.7	11.0
Germany	5.6	4.4	4.3	7.3	7.5	5.7	5.5	0.6	0.6
France	4.2	3.2	3.3	4.1	4.2	3.0	3.4	0.5	0.5
United Kingdom	4.2	3.1	3.1	4.4	4.4	4.7	4.0	0.8	0.8
Italy	3.2	2.5	2.6	2.7	2.9	2.6	2.9	0.5	0.5
Canada	2.3	2.0	2.1	2.5	2.5	1.8	1.9	0.6	0.6
Other advanced economies	14.3	9.4	9.6	19.6	19.2	19.5	19.2	8.4	8.4
Spain	2.0	1.7	1.7	2.0	2.2	2.0	2.2	0.3	0.3
Netherlands	1.8	1.0	1.0	3.8	2.9	3.1	2.6	0.2	0.2
Australia	1.4	1.6	1.7	1.5	1.5	1.3	1.4	0.4	0.4
Belgium	1.3	0.6	0.6	1.9	2.0	1.4	1.6	0.2	0.2
Switzerland	1.2	0.7	0.7	2.2	2.2	2.4	1.9	4.3	4.3
Sweden	0.9	0.6	0.6	1.1	1.2	1.4	1.4	0.5	0.5
Austria	0.8	0.5	0.5	1.0	1.1	0.9	0.9	0.1	0.1
Norway	0.8	0.5	0.5	0.8	0.8	1.2	1.3	0.6	0.5
Ireland	0.7	0.3	0.3	1.2	1.3	1.3	1.2	0.0	0.0
Denmark	0.7	0.4	0.4	0.8	0.8	0.6	0.7	0.7	0.8
Emerging Market and Developing Countries 6/	42.4	49.5	48.6	42.7	42.3	44.4	43.8	76.7	76.1
Africa	4.4	3.3	3.2	2.8	2.8	3.7	4.0	3.5	3.8
South Africa	0.6	0.6	0.6	0.5	0.5	0.3	0.3	0.4	0.4
Nigeria	0.5	0.8	0.8	0.4	0.4	0.5	0.5	0.3	0.4
Asia	16.0	25.8	24.6	21.2	20.8	16.6	15.5	46.7	45.0
China 7/	6.4	14.4	13.4	9.8	9.4	8.2	6.9	33.9	32.3
India	2.7	4.2	4.2	2.1	2.1	1.4	1.5	2.5	2.4
Korea, Republic of	1.8	1.7	1.7	2.6	2.6	0.9	1.0	3.1	3.0
Indonesia	1.0	1.7	1.6	0.8	0.8	0.7	0.7	0.9	0.9
Singapore	0.8	0.4	0.4	2.3	2.3	1.7	1.9	2.3	2.4
Malaysia	0.8	0.5	0.5	1.0	1.0	0.8	0.9	1.1	1.2
Thailand	0.7	0.7	0.7	1.1	1.1	1.2	1.3	1.4	1.5
Middle East, Malta & Turkey	6.7	6.1	6.1	6.0	5.9	8.8	8.8	12.0	11.9
Saudi Arabia	2.1	1.2	1.2	1.2	1.2	2.5	2.6	6.4	6.2
Turkey	1.0	1.2	1.2	0.9	0.9	1.1	1.1	1.0	1.0
Iran, Islamic Republic of	0.7	1.0	1.0	0.4	0.4	0.5	0.5	1.1	1.0
Western Hemisphere	7.9	8.2	8.3	5.4	5.3	6.3	6.3	7.1	7.2
Brazil	2.3	3.1	3.1	1.3	1.2	1.7	1.5	3.2	3.3
Mexico	1.9	1.8	1.8	1.6	1.6	1.6	1.6	1.6	1.5
Venezuela, República Bolivariana de	0.8	0.5	0.5	0.3	0.3	0.5	0.6	0.1	0.1
Argentina	0.7	0.8	0.9	0.4	0.4	0.4	0.5	0.2	0.3
Transition economies	7.2	6.3	6.4	7.3	7.4	9.0	9.2	7.3	8.2
Russian Federation	2.7	3.0	3.1	2.2	2.2	2.6	2.7	3.6	4.3
Poland	0.9	0.8	0.8	1.0	1.0	0.9	1.0	0.8	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum Items:									
EU 28	30.4	21.3	21.5	36.6	36.7	33.7	33.5	7.0	7.3
LICs 8/	3.3	1.9	1.8	1.5	1.5	2.2	2.1	1.3	1.3

Source: Finance Department

1/ Includes South Sudan and Nauru which became members on April 18, 2012 and April 12, 2016, respectively; reflects their quota increases proposed in their respective membership resolutions after the effectiveness of the 14th Review.

2/ Based on IFS data through 2014.

3/ Based on IFS data through 2013.

4/ GDP blend using 60 percent market and 40 percent PPP exchange rates.

5/ Variability of current receipts minus net capital flows (due to change in sign convention in BPM6).

6/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

7/ Including China, P.R., Hong Kong SAR, and Macao SAR.

8/ Currently PRGT-eligible countries plus Zimbabwe.

Table 2b. Updated GDP Blend Variable
(In percent)

	14th General Review Quota Shares 1/	Calculated Quota Shares 2/ 3/	GDP		PPP GDP 5/		GDP Blend 6/	
			Current 3/	Previous 4/	Current 3/	Previous 4/	Current 3/	Previous 4/
Advanced economies	57.6	50.7	57.6	58.5	39.8	40.7	50.5	51.4
Major advanced economies	43.4	36.1	46.5	47.2	32.8	33.5	41.0	41.8
United States	17.4	14.3	22.2	22.1	16.3	16.7	19.8	20.0
Japan	6.5	5.3	6.9	7.6	4.5	4.7	5.9	6.5
Germany	5.6	5.1	4.9	4.9	3.5	3.6	4.4	4.3
France	4.2	3.3	3.7	3.7	2.5	2.6	3.2	3.3
United Kingdom	4.2	3.6	3.6	3.6	2.4	2.3	3.1	3.1
Italy	3.2	2.5	2.8	2.9	2.1	2.1	2.5	2.6
Canada	2.3	2.1	2.4	2.5	1.5	1.5	2.0	2.1
Other advanced economies	14.3	14.6	11.1	11.2	7.0	7.2	9.4	9.6
Spain	2.0	1.8	1.8	1.9	1.5	1.5	1.7	1.7
Netherlands	1.8	2.1	1.1	1.1	0.8	0.8	1.0	1.0
Australia	1.4	1.5	2.0	2.1	1.0	1.0	1.6	1.7
Belgium	1.3	1.1	0.7	0.7	0.5	0.5	0.6	0.6
Switzerland	1.2	1.6	0.9	0.9	0.4	0.4	0.7	0.7
Sweden	0.9	0.9	0.7	0.8	0.4	0.4	0.6	0.6
Austria	0.8	0.7	0.6	0.6	0.4	0.4	0.5	0.5
Norway	0.8	0.8	0.7	0.7	0.3	0.3	0.5	0.5
Ireland	0.7	0.7	0.3	0.3	0.2	0.2	0.3	0.3
Denmark	0.7	0.6	0.4	0.4	0.2	0.2	0.4	0.4
Emerging Market and Developing Countries 7/	42.4	49.3	42.4	41.5	60.2	59.3	49.5	48.6
Africa	4.4	3.7	2.7	2.6	4.1	4.0	3.3	3.2
South Africa	0.6	0.5	0.5	0.5	0.7	0.7	0.6	0.6
Nigeria	0.5	0.7	0.7	0.6	1.0	0.9	0.8	0.8
Asia	16.0	23.4	21.3	20.1	32.5	31.4	25.8	24.6
China 8/	6.4	12.0	13.0	11.9	16.5	15.7	14.4	13.4
India	2.7	3.0	2.6	2.6	6.6	6.6	4.2	4.2
Korea, Republic of	1.8	2.0	1.7	1.7	1.7	1.7	1.7	1.7
Indonesia	1.0	1.3	1.2	1.2	2.4	2.3	1.7	1.6
Singapore	0.8	1.3	0.4	0.4	0.4	0.4	0.4	0.4
Malaysia	0.8	0.8	0.4	0.4	0.7	0.7	0.5	0.5
Thailand	0.7	1.0	0.5	0.5	1.0	0.9	0.7	0.7
Middle East, Malta & Turkey	6.7	7.2	5.2	5.2	7.4	7.5	6.1	6.1
Saudi Arabia	2.1	1.7	1.0	1.0	1.5	1.5	1.2	1.2
Turkey	1.0	1.1	1.1	1.1	1.4	1.4	1.2	1.2
Iran, Islamic Republic of	0.7	0.8	0.8	0.8	1.3	1.3	1.0	1.0
Western Hemisphere	7.9	7.4	7.7	7.9	8.8	8.8	8.2	8.3
Brazil	2.3	2.3	3.0	3.2	3.1	3.0	3.1	3.1
Mexico	1.9	1.7	1.7	1.6	2.0	2.1	1.8	1.8
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	0.7	0.8	0.9	0.9	0.8	0.9
Transition economies	7.2	7.6	5.5	5.7	7.4	7.5	6.3	6.4
Russian Federation	2.7	2.7	2.7	2.8	3.4	3.5	3.0	3.1
Poland	0.9	0.9	0.7	0.7	0.9	0.9	0.8	0.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum Item:								
EU 28	30.4	27.5	23.7	23.8	17.7	17.9	21.3	21.5
LICs 9/	3.3	2.2	1.4	1.3	2.6	2.6	1.9	1.8

Source: Finance Department

1/ Includes South Sudan and Nauru which became members on April 18, 2012 and April 12, 2016, respectively; reflects their quota increases proposed in their respective membership resolutions after the effectiveness of the 14th Review.

2/ Based on the following formula: $CQS = (0.50 * GDP + 0.30 * Openness + 0.15 * Variability + 0.05 * Reserves) ^ K$. GDP blended using 60 percent market and 40 percent PPP exchange rates. K is a compression factor of 0.95.

3/ Based on IFS data through 2014.

4/ Based on IFS data through 2013.

5/ Current PPP-GDP data were retrieved from the WEO database for 186 countries. For the countries with no WEO data (Nauru, Somalia and Syrian Arab Republic), PPP-GDP was gap filled.

6/ GDP blend using 60 percent market and 40 percent PPP exchange rates.

7/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

8/ Including China, P.R., Hong Kong SAR, and Macao SAR.

9/ Currently PRGT-eligible countries plus Zimbabwe.

9. **As in previous updates, there were sizable absolute changes in CQS for some individual members** (Table 3). Among the largest gainers, China again recorded the largest individual increase in CQS (0.77 pp) broadly in line with the last update. Three AEs are among the top five gainers, namely the Netherlands, the UK, and Switzerland. For the Netherlands, the 0.32 pp increase in CQS was driven by a higher share of openness associated mainly with changes in the accounting treatment of balance of payments data.⁹ The gains for the UK and Switzerland were mainly associated with a higher share in variability. Eight of the 10 largest declines in CQS were for AEs. Japan had the largest individual decline (-0.33 pp), reflecting mainly a lower share in market GDP. For the US, its share in market GDP was broadly unchanged, but its CQS (-0.21 pp) was reduced by lower shares for the other variables.

Table 3. Top 10 Positive and Negative Changes in Calculated Quota Shares
(In percent)

	Difference between Current and Previous Shares (In percent) 1/	Contribution of Variables to Change in CQS 2/					
		Calculated Quota Share	Market GDP	PPP GDP	GDP Blend 3/	Openness	Variability
<i>Top 10: Positive Change</i>							
China 4/	0.765	0.326	0.161	0.487	0.110	0.192	0.080
Netherlands	0.317	0.012	-0.007	0.006	0.253	0.071	-0.001
United Kingdom	0.117	0.014	0.012	0.027	-0.011	0.109	0.001
Switzerland	0.066	-0.007	0.002	-0.005	-0.009	0.081	0.000
United Arab Emirates	0.050	0.000	0.002	0.002	0.010	0.031	0.006
Indonesia	0.035	0.006	0.028	0.034	0.002	-0.003	0.002
Afghanistan	0.028	0.000	0.000	0.000	0.000	0.025	0.000
Oman	0.024	0.000	0.000	0.000	0.001	0.020	0.000
Luxembourg	0.022	0.000	0.000	0.000	0.023	-0.001	0.000
Vietnam	0.020	0.005	0.001	0.005	0.011	-0.001	0.003
<i>Top 10: Negative Change</i>							
Japan	-0.326	-0.231	-0.030	-0.261	-0.023	-0.060	-0.015
United States	-0.212	0.023	-0.093	-0.070	-0.056	-0.118	-0.005
France	-0.130	-0.008	-0.021	-0.029	-0.054	-0.056	-0.001
Spain	-0.099	-0.014	-0.008	-0.023	-0.056	-0.024	-0.001
Italy	-0.096	-0.016	-0.011	-0.027	-0.037	-0.037	-0.002
Russia	-0.081	-0.030	-0.020	-0.049	0.007	-0.009	-0.035
Argentina	-0.050	-0.029	-0.005	-0.034	-0.003	-0.008	-0.004
Australia	-0.047	-0.026	-0.004	-0.029	-0.007	-0.012	0.001
Canada	-0.046	-0.016	-0.005	-0.021	-0.012	-0.016	0.001
Belgium	-0.045	0.001	-0.001	0.000	-0.018	-0.027	-0.001

Source: Finance Department

1/ Current and previous calculations are based on data through 2014 and 2013 respectively, using the existing formula.

2/ The difference between the current dataset through 2014 and the previous dataset through 2013, multiplied by the variable weight in the quota formula. The change in CQS also reflects the effect of compression.

3/ GDP blended using 60 percent market and 40 percent PPP factors.

4/ Including China, P.R., Hong Kong SAR and Macao SAR.

B. Developments in Out-Of-Liness

10. **Out-of-liness (OOL) based on the current formula has increased further.** Comparing CQS with 14th Review quota shares, at the aggregate level AEs are over-represented and EMDCs

⁹ In particular, this is the result of the transition of the Netherlands' balance of payments to BPM6. With this migration, data now include Special Financial Institutions (SFIs) as residents, which were previously explicitly excluded from BPM5 (for more details, see Statistical Appendix).

under-represented by 7.0 pp, compared with 6.3 pp in the previous update (Table 4). The number of underrepresented members increased slightly to 73 compared with 72 in the previous update.

Table 4. Under- and Overrepresented Countries by Major Country Groups 1/
(In percent)

	14th General Review	Difference 3/		Number of Countries		2008 Reform	Difference 7/
	Quota Share 2/ (In percent)	Current 4/	Previous 5/	Current	Previous	Quota Share 6/ (In percent)	
Advanced economies	57.6	-7.0	-6.3	26	26	60.5	-2.2
Underrepresented	-	1.3	1.0	10	8	--	1.8
Overrepresented	-	-8.2	-7.3	16	18	--	-4.1
Emerging Market and Developing Countries	42.4	7.0	6.3	163	162	39.5	2.2
Underrepresented	-	9.7	9.0	63	64	--	8.9
Overrepresented	-	-2.8	-2.7	100	98	--	-6.7
Total Underrepresented Countries	36.8	11.0	10.0	73	72	30.7	10.7
Total Overrepresented Countries	63.2	-11.0	-10.0	116	116	69.3	-10.7
Memorandum Items:							
EU 28	30.4	-2.9	-2.8	28	28	32.0	-0.5
Underrepresented	-	0.9	0.7	14	12	--	2.2
Overrepresented	-	-3.8	-3.5	14	16	--	-2.8
LICs 8/	3.3	-1.1	-1.2	70	70	3.3	-1.6
Underrepresented	-	0.1	0.1	12	10	--	0.0
Overrepresented	-	-1.2	-1.3	58	60	--	-1.6

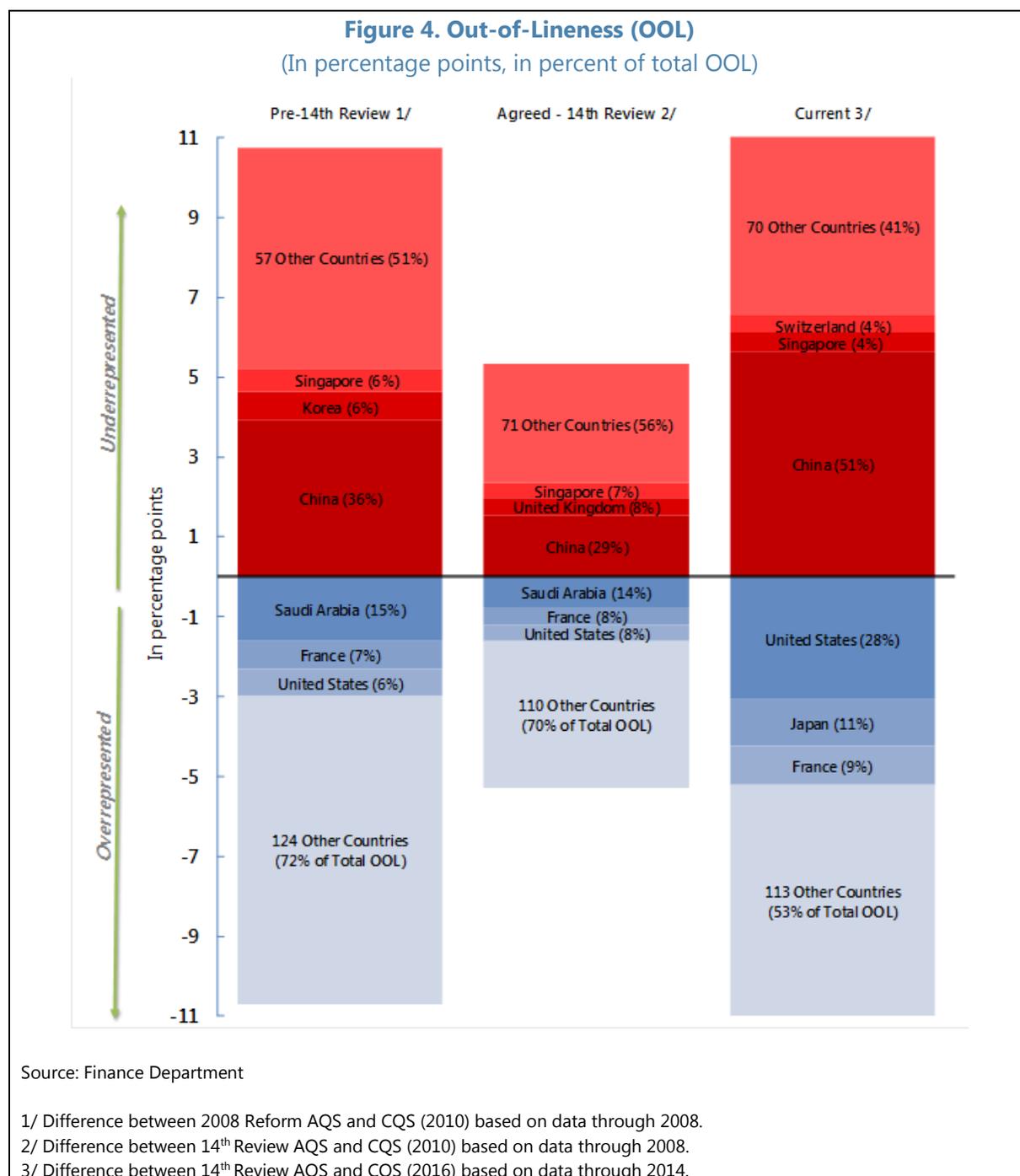
Source: Finance Department

1/ Under- and over-represented countries for the two datasets, respectively.
 2/ Includes South Sudan and Nauru which became members on April 18, 2012 and April 12, 2016, respectively; reflects their quota increases proposed in their respective membership resolutions after the effectiveness of the 14th Review.
 3/ Difference between calculated quota shares and 14th General Review quota shares.
 4/ Based on IFS data through 2014.
 5/ Based on IFS data through 2013.
 6/ The “2008 Reform” reflects quotas after the “second round” ad hoc quota increases for 54 members agreed in 2008, following the “first round” ad hoc increases for four members agreed in 2006. Excludes South Sudan and Nauru which became members on April 18, 2012 and April 12, 2016, respectively. For the two countries, Somalia and Sudan, that have not yet consented to and paid for their quota increases, 11th Review proposed quotas are used.
 7/ Difference between calculated quota shares based on IFS data through 2008 (14th Review) and 2008 Reform quota shares.
 8/ Currently PRGT-eligible countries plus Zimbabwe.

11. These developments illustrate that calculated quota shares can over time depart significantly from actual quota shares given the periodic nature of quota adjustments.

- **The 14th Review quota increases resulted in a major reduction of OOL.** Aggregate OOL for the membership as a whole would have been more than halved if the new quotas had become effective immediately after the 14th Review was completed in 2010 (Figure 4).
- **However, subsequent economic developments have increased aggregate OOL again to close to the level prevailing before the 14th Review.** For example, the 73 countries that are currently under-represented based on the current formula have an aggregate OOL of about 11 pp, very close to the level prevailing in 2010. Within this group, one country—China—now accounts for roughly half the aggregate OOL, compared with about one-third prior to the 14th Review. Among over-represented countries, the US was modestly over-represented in 2010 but now accounts for almost 30 percent of aggregate OOL, while Japan

and France also represent sizable shares. These results are obviously sensitive to the quota formula used to measure CQS and a different formula could generate a different OOL distribution. However, they also highlight the importance of making periodic adjustments in quota shares to reflect members' changing relative positions in the global economy.



QUOTA FORMULA VARIABLES: TAKING STOCK

12. **The quota formula serves as a guide to quota adjustments.** The Fund has broad discretion to decide what considerations should determine quota adjustments. In practice, the quota formula has been used as an important indicator in past adjustments, but other relevant factors have also played a role. In the 2010 Reform, 60 percent of the overall increase was distributed according to the formula, and the remaining 40 percent was based on alternative criteria, though with the formula also playing a role for some of these criteria.

13. **The current formula was agreed as part of the 2008 Reform (Box 2).**¹⁰ The agreed formula represented a major improvement in terms of simplicity and transparency over the previous five formula system. In addition, the formula added two new elements—PPP GDP and compression—with the agreement that they would be included for a period of 20 years, after which the scope for retaining these elements would be reviewed.¹¹ Considerable dissatisfaction with the formula remained, however, and the 2010 Reform package included a request that the Executive Board complete a comprehensive review of the quota formula by January 2013.

14. **The 2013 QFR made important progress in identifying key elements that could form the basis for a final agreement on a new quota formula.** The Board agreed during the QFR that the principles underpinning the 2008 reform remained valid. Thus, the formula should be simple and transparent, consistent with the multiple roles of quotas,¹² produce results that are broadly acceptable to the membership, and be feasible to implement statistically based on timely, high quality and widely available data. In its report to the Board of Governors on the outcome of the QFR, the Executive Board concluded that its discussions had provided important building blocks for agreement on a new quota formula that better reflects members' relative positions in the global economy, and that the outcome of the review will form a good basis for the Executive Board to agree on a new quota formula as part of its work on the 15th Review.¹³

15. **Other key outcomes of the review were:**

- Agreement that **GDP** should remain the most important variable, with the largest weight in the formula and scope to further increase its weight.
- Agreement that **openness** should continue to play an important role in the formula, and concerns regarding this variable need to be thoroughly examined and addressed.

¹⁰ For more background on quota formula variables, see Annex I.

¹¹ [Reform of Quota and Voice in the International Monetary Fund—Report of the Executive Board to the Board of Governors](#) (4/4/08)

¹² These include their key role in determining the Fund's financial resources, their role in decisions on members' access to Fund resources, their role in determining members' shares in a general allocation of SDRs, and their close link with members' voting rights.

¹³ See [Outcome of the Quota Formula Review—Report of the Executive Board to the Board of Governors](#) (1/31/13).

- Considerable support for dropping **variability** from the formula, with some conditioning their support on other elements of the reform package, including how its weight is reallocated and the adequacy of measures to protect the poorest members.
- Considerable support for retaining **reserves** with its current weight.
- Consideration will be given to whether or not (i) the weight of **PPP GDP** in the GDP blend variable and (ii) the current level of **compression** should be adjusted.
- Consideration will be given to whether and how to take account of very significant **voluntary financial contributions** through ad hoc adjustments as part of the 15th Review.
- Agreement that measures should be taken to **protect the voice and representation of the poorest members**, with considerable support for addressing this issue as part of the 15th Review.

16. **Staff prepared further analysis as background for Directors’ subsequent informal exchanges in the context of the annual quota data updates.**

- **2013 update:** The staff paper presented additional work on the openness variable, and identified possible options for addressing the concerns that had been raised in the past.¹⁴ These options included data adjustments, adjusting its weight, and a cap on the overall boost that individual countries can obtain from openness. The paper also presented the results of additional staff work on variability that did not identify any significant correlation between this variable and broader measures of balance of payments difficulties and underlying vulnerabilities that were resolved without recourse to IMF assistance.¹⁵
- **2014 update:** The staff paper presented additional work on PPP GDP (including an assessment of data quality following the update of the 2011 International Comparison Program), and updated staff’s earlier examination of the openness variable based on the latest data.¹⁶ It also summarized staff’s extensive work program on variability dating back to the 2008 reform that has failed to find evidence of any link between the current variability measure and actual or potential demand for Fund resources, or to identify a superior alternative measure that would better capture such demand.¹⁷
- **2015 update:** The staff paper updated previous staff analysis on the characteristics of PPP GDP and openness, noting that key conclusions from previous work remained broadly unchanged.

¹⁴ See [Quota Formula—Data Update and Further Considerations](#) (6/6/13).

¹⁵ Previous staff work had focused on the relationship between variability and actual demand for Fund resources (see below and Annex I).

¹⁶ See [Quota Formula—Data Update and Further Considerations](#) (7/2/14).

¹⁷ See Annex II in [Quota Formula—Data Update and Further Considerations—Annexes](#) (7/2/14).

17. **As part of this work, staff has also presented further illustrative simulations of possible reforms of the quota formula.** These simulations have been purely illustrative, and no proposals have been made. The simulations have sought to illustrate the possible implications of reforms that would build on and remain consistent with the broad conclusions of the QFR. In particular, they have (i) retained GDP as the most important variable, and explored different options for the relative weight of market and PPP GDP; (ii) retained openness with a sizable weight, and sought to explore possible options that could address the concerns expressed about this variable; (iii) excluded variability with different options for redistributing its weight; (iv) retained reserves with its current 5 percent weight; and (v) explored the impact of varying the compression factor.

18. **Directors' views expressed at the informal discussions in 2013-15 broadly echoed those expressed previously in the context of the QFR.** No significant convergence of views has emerged, and sizable differences remain, including on the extent of needed further reforms. Some have noted that the current formula is already delivering large shifts in CQS and questioned whether further significant reforms are needed, whereas others see a need for substantial change. Some of those who could support dropping variability have reiterated that this support is conditional on other elements of the reform, including how its weight is redistributed. Most continued to support retaining openness but with no consensus on how best to address the concerns regarding this variable. Views continued to diverge on the weight of PPP GDP in the GDP blend variable, with most EMDCs calling for an increase while most AEs support at most maintaining the current share. A few have reiterated earlier calls during the QFR for a more radical simplification of the formula centered solely or mainly on GDP, or for revisiting other issues (e.g., whether to maintain the compression factor or whether to recognize financial contributions in the formula).

Box 2. The Quota Formula

The current quota formula was agreed in 2008. It includes four variables (GDP, openness, variability, and reserves), expressed in shares of global totals, with the variables assigned weights totaling to 1.0. The formula also includes a compression factor that reduces dispersion in calculated quota shares. The formula is:

$$\text{CQS} = (0.5*Y + 0.3*O + 0.15*V + 0.05*R)^k$$

where:

CQS = calculated quota share;

Y = a blend of GDP converted at market exchange rates and PPP rates averaged over a three-year period. The weights of market-based and PPP GDP are 0.60 and 0.40, respectively;

O = the annual average of the sum of current payments and current receipts (goods, services, income, and transfers) for a five-year period;

V = variability of current receipts and net capital flows (measured as the standard deviation from a centered three-year trend over a thirteen-year period);

R = twelve-month average over one year of official reserves (foreign exchange, SDR holdings, reserve position in the Fund, and monetary gold);

and k = a compression factor of 0.95. The compression factor is applied to the uncompressed calculated quota shares which are then rescaled to sum to 100.

The original formula used at the Bretton Woods Conference contained five variables—national income, gold and foreign exchange reserves, the five-year average of annual exports and imports, and a variability measure based on the maximum fluctuation in exports over a five-year period. It was significantly revised in 1962/63, when it was expanded to five formulas that produced somewhat higher calculated quotas for members with relatively small and more open economies. In 1983, a further revision of the five formulas took place—the influence of variability of current receipts was reduced, GDP replaced national income, and reserves, which had been dropped earlier, were reintroduced. During the discussions on the 11th Review, many Directors requested that the quota formula be reviewed again—and in April 1997 the Interim Committee asked the Executive Board to promptly review the quota formula after the completion of the 11th Review.¹ A group of external experts (the Quota Formula Review Group (QFRG)) led by Professor Cooper was asked to review the formula and propose possible changes. The QFRG recommended the adoption of a single formula with two variables—market GDP and variability (see [External Review of the Quota Formula](#) (5/1/00)). However, no further changes were agreed until the 2008 reform. A comprehensive review of the quota formula was concluded in January 2013 and important progress was made in identifying key elements that could form the basis for a final agreement on a new quota formula, and it was agreed that achieving broad consensus on a new quota formula will best be done in the context of the 15th Review rather than on a stand-alone basis.

^{1/} *Communiqué of the Interim Committee of the Board of Governors of the International Monetary Fund* (April 28, 1997).

ILLUSTRATIVE CALCULATIONS FOR ALTERNATIVE QUOTA FORMULAS

19. **This section updates the illustrative simulations of possible reforms of the quota formula presented previously, using the latest data.**¹⁸ As noted above, these simulations have sought to capture possible reforms that would be broadly in line with the conclusions of the QFR. More far reaching reforms could also be considered in future papers if Directors wish to revisit these conclusions. As in the past, staff could also circulate additional simulations if requested by Executive Directors. It should be stressed that the simulations presented in this paper are purely illustrative and no proposals are made.

20. **As in previous data update papers, all simulations of alternative formulas exclude variability.** As noted, this reform received considerable support in the QFR, though some Directors have conditioned their support for dropping variability on other elements of the reform package. As discussed in previous papers (and summarized in Annex II of [Quota Formula—Data Update and Further Considerations](#)), staff has undertaken extensive work to explore the links between variability and actual or potential demand for Fund resources and has found no evidence of such a link. More recent staff work also highlighted the very close relationship between members' shares in openness and variability, suggesting that the two measures are to a large extent capturing the same concept (Annex I). The simulations also maintain reserves with its current weight in line with the QFR.

21. **Set 1 shows four different approaches to reallocate the weight of variability:** (i) split evenly between GDP and openness (thereby increasing the relative weight of openness), (ii) split between GDP (2/3) and openness (1/3) leaving the relative weights of GDP and openness broadly unchanged, (iii) all to GDP (thereby increasing the relative weight of GDP), and (iv) all to GDP and a lower weight for openness (0.25), which would increase the weight of GDP to 0.7.

22. **Set 2 shows a range of options for adjusting the weight of PPP GDP in the GDP blend.** These include increasing the weight of PPP GDP in the blend to 45 and 50 percent, respectively. A simulation is also shown with the weight of PPP GDP reduced to 35 percent. As noted previously, a combination of dropping variability and reducing the weight of PPP GDP would lead to a lower CQS for a large number of EMDCs, including LICs.

23. **Set 3 explores the implications of introducing a cap that limits the overall boost individual countries can receive from openness.** As noted in Annex I, staff has explored the possible use of a cap to address one possible concern with the openness variable, namely that for some countries it can generate CQS that appear very large in relation to other measures of their relative economic positions. In line with the approach taken in previous update papers, two types of

¹⁸ See [Quota Formula—Data Update and Further Considerations](#) (7/2/14) and [Quota Formula—Data Update](#) (6/22/15). An additional set has been included to illustrate the impact of both a higher and a lower degree of compression.

caps are illustrated: one capping the absolute level of openness in relation to market GDP (absolute cap) and the second capping the ratio of openness to GDP blend shares (share cap).

24. **Set 4 illustrates the impact of changing the compression factor.** In response to Directors' comments at the last discussion, this set illustrates the impact of both a higher (0.925) and a lower (0.975) degree of compression, based on simulations presented in Set 1.

25. **Summary results for the 35 members with the largest quotas and for major country groups are presented below.** Table 5 provides an overview of the results for major country groups and detailed results for all members are presented in the Statistical Appendix. The overall results are broadly similar to those illustrated in the July 2014 and June 2015 papers, though starting from a different base given the data update. The main results can be summarized as follows:

- *Set 1 – Simplification of the Current Formula – dropping variability, keeping current GDP and openness measures (Table 6).* Dropping variability and allocating part or all of the weight to GDP reduces (compared to the current formula) the CQS of other advanced economies and increases that of major advanced economies and EMDCs as a group. The shifts are larger when the weight of openness is also reduced. The majority of large countries gain from dropping variability, while around one quarter of small countries gain.
- *Set 2 – Same as Set 1, but with different combinations of GDP blend (Tables 7-10).* Increasing the weight of PPP GDP in the GDP blend leads to a higher CQS for EMDCs relative to the current formula. More EMDCs and small countries gain with an increased weight for PPP GDP relative to Set 1. Conversely, increasing the weight of market GDP in the GDP blend reduces the share of both EMDCs and LICs.
- *Set 3 – Same as Set 1, but with different openness measures (Tables 11-13).* Capping openness tends to reduce the CQS of other advanced economies and increases the CQS for major advanced economies and EMDCs as a group. Also, there are generally a larger number of gainers among both EMDCs and small countries compared with Set 1, including when the weight of openness is reduced, as capping openness redistributes the very large boost received by some countries under the current measure across the rest of the membership.
- *Set 4 – Same as Set 1, but with a higher and a lower degree of compression (Tables 14-15).* Higher compression reduces the share of the largest economies and increases the share of all other members. As a result, it leads to the largest number of gainers among EMDCs and LICs, as well as among small countries. Reducing the amount of compression has the opposite impact, with gains for the largest members and reduced shares for all other members.

Table 5. Illustrative Calculations: Summary

	Calculated Quota Share (in percent)				Number of Gainers 1/	of which:			of which: 2/	
	Major Advanced	Other Advanced	EMDCs	LICs		AEs (26)	EMDCs excl. LICs (93)	LICs (70)	Large countries (18)	Small countries (171)
14th Review Quota Share	43.36	14.28	42.36	3.31						
Current CQS	36.08	14.61	49.31	2.21						
Set 1. Current GDP and openness measures, dropping variability										
1. Weight of variability split evenly between GDP and openness	36.60	13.88	49.52	2.11	56	8	27	21	14	42
2. Weight of variability split between GDP (2/3) and openness (1/3)	36.68	13.63	49.69	2.12	51	7	25	19	14	37
3. All weight of variability to GDP	36.84	13.13	50.03	2.15	52	6	27	19	13	39
4. Weight of openness reduced to 0.25	37.00	12.63	50.37	2.17	53	5	28	20	12	41
Set 2. Same as Set 1, but with different GDP blends										
1. <i>Weight of variability split evenly between GDP and openness</i>										
a. 50/50 GDP blend	35.86	13.64	50.50	2.19	66	3	38	25	11	55
b. 55/45 GDP blend	36.23	13.76	50.01	2.15	61	5	33	23	12	49
c. 65/35 GDP blend	36.96	14.00	49.04	2.07	47	9	23	15	13	34
2. <i>Weight of variability split between GDP (2/3) and openness (1/3)</i>										
a. 50/50 GDP blend	35.91	13.38	50.71	2.21	59	3	33	23	11	48
b. 55/45 GDP blend	36.29	13.51	50.20	2.16	54	5	28	21	12	42
c. 65/35 GDP blend	37.06	13.75	49.19	2.08	46	8	22	16	14	32
3. <i>All weight of variability to GDP</i>										
a. 50/50 GDP blend	36.01	12.86	51.13	2.24	56	1	33	22	9	47
b. 55/45 GDP blend	36.42	13.00	50.58	2.19	55	5	29	21	12	43
c. 65/35 GDP blend	37.25	13.27	49.48	2.10	46	7	22	17	14	32
4. <i>Weight of openness reduced to 0.25</i>										
a. 50/50 GDP blend	36.11	12.34	51.55	2.26	58	2	33	23	10	48
b. 55/45 GDP blend	36.56	12.49	50.96	2.22	55	3	30	22	11	44
c. 65/35 GDP blend	37.45	12.78	49.77	2.12	49	7	25	17	14	35

Source: Finance Department

1/ Countries with positive change in relation to current CQS.

2/ Countries are classified as "large" if their current GDP blend share exceeds 1.0 percent.

Table 5. Illustrative Calculations: Summary (concluded)

	Calculated Quota Share (in percent)				Number of Gainers 1/	of which:			of which: 2/	
	Major Advanced	Other Advanced	EMDCs	LICs		AEs (26)	EMDCs excl. LICs (93)	LICs (70)	Large countries (18)	Small countries (171)
14th Review Quota Share	43.36	14.28	42.36	3.31						
Current CQS	36.08	14.61	49.31	2.21						
Set 3. Same as Set 1, but with different openness measures										
1. <i>Weight of variability split evenly between GDP and openness</i>										
a. Nominal openness capped at 85th percentile	37.26	13.05	49.69	2.14	72	11	36	25	16	56
b. Nominal openness capped at 75th percentile	37.59	12.72	49.70	2.15	82	12	41	29	16	66
c. Openness share capped at 1.8	38.01	11.92	50.07	2.17	87	12	45	30	17	70
d. Openness share capped at 1.5	38.23	11.48	50.29	2.20	79	11	41	27	16	63
2. <i>Weight of variability split between GDP (2/3) and openness (1/3)</i>										
a. Nominal openness capped at 85th percentile	37.30	12.85	49.85	2.15	71	10	36	25	16	55
b. Nominal openness capped at 75th percentile	37.61	12.54	49.85	2.16	73	10	37	26	16	57
c. Openness share capped at 1.8	38.00	11.80	50.20	2.18	83	11	44	28	17	66
d. Openness share capped at 1.5	38.20	11.39	50.40	2.20	78	10	41	27	15	63
3. <i>All weight of variability to GDP</i>										
a. Nominal openness capped at 85th percentile	37.38	12.46	50.16	2.17	57	7	30	20	14	43
b. Nominal openness capped at 75th percentile	37.64	12.19	50.17	2.17	64	9	32	23	15	49
c. Openness share capped at 1.8	37.98	11.55	50.47	2.19	72	10	36	26	16	56
d. Openness share capped at 1.5	38.15	11.20	50.64	2.21	73	9	36	28	15	58
Set 4. Same as Set 1, but with different compressions										
1. <i>With a higher degree of compression (0.925)</i>										
1. Dropping variability, weight split evenly between GDP and openness	35.64	14.20	50.16	2.33	126	10	62	54	11	115
2. Dropping variability, weight split between GDP (2/3) and openness (1/3)	35.72	13.96	50.32	2.34	119	7	62	50	12	107
3. Dropping variability, all weight to GDP	35.88	13.46	50.66	2.37	111	7	56	48	13	98
4. Dropping variability, weight of openness reduced to 0.25	36.04	12.97	50.99	2.39	110	6	54	50	12	98
2. <i>With a lower degree of compression (0.975)</i>										
1. Dropping variability, weight split evenly between GDP and openness	37.53	13.55	48.92	1.91	22	7	14	1	14	8
2. Dropping variability, weight split between GDP (2/3) and openness (1/3)	37.62	13.30	49.09	1.92	22	7	14	1	14	8
3. Dropping variability, all weight to GDP	37.78	12.79	49.43	1.94	26	5	17	4	13	13
4. Dropping variability, weight of openness reduced to 0.25	37.95	12.29	49.77	1.96	29	5	18	6	13	16

Source: Finance Department

1/ Countries with positive change in relation to current CQS.

2/ Countries are classified as "large" if their current GDP blend share exceeds 1.0 percent.

Table 6. Illustrative Calculations—Current GDP and Openness Measures, and Dropping Variability
(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, and weight split:			Formula w/o variability and:
			Even split	GDP (2/3), openness (1/3)	All to GDP blend	Weight of openness reduced to 0.25
Advanced economies	57.6	50.7	50.5	50.3	50.0	49.6
Major advanced economies	43.4	36.1	36.6	36.7	36.8	37.0
United States	17.4	14.3	14.8	14.9	15.2	15.6
Japan	6.5	5.3	5.3	5.3	5.4	5.5
Germany	5.6	5.1	5.1	5.0	4.9	4.8
France	4.2	3.3	3.3	3.3	3.3	3.2
United Kingdom	4.2	3.6	3.4	3.4	3.4	3.3
Italy	3.2	2.5	2.5	2.5	2.5	2.5
Canada	2.3	2.1	2.2	2.1	2.1	2.1
Other advanced economies	14.3	14.6	13.9	13.6	13.1	12.6
Spain	2.0	1.8	1.8	1.8	1.8	1.7
Netherlands	1.8	2.1	2.0	1.9	1.8	1.7
Australia	1.4	1.5	1.5	1.5	1.5	1.6
Belgium	1.3	1.1	1.1	1.1	1.0	1.0
Switzerland	1.2	1.6	1.5	1.5	1.4	1.3
Sweden	0.9	0.9	0.9	0.8	0.8	0.8
Austria	0.8	0.7	0.7	0.7	0.7	0.6
Norway	0.8	0.8	0.7	0.7	0.7	0.7
Ireland	0.7	0.7	0.7	0.6	0.6	0.5
Denmark	0.7	0.6	0.6	0.6	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	49.3	49.5	49.7	50.0	50.4
Africa	4.4	3.7	3.6	3.6	3.6	3.6
South Africa	0.6	0.5	0.6	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7	0.7
Asia	16.0	23.4	24.4	24.6	24.8	25.0
China 2/	6.4	12.0	12.6	12.7	12.9	13.1
India	2.7	3.0	3.3	3.3	3.4	3.5
Korea, Republic of	1.8	2.0	2.1	2.1	2.1	2.0
Indonesia	1.0	1.3	1.4	1.4	1.4	1.5
Singapore	0.8	1.3	1.3	1.2	1.1	1.0
Malaysia	0.8	0.8	0.8	0.8	0.7	0.7
Thailand	0.7	1.0	0.9	0.9	0.9	0.9
Middle East, Malta and Turkey	6.7	7.2	6.8	6.8	6.8	6.8
Saudi Arabia	2.1	1.7	1.5	1.5	1.5	1.5
Turkey	1.0	1.1	1.1	1.1	1.1	1.2
Iran, I.R. of	0.7	0.8	0.8	0.8	0.8	0.9
Western Hemisphere	7.9	7.4	7.5	7.6	7.7	7.8
Brazil	2.3	2.3	2.4	2.4	2.5	2.6
Mexico	1.9	1.7	1.8	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7	0.7
Transition economies	7.2	7.6	7.2	7.2	7.1	7.1
Russia	2.7	2.7	2.7	2.7	2.8	2.8
Poland	0.9	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:						
EU28	30.4	27.5	26.8	26.5	25.7	25.0
LICs 3/	3.3	2.2	2.1	2.1	2.1	2.2
Coefficients for quota variables						
GDP		0.300	0.345	0.360	0.390	0.420
PPP GDP		0.200	0.230	0.240	0.260	0.280
Openness		0.300	0.375	0.350	0.300	0.250
Variability		0.150	0.000	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050	0.050
Compression factor		0.950	0.950	0.950	0.950	0.950

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

Table 7. Illustrative Calculations—Current Openness Measure, Dropping Variability, Weight Split Evenly Between GDP and Openness, and Different Combinations of GDP Blend

(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, current openness measure, weight split evenly between GDP and openness, and GDP blends:		
			50/50	55/45	65/35
Advanced economies	57.6	50.7	49.5	50.0	51.0
Major advanced economies	43.4	36.1	35.9	36.2	37.0
United States	17.4	14.3	14.5	14.6	14.9
Japan	6.5	5.3	5.2	5.2	5.4
Germany	5.6	5.1	5.0	5.0	5.1
France	4.2	3.3	3.3	3.3	3.4
United Kingdom	4.2	3.6	3.4	3.4	3.5
Italy	3.2	2.5	2.5	2.5	2.5
Canada	2.3	2.1	2.1	2.1	2.2
Other advanced economies	14.3	14.6	13.6	13.8	14.0
Spain	2.0	1.8	1.8	1.8	1.8
Netherlands	1.8	2.1	2.0	2.0	2.0
Australia	1.4	1.5	1.5	1.5	1.6
Belgium	1.3	1.1	1.1	1.1	1.1
Switzerland	1.2	1.6	1.5	1.5	1.5
Sweden	0.9	0.9	0.8	0.9	0.9
Austria	0.8	0.7	0.7	0.7	0.7
Norway	0.8	0.8	0.7	0.7	0.7
Ireland	0.7	0.7	0.7	0.7	0.7
Denmark	0.7	0.6	0.6	0.6	0.6
Emerging Market and Developing Countries 1/	42.4	49.3	50.5	50.0	49.0
Africa	4.4	3.7	3.6	3.6	3.5
South Africa	0.6	0.5	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7
Asia	16.0	23.4	25.0	24.7	24.1
China 2/	6.4	12.0	12.7	12.6	12.5
India	2.7	3.0	3.5	3.4	3.2
Korea, Republic of	1.8	2.0	2.1	2.1	2.2
Indonesia	1.0	1.3	1.5	1.4	1.3
Singapore	0.8	1.3	1.3	1.3	1.3
Malaysia	0.8	0.8	0.8	0.8	0.8
Thailand	0.7	1.0	1.0	1.0	0.9
Middle East, Malta and Turkey	6.7	7.2	6.9	6.9	6.7
Saudi Arabia	2.1	1.7	1.5	1.5	1.5
Turkey	1.0	1.1	1.1	1.1	1.1
Iran, I.R. of	0.7	0.8	0.8	0.8	0.8
Western Hemisphere	7.9	7.4	7.6	7.5	7.5
Brazil	2.3	2.3	2.4	2.4	2.4
Mexico	1.9	1.7	1.8	1.8	1.7
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7
Transition economies	7.2	7.6	7.3	7.3	7.2
Russia	2.7	2.7	2.8	2.7	2.7
Poland	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0
Memorandum items:					
EU28	30.4	27.5	26.5	26.7	27.0
LICs 3/	3.3	2.2	2.2	2.2	2.1
Coefficients for quota variables					
GDP		0.300	0.288	0.316	0.374
PPP GDP		0.200	0.288	0.259	0.201
Openness		0.300	0.375	0.375	0.375
Variability		0.150	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050
Compression factor		0.950	0.950	0.950	0.950

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

Table 8. Illustrative Calculations—Current Openness Measure, Dropping Variability, Weight Split Between GDP (2/3) and Openness (1/3), and Different Combinations of GDP Blend
(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, current openness measure, weight split between GDP (2/3) and openness (1/3), and GDP blends:		
			50/50	55/45	65/35
Advanced economies	57.6	50.7	49.3	49.8	50.8
Major advanced economies	43.4	36.1	35.9	36.3	37.1
United States	17.4	14.3	14.6	14.8	15.1
Japan	6.5	5.3	5.2	5.3	5.4
Germany	5.6	5.1	4.9	5.0	5.1
France	4.2	3.3	3.3	3.3	3.4
United Kingdom	4.2	3.6	3.3	3.4	3.4
Italy	3.2	2.5	2.5	2.5	2.5
Canada	2.3	2.1	2.1	2.1	2.2
Other advanced economies	14.3	14.6	13.4	13.5	13.8
Spain	2.0	1.8	1.7	1.8	1.8
Netherlands	1.8	2.1	1.9	1.9	2.0
Australia	1.4	1.5	1.5	1.5	1.6
Belgium	1.3	1.1	1.1	1.1	1.1
Switzerland	1.2	1.6	1.4	1.4	1.5
Sweden	0.9	0.9	0.8	0.8	0.9
Austria	0.8	0.7	0.7	0.7	0.7
Norway	0.8	0.8	0.7	0.7	0.7
Ireland	0.7	0.7	0.6	0.6	0.6
Denmark	0.7	0.6	0.5	0.6	0.6
Emerging Market and Developing Countries 1/	42.4	49.3	50.7	50.2	49.2
Africa	4.4	3.7	3.7	3.6	3.5
South Africa	0.6	0.5	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7
Asia	16.0	23.4	25.2	24.9	24.2
China 2/	6.4	12.0	12.8	12.8	12.6
India	2.7	3.0	3.6	3.4	3.2
Korea, Republic of	1.8	2.0	2.1	2.1	2.1
Indonesia	1.0	1.3	1.5	1.4	1.4
Singapore	0.8	1.3	1.2	1.2	1.2
Malaysia	0.8	0.8	0.8	0.8	0.8
Thailand	0.7	1.0	1.0	0.9	0.9
Middle East, Malta and Turkey	6.7	7.2	6.9	6.9	6.7
Saudi Arabia	2.1	1.7	1.5	1.5	1.5
Turkey	1.0	1.1	1.1	1.1	1.1
Iran, I.R. of	0.7	0.8	0.8	0.8	0.8
Western Hemisphere	7.9	7.4	7.6	7.6	7.5
Brazil	2.3	2.3	2.5	2.5	2.4
Mexico	1.9	1.7	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7
Transition economies	7.2	7.6	7.3	7.2	7.1
Russia	2.7	2.7	2.8	2.8	2.7
Poland	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0
Memorandum items:					
EU28	30.4	27.5	26.1	26.3	26.6
LICs 3/	3.3	2.2	2.2	2.2	2.1
Coefficients for quota variables					
GDP		0.300	0.300	0.330	0.390
PPP GDP		0.200	0.300	0.270	0.210
Openness		0.300	0.350	0.350	0.350
Variability		0.150	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050
Compression factor		0.950	0.950	0.950	0.950

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

**Table 9. Illustrative Calculations—Current Openness Measure, Dropping Variability,
All Weight to GDP, and Different Combinations of GDP Blend**

(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, current openness measure, all weight to GDP, and GDP blends:		
			50/50	55/45	65/35
Advanced economies	57.6	50.7	48.9	49.4	50.5
Major advanced economies	43.4	36.1	36.0	36.4	37.3
United States	17.4	14.3	14.9	15.1	15.4
Japan	6.5	5.3	5.3	5.4	5.5
Germany	5.6	5.1	4.8	4.8	4.9
France	4.2	3.3	3.2	3.2	3.3
United Kingdom	4.2	3.6	3.3	3.3	3.4
Italy	3.2	2.5	2.4	2.5	2.5
Canada	2.3	2.1	2.1	2.1	2.2
Other advanced economies	14.3	14.6	12.9	13.0	13.3
Spain	2.0	1.8	1.7	1.7	1.8
Netherlands	1.8	2.1	1.8	1.8	1.8
Australia	1.4	1.5	1.5	1.5	1.6
Belgium	1.3	1.1	1.0	1.0	1.0
Switzerland	1.2	1.6	1.4	1.4	1.4
Sweden	0.9	0.9	0.8	0.8	0.8
Austria	0.8	0.7	0.7	0.7	0.7
Norway	0.8	0.8	0.6	0.7	0.7
Ireland	0.7	0.7	0.6	0.6	0.6
Denmark	0.7	0.6	0.5	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	49.3	51.1	50.6	49.5
Africa	4.4	3.7	3.7	3.6	3.5
South Africa	0.6	0.5	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7
Asia	16.0	23.4	25.4	25.1	24.4
China 2/	6.4	12.0	13.1	13.0	12.8
India	2.7	3.0	3.7	3.6	3.3
Korea, Republic of	1.8	2.0	2.1	2.1	2.1
Indonesia	1.0	1.3	1.5	1.5	1.4
Singapore	0.8	1.3	1.1	1.1	1.1
Malaysia	0.8	0.8	0.8	0.8	0.7
Thailand	0.7	1.0	0.9	0.9	0.9
Middle East, Malta and Turkey	6.7	7.2	7.0	6.9	6.7
Saudi Arabia	2.1	1.7	1.5	1.5	1.5
Turkey	1.0	1.1	1.2	1.2	1.1
Iran, I.R. of	0.7	0.8	0.9	0.9	0.8
Western Hemisphere	7.9	7.4	7.8	7.7	7.7
Brazil	2.3	2.3	2.5	2.5	2.5
Mexico	1.9	1.7	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7
Transition economies	7.2	7.6	7.3	7.2	7.1
Russia	2.7	2.7	2.8	2.8	2.7
Poland	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0
Memorandum items:					
EU28	30.4	27.5	25.3	25.5	25.9
LICs 3/	3.3	2.2	2.2	2.2	2.1
Coefficients for quota variables					
GDP		0.300	0.325	0.358	0.423
PPP GDP		0.200	0.325	0.293	0.228
Openness		0.300	0.300	0.300	0.300
Variability		0.150	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050
Compression factor		0.950	0.950	0.950	0.950

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

Table 10. Illustrative Calculations—Current Openness Measure, Dropping Variability, Weight of Openness Reduced to 0.25, and Different Combinations of GDP Blend
(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, weight of openness reduced to 0.25, and GDP blends:		
			50/50	55/45	65/35
Advanced economies	57.6	50.7	48.4	49.0	50.2
Major advanced economies	43.4	36.1	36.1	36.6	37.4
United States	17.4	14.3	15.2	15.4	15.8
Japan	6.5	5.3	5.4	5.4	5.6
Germany	5.6	5.1	4.7	4.7	4.8
France	4.2	3.3	3.2	3.2	3.3
United Kingdom	4.2	3.6	3.2	3.3	3.3
Italy	3.2	2.5	2.4	2.5	2.5
Canada	2.3	2.1	2.0	2.1	2.1
Other advanced economies	14.3	14.6	12.3	12.5	12.8
Spain	2.0	1.8	1.7	1.7	1.8
Netherlands	1.8	2.1	1.7	1.7	1.7
Australia	1.4	1.5	1.5	1.5	1.6
Belgium	1.3	1.1	0.9	0.9	1.0
Switzerland	1.2	1.6	1.3	1.3	1.3
Sweden	0.9	0.9	0.8	0.8	0.8
Austria	0.8	0.7	0.6	0.6	0.7
Norway	0.8	0.8	0.6	0.6	0.7
Ireland	0.7	0.7	0.5	0.5	0.5
Denmark	0.7	0.6	0.5	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	49.3	51.6	51.0	49.8
Africa	4.4	3.7	3.7	3.7	3.6
South Africa	0.6	0.5	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7
Asia	16.0	23.4	25.7	25.3	24.6
China 2/	6.4	12.0	13.3	13.2	13.0
India	2.7	3.0	3.8	3.7	3.4
Korea, Republic of	1.8	2.0	2.0	2.0	2.0
Indonesia	1.0	1.3	1.6	1.5	1.4
Singapore	0.8	1.3	1.0	1.0	1.0
Malaysia	0.8	0.8	0.7	0.7	0.7
Thailand	0.7	1.0	0.9	0.9	0.9
Middle East, Malta and Turkey	6.7	7.2	7.0	6.9	6.7
Saudi Arabia	2.1	1.7	1.5	1.5	1.5
Turkey	1.0	1.1	1.2	1.2	1.1
Iran, I.R. of	0.7	0.8	0.9	0.9	0.9
Western Hemisphere	7.9	7.4	7.9	7.9	7.8
Brazil	2.3	2.3	2.6	2.6	2.6
Mexico	1.9	1.7	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7
Transition economies	7.2	7.6	7.2	7.2	7.0
Russia	2.7	2.7	2.9	2.8	2.8
Poland	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0
Memorandum items:					
EU28	30.4	27.5	24.6	24.8	25.2
LICs 3/	3.3	2.2	2.3	2.2	2.1
Coefficients for quota variables					
GDP		0.300	0.350	0.385	0.455
PPP GDP		0.200	0.350	0.315	0.245
Openness		0.300	0.250	0.250	0.250
Variability		0.150	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050
Compression factor		0.950	0.950	0.950	0.950

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

Table 11. Illustrative Calculations—Current GDP Blend, Dropping Variability, Weight Split Evenly Between GDP and Openness, and Different Openness Measures

(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, weight split evenly between GDP and openness, and different openness measures:			
			Nominal openness capped at the 85th percentile	Nominal openness capped at the 75th percentile	Openness shares capped at 1.8	Openness shares capped at 1.5
Advanced economies	57.6	50.7	50.3	50.3	49.9	49.7
Major advanced economies	43.4	36.1	37.3	37.6	38.0	38.2
United States	17.4	14.3	15.0	15.1	15.2	15.6
Japan	6.5	5.3	5.4	5.4	5.5	5.6
Germany	5.6	5.1	5.2	5.3	5.3	4.9
France	4.2	3.3	3.4	3.5	3.5	3.6
United Kingdom	4.2	3.6	3.5	3.6	3.6	3.6
Italy	3.2	2.5	2.6	2.6	2.6	2.7
Canada	2.3	2.1	2.2	2.2	2.3	2.3
Other advanced economies	14.3	14.6	13.1	12.7	11.9	11.5
Spain	2.0	1.8	1.8	1.8	1.9	1.9
Netherlands	1.8	2.1	1.7	1.5	1.3	1.2
Australia	1.4	1.5	1.6	1.6	1.6	1.6
Belgium	1.3	1.1	1.0	0.9	0.8	0.7
Switzerland	1.2	1.6	1.5	1.4	1.2	1.1
Sweden	0.9	0.9	0.9	0.9	0.8	0.8
Austria	0.8	0.7	0.7	0.7	0.7	0.6
Norway	0.8	0.8	0.7	0.7	0.7	0.7
Ireland	0.7	0.7	0.5	0.5	0.4	0.4
Denmark	0.7	0.6	0.6	0.6	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	49.3	49.7	49.7	50.1	50.3
Africa	4.4	3.7	3.6	3.6	3.7	3.7
South Africa	0.6	0.5	0.6	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7	0.7
Asia	16.0	23.4	24.3	24.3	24.6	24.7
China 2/	6.4	12.0	12.7	12.8	12.9	13.2
India	2.7	3.0	3.3	3.3	3.4	3.4
Korea, Republic of	1.8	2.0	2.2	2.2	2.3	2.1
Indonesia	1.0	1.3	1.4	1.4	1.4	1.4
Singapore	0.8	1.3	0.8	0.7	0.7	0.6
Malaysia	0.8	0.8	0.8	0.8	0.8	0.7
Thailand	0.7	1.0	1.0	1.0	1.0	0.9
Middle East, Malta and Turkey	6.7	7.2	6.9	6.8	6.8	6.8
Saudi Arabia	2.1	1.7	1.5	1.5	1.6	1.6
Turkey	1.0	1.1	1.1	1.1	1.2	1.2
Iran, I.R. of	0.7	0.8	0.8	0.8	0.8	0.8
Western Hemisphere	7.9	7.4	7.6	7.7	7.7	7.9
Brazil	2.3	2.3	2.4	2.4	2.5	2.5
Mexico	1.9	1.7	1.8	1.8	1.8	1.9
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7	0.7
Transition economies	7.2	7.6	7.3	7.2	7.2	7.2
Russia	2.7	2.7	2.8	2.8	2.8	2.9
Poland	0.9	0.9	0.9	0.9	1.0	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:						
EU28	30.4	27.5	26.2	26.0	25.6	24.8
LICs 3/	3.3	2.2	2.1	2.1	2.2	2.2
Coefficients for quota variables						
GDP		0.300	0.345	0.345	0.345	0.345
PPP GDP		0.200	0.230	0.230	0.230	0.230
Openness		0.300	0.375	0.375	0.375	0.375
Variability		0.150	0.000	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050	0.050
Compression factor		0.950	0.950	0.950	0.950	0.950

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

Table 12. Illustrative Calculations—Current GDP Blend, Dropping Variability, Weight Split Between GDP (2/3) and Openness (1/3), and Different Openness Measures

(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, weight split between GDP (2/3) and openness (1/3), and different openness measures:			
			Nominal openness capped at the 85th percentile	Nominal openness capped at the 75th percentile	Openness shares capped at 1.8	Openness shares capped at 1.5
Advanced economies	57.6	50.7	50.2	50.1	49.8	49.6
Major advanced economies	43.4	36.1	37.3	37.6	38.0	38.2
United States	17.4	14.3	15.1	15.2	15.4	15.7
Japan	6.5	5.3	5.4	5.5	5.5	5.6
Germany	5.6	5.1	5.1	5.2	5.2	4.8
France	4.2	3.3	3.4	3.4	3.5	3.6
United Kingdom	4.2	3.6	3.5	3.5	3.6	3.5
Italy	3.2	2.5	2.5	2.6	2.6	2.7
Canada	2.3	2.1	2.2	2.2	2.2	2.3
Other advanced economies	14.3	14.6	12.9	12.5	11.8	11.4
Spain	2.0	1.8	1.8	1.8	1.8	1.9
Netherlands	1.8	2.1	1.6	1.5	1.3	1.2
Australia	1.4	1.5	1.6	1.6	1.6	1.6
Belgium	1.3	1.1	1.0	0.9	0.8	0.7
Switzerland	1.2	1.6	1.5	1.4	1.2	1.1
Sweden	0.9	0.9	0.9	0.9	0.8	0.8
Austria	0.8	0.7	0.7	0.7	0.7	0.6
Norway	0.8	0.8	0.7	0.7	0.7	0.7
Ireland	0.7	0.7	0.5	0.4	0.4	0.3
Denmark	0.7	0.6	0.6	0.6	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	49.3	49.8	49.9	50.2	50.4
Africa	4.4	3.7	3.6	3.6	3.7	3.7
South Africa	0.6	0.5	0.6	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7	0.7
Asia	16.0	23.4	24.4	24.5	24.7	24.8
China 2/	6.4	12.0	12.8	12.9	13.0	13.3
India	2.7	3.0	3.4	3.4	3.4	3.5
Korea, Republic of	1.8	2.0	2.2	2.2	2.2	2.1
Indonesia	1.0	1.3	1.4	1.4	1.4	1.5
Singapore	0.8	1.3	0.8	0.7	0.7	0.6
Malaysia	0.8	0.8	0.8	0.7	0.8	0.7
Thailand	0.7	1.0	1.0	1.0	1.0	0.9
Middle East, Malta and Turkey	6.7	7.2	6.9	6.8	6.8	6.8
Saudi Arabia	2.1	1.7	1.5	1.5	1.6	1.6
Turkey	1.0	1.1	1.1	1.2	1.2	1.2
Iran, I.R. of	0.7	0.8	0.8	0.8	0.8	0.8
Western Hemisphere	7.9	7.4	7.7	7.7	7.8	7.9
Brazil	2.3	2.3	2.5	2.5	2.5	2.5
Mexico	1.9	1.7	1.8	1.8	1.8	1.9
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7	0.7
Transition economies	7.2	7.6	7.3	7.2	7.2	7.2
Russia	2.7	2.7	2.8	2.8	2.8	2.9
Poland	0.9	0.9	0.9	0.9	1.0	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:						
EU28	30.4	27.5	25.9	25.7	25.3	24.5
LICs 3/	3.3	2.2	2.1	2.2	2.2	2.2
Coefficients for quota variables						
GDP		0.300	0.360	0.360	0.360	0.360
PPP GDP		0.200	0.240	0.240	0.240	0.240
Openness		0.300	0.350	0.350	0.350	0.350
Variability		0.150	0.000	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050	0.050
Compression factor		0.950	0.950	0.950	0.950	0.950

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

**Table 13. Illustrative Calculations—Current GDP Blend, Dropping Variability,
All Weight to GDP, and Different Openness Measures**
(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, all weight to GDP, and different openness measures:			
			Nominal openness capped at the 85th percentile	Nominal openness capped at the 75th percentile	Openness shares capped at 1.8	Openness shares capped at 1.5
Advanced economies	57.6	50.7	49.8	49.8	49.5	49.4
Major advanced economies	43.4	36.1	37.4	37.6	38.0	38.2
United States	17.4	14.3	15.4	15.5	15.6	15.9
Japan	6.5	5.3	5.5	5.5	5.6	5.7
Germany	5.6	5.1	5.0	5.0	5.1	4.7
France	4.2	3.3	3.3	3.4	3.4	3.5
United Kingdom	4.2	3.6	3.4	3.5	3.5	3.5
Italy	3.2	2.5	2.5	2.5	2.6	2.6
Canada	2.3	2.1	2.2	2.2	2.2	2.3
Other advanced economies	14.3	14.6	12.5	12.2	11.6	11.2
Spain	2.0	1.8	1.8	1.8	1.8	1.9
Netherlands	1.8	2.1	1.5	1.4	1.2	1.2
Australia	1.4	1.5	1.6	1.6	1.6	1.6
Belgium	1.3	1.1	1.0	0.9	0.8	0.7
Switzerland	1.2	1.6	1.4	1.3	1.1	1.1
Sweden	0.9	0.9	0.8	0.8	0.8	0.8
Austria	0.8	0.7	0.7	0.7	0.6	0.6
Norway	0.8	0.8	0.7	0.7	0.7	0.7
Ireland	0.7	0.7	0.5	0.4	0.4	0.3
Denmark	0.7	0.6	0.6	0.6	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	49.3	50.2	50.2	50.5	50.6
Africa	4.4	3.7	3.6	3.6	3.7	3.7
South Africa	0.6	0.5	0.6	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7	0.7
Asia	16.0	23.4	24.7	24.7	24.9	24.9
China 2/	6.4	12.0	13.0	13.1	13.2	13.4
India	2.7	3.0	3.5	3.5	3.5	3.6
Korea, Republic of	1.8	2.0	2.1	2.1	2.2	2.1
Indonesia	1.0	1.3	1.5	1.5	1.5	1.5
Singapore	0.8	1.3	0.7	0.7	0.6	0.6
Malaysia	0.8	0.8	0.8	0.7	0.7	0.7
Thailand	0.7	1.0	0.9	0.9	1.0	0.9
Middle East, Malta and Turkey	6.7	7.2	6.9	6.8	6.9	6.8
Saudi Arabia	2.1	1.7	1.5	1.5	1.5	1.6
Turkey	1.0	1.1	1.2	1.2	1.2	1.2
Iran, I.R. of	0.7	0.8	0.8	0.9	0.9	0.9
Western Hemisphere	7.9	7.4	7.8	7.8	7.9	8.0
Brazil	2.3	2.3	2.6	2.6	2.6	2.6
Mexico	1.9	1.7	1.8	1.8	1.8	1.9
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7	0.7
Transition economies	7.2	7.6	7.2	7.2	7.2	7.2
Russia	2.7	2.7	2.8	2.8	2.8	2.9
Poland	0.9	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:						
EU28	30.4	27.5	25.2	25.1	24.7	24.1
LICs 3/	3.3	2.2	2.2	2.2	2.2	2.2
Coefficients for quota variables						
GDP		0.300	0.390	0.390	0.390	0.390
PPP GDP		0.200	0.260	0.260	0.260	0.260
Openness		0.300	0.300	0.300	0.300	0.300
Variability		0.150	0.000	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050	0.050
Compression factor		0.950	0.950	0.950	0.950	0.950

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

Table 14. Illustrative Calculations—Current GDP and Openness Measures, Dropping Variability, and Higher Compression (0.925)
(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, and weight split:			Formula w/o variability and:
			Even split	GDP (2/3), openness (1/3)	All to GDP blend	Weight of openness reduced to 0.25
Advanced economies	57.6	50.7	49.8	49.7	49.3	49.0
Major advanced economies	43.4	36.1	35.6	35.7	35.9	36.0
United States	17.4	14.3	14.1	14.2	14.5	14.8
Japan	6.5	5.3	5.2	5.2	5.3	5.4
Germany	5.6	5.1	5.0	4.9	4.8	4.7
France	4.2	3.3	3.3	3.3	3.3	3.2
United Kingdom	4.2	3.6	3.4	3.4	3.3	3.3
Italy	3.2	2.5	2.5	2.5	2.5	2.5
Canada	2.3	2.1	2.2	2.2	2.1	2.1
Other advanced economies	14.3	14.6	14.2	14.0	13.5	13.0
Spain	2.0	1.8	1.8	1.8	1.8	1.8
Netherlands	1.8	2.1	2.0	2.0	1.8	1.7
Australia	1.4	1.5	1.6	1.6	1.6	1.6
Belgium	1.3	1.1	1.1	1.1	1.0	1.0
Switzerland	1.2	1.6	1.5	1.5	1.4	1.3
Sweden	0.9	0.9	0.9	0.9	0.8	0.8
Austria	0.8	0.7	0.7	0.7	0.7	0.7
Norway	0.8	0.8	0.7	0.7	0.7	0.7
Ireland	0.7	0.7	0.7	0.7	0.6	0.6
Denmark	0.7	0.6	0.6	0.6	0.6	0.5
Emerging Market and Developing Countries 1/	42.4	49.3	50.2	50.3	50.7	51.0
Africa	4.4	3.7	3.8	3.8	3.9	3.9
South Africa	0.6	0.5	0.6	0.6	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7	0.7
Asia	16.0	23.4	24.1	24.2	24.4	24.6
China 2/	6.4	12.0	12.0	12.1	12.3	12.5
India	2.7	3.0	3.3	3.3	3.4	3.5
Korea, Republic of	1.8	2.0	2.2	2.1	2.1	2.1
Indonesia	1.0	1.3	1.4	1.4	1.5	1.5
Singapore	0.8	1.3	1.3	1.2	1.1	1.0
Malaysia	0.8	0.8	0.8	0.8	0.8	0.7
Thailand	0.7	1.0	1.0	1.0	0.9	0.9
Middle East, Malta and Turkey	6.7	7.2	7.0	7.0	7.1	7.1
Saudi Arabia	2.1	1.7	1.5	1.5	1.5	1.5
Turkey	1.0	1.1	1.1	1.2	1.2	1.2
Iran, I.R. of	0.7	0.8	0.8	0.8	0.9	0.9
Western Hemisphere	7.9	7.4	7.7	7.8	7.9	8.1
Brazil	2.3	2.3	2.4	2.4	2.5	2.6
Mexico	1.9	1.7	1.8	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.5	0.5	0.5	0.5
Argentina	0.7	0.6	0.7	0.7	0.7	0.7
Transition economies	7.2	7.6	7.5	7.5	7.4	7.3
Russia	2.7	2.7	2.7	2.7	2.8	2.8
Poland	0.9	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:						
EU28	30.4	27.5	27.0	26.7	26.0	25.2
LICs 3/	3.3	2.2	2.3	2.3	2.4	2.4
Coefficients for quota variables						
GDP		0.300	0.345	0.360	0.390	0.420
PPP GDP		0.200	0.230	0.240	0.260	0.280
Openness		0.300	0.375	0.350	0.300	0.250
Variability		0.150	0.000	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050	0.050
Compression factor		0.950	0.925	0.925	0.925	0.925

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

Table 15. Illustrative Calculations—Current GDP and Openness Measures, Dropping Variability, and Lower Compression (0.975)

(In percent)

	14th General Review Quotas	Current Formula	Formula w/o variability, and weight split:			Formula w/o variability and:
			Even split	GDP (2/3), openness (1/3)	All to GDP blend	Weight of openness reduced to 0.25
Advanced economies	57.6	50.7	51.1	50.9	50.6	50.2
Major advanced economies	43.4	36.1	37.5	37.6	37.8	37.9
United States	17.4	14.3	15.5	15.6	16.0	16.3
Japan	6.5	5.3	5.4	5.5	5.5	5.6
Germany	5.6	5.1	5.2	5.1	5.0	4.8
France	4.2	3.3	3.4	3.3	3.3	3.3
United Kingdom	4.2	3.6	3.5	3.4	3.4	3.3
Italy	3.2	2.5	2.5	2.5	2.5	2.5
Canada	2.3	2.1	2.1	2.1	2.1	2.1
Other advanced economies	14.3	14.6	13.5	13.3	12.8	12.3
Spain	2.0	1.8	1.8	1.8	1.7	1.7
Netherlands	1.8	2.1	2.0	1.9	1.8	1.7
Australia	1.4	1.5	1.5	1.5	1.5	1.5
Belgium	1.3	1.1	1.1	1.1	1.0	0.9
Switzerland	1.2	1.6	1.5	1.4	1.4	1.3
Sweden	0.9	0.9	0.8	0.8	0.8	0.8
Austria	0.8	0.7	0.7	0.7	0.6	0.6
Norway	0.8	0.8	0.7	0.7	0.6	0.6
Ireland	0.7	0.7	0.6	0.6	0.6	0.5
Denmark	0.7	0.6	0.6	0.5	0.5	0.5
Emerging Market and Developing Countries 1/	42.4	49.3	48.9	49.1	49.4	49.8
Africa	4.4	3.7	3.3	3.3	3.4	3.4
South Africa	0.6	0.5	0.5	0.5	0.6	0.6
Nigeria	0.5	0.7	0.7	0.7	0.7	0.7
Asia	16.0	23.4	24.8	24.9	25.1	25.3
China 2/	6.4	12.0	13.1	13.2	13.4	13.7
India	2.7	3.0	3.3	3.4	3.5	3.6
Korea, Republic of	1.8	2.0	2.1	2.1	2.1	2.0
Indonesia	1.0	1.3	1.4	1.4	1.4	1.5
Singapore	0.8	1.3	1.2	1.2	1.1	1.0
Malaysia	0.8	0.8	0.8	0.7	0.7	0.7
Thailand	0.7	1.0	0.9	0.9	0.9	0.9
Middle East, Malta and Turkey	6.7	7.2	6.6	6.6	6.6	6.6
Saudi Arabia	2.1	1.7	1.5	1.5	1.5	1.5
Turkey	1.0	1.1	1.1	1.1	1.1	1.1
Iran, I.R. of	0.7	0.8	0.8	0.8	0.8	0.8
Western Hemisphere	7.9	7.4	7.3	7.4	7.5	7.6
Brazil	2.3	2.3	2.4	2.4	2.5	2.6
Mexico	1.9	1.7	1.7	1.7	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.4	0.4	0.4	0.5
Argentina	0.7	0.6	0.6	0.6	0.7	0.7
Transition economies	7.2	7.6	7.0	6.9	6.9	6.8
Russia	2.7	2.7	2.7	2.7	2.8	2.8
Poland	0.9	0.9	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:						
EU28	30.4	27.5	26.6	26.2	25.5	24.7
LICs 3/	3.3	2.2	1.9	1.9	1.9	2.0
Coefficients for quota variables						
GDP		0.300	0.345	0.360	0.390	0.420
PPP GDP		0.200	0.230	0.240	0.260	0.280
Openness		0.300	0.375	0.350	0.300	0.250
Variability		0.150	0.000	0.000	0.000	0.000
Reserves		0.050	0.050	0.050	0.050	0.050
Compression factor		0.950	0.975	0.975	0.975	0.975

Source: Finance Department

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR, and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

REALIGNING QUOTA SHARES

26. **General quota increases provide an important opportunity to realign quota and voting shares to reflect changes in members’ relative economic positions.** Board of Governors Resolution 66-2 states that “Any realignment [under the 15th Review] 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 emerging market and developing countries as a whole. Steps shall be taken to protect the voice and representation of the poorest members.” The recent IMFC and G20 communiques also reaffirmed this expectation.¹⁹

27. **The extent of any realignment depends on the size of the overall quota increase and how it is distributed.** A larger overall increase tends to increase the scope for realigning shares, particularly where all or most of the increase is distributed to all members based on the quota formula (referred to as the selective element). However, a large realignment is also possible with a relatively small overall increase if it is concentrated on a sub-set of members (referred to as the ad hoc element). Prior to the 14th Review, a significant portion (often more than half) of the overall increase agreed in previous general reviews was distributed based on actual quota shares (the equiproportional element), which results in no share realignment.²⁰ In the 14th Review, with its heavy focus on governance reform, the selective element represented 60 percent of the total, while the remaining 40 percent was allocated to a sub-set of members as ad hoc increases based primarily on the GDP-blend variable, with no equiproportional element.

28. **Previous general quota reviews have resulted in a partial adjustment of actual toward calculated quota shares.** This in part reflects the need to obtain a broad consensus for adjusting quota shares. Also, the quota formula only serves as a guide to potential adjustments in quota shares, and the reasonableness of the results generated by the formula have at times been questioned, as discussed above. In addition, other considerations outside of the formula, such as members’ ability or willingness to contribute to the Fund’s liquidity and protection of the poorest, have also been taken into account. Finally, the practice of adjusting shares through quota increases means that adjustments in actual quota shares tend to be gradual, even if all of the increase is distributed based on CQS, because the new quota shares would reflect a weighted sum of existing AQS and CQS. A measure used in the past of the extent to which the discrepancy between actual and calculated quota shares has been reduced in previous general reviews highlights this point (Table 16). The adjustment coefficient was typically fairly low prior to the 9th Review and by far the largest in the 14th Review. Also, the convergence index, which measures the extent of aggregate convergence between AQS and CQS, reached its highest level following the 14th Review.

¹⁹ See the [Communiqué of the Thirty-Third Meeting of the IMFC, April 16, 2016](#), Washington, D.C. and the [Communiqué of G20 Finance Ministers and Central Bank Governors Meeting](#), July 24, 2016, Chengdu, China.

²⁰ The sole exception is the Sixth Review, which did not include any equiproportional or selective element. Instead, the quota shares of the major oil exporters were doubled with the stipulation that the collective share of the developing countries would not fall. Different increases applied to different groups of countries and individual countries’ increases within groups varied considerably.

29. **This section presents some initial simulations to illustrate the potential impact of possible reforms of the quota formula on the adjustment of members' actual quota shares.**

The simulations are intended purely as an aid to future discussions, given that Directors have not yet explored any of the possible parameters for the 15th Review, including the size of any quota increase and the extent of any desired overall shifts in shares. Also, as discussed above, considerable differences of views remain over the quota formula. Against this background, the main purpose of the simulations is to show how possible changes in the quota formula might feed through into shifts in actual quota shares in the context of the 15th Review. Given the very early stage of discussions, the simulations are purely illustrative and do not in any way represent staff proposals.

Table 16. Adjustment Coefficients and Convergence Indices

	Fifth Review	Sixth Review	Seventh Review	Eighth Review	Ninth Review	Eleventh Review	2008 Reform	Fourteenth Review	Current
Adjustment Coefficient 1/	11.5	5.4	1.7	19.3	28.0	14.4	25.6	55.7	--
Convergence Index 2/	89.2	85.3	83.2	85.6	89.9	85.6	89.3	94.7	89.0

Source: *External Review of Quota Formulas—Annex* (EBAP/00/52, Sup 1, 5/1/00); and staff estimates

1/ The adjustment coefficient measures the extent to which deviations between actual and calculated quotas are reduced by quota share adjustments. The specific formula for the adjustment coefficient is:

$$\frac{\{\text{SORTISUM}((\text{CQS}-\text{PQS})^2)\}-\{\text{SORTISUM}((\text{CQS}-\text{PropQS})^2)\}}{\{\text{SQRT}[\text{SUM}((\text{CQS}-\text{PQS})^2)]\}} \times 100$$

Where SQRT is the square root, CQS is the calculated quota share, PQS is the present quota share and PropQS is the proposed quota share.

2/ The convergence index is defined as 100 percent minus the total of positive deviations between agreed and calculated quota shares.

30. **For simplicity, simulations are only presented for a sub-set of the alternative formulas discussed above.** The alternative formulas (see also Table 17) build on the earlier illustrative calculations for alternative quota formulas. In addition to the current formula, which is included for reference, two simulations illustrate the impact of dropping variability, one by splitting its weight two-thirds/one-third between GDP/openness, and one by assigning all of its weight to GDP. Two further simulations explore the impact of a different openness measure, covering again two options for allocating the weight of the dropped variability variable. Clearly, many other variants can be considered. Specifically, the following alternative formulas are used:

- The second formula in Set 1 (Formula 1.2): current GDP and openness, dropping variability, 2/3 weight of variability to GDP, and 1/3 weight of variability to openness;
- The third formula in Set 1 (Formula 1.3): current GDP and openness, dropping variability, all weight to GDP;
- The third formula in Set 3.2 (Formula 3.2.c): current GDP, openness share capped at 1.8, dropping variability, 2/3 weight of variability to GDP, and 1/3 weight of variability to openness; and

- The third formula in Set 3.3 (Formula 3.3.c): current GDP, openness share capped at 1.8, dropping variability, all weight to GDP.

Table 17. Weights of Variables for the Formulas Used for Illustrative Quota Allocations 1/

	GDP	Openness	Variability	Reserves	Compression Factor
Current Formula	0.50	0.30	0.15	0.05	0.95
Formula 1.2	0.60	0.35	0	0.05	0.95
Formula 1.3	0.65	0.30	0	0.05	0.95
Formula 3.2.c	0.60	0.35	0	0.05	0.95
Formula 3.3.c	0.65	0.30	0	0.05	0.95

Source: Finance Department

1/ Formulas 1.2 and 1.3 use the current openness measure. Openness share is capped at 1.8 for Formulas 3.2.c and 3.3.c.

31. **Again for purely illustrative purposes, two alternatives are considered for the size of an overall quota increase.** These include an increase of 70 percent, or about SDR 330 billion, which would broadly maintain the Fund’s current overall lending capacity after the bilateral borrowing agreements expire. Simulations are also shown for a larger increase of 115 percent, which would broadly restore the ratio of quotas relative to an average of relevant economic indicators to levels observed in previous general reviews of quotas.²¹ Such an increase would also be required to maintain the Fund’s lending capacity in the absence of both bilateral borrowing and the NAB. While Directors held an initial discussion of the adequacy of Fund resources in March, the main focus of the staff paper was on the Fund’s potential resource needs over the medium term, and it did not consider the appropriate mix of those resources between quotas and borrowed resources. Staff plan to revisit the issue of the mix of Fund resources in future papers.

32. **The simulations consider quota increases that are distributed predominantly as selective increases, i.e., allocated to all members in accordance with their calculated quota shares.** Clearly many different variants can be considered, including whether there should be any equiproportional increase, which would slow down the pace of adjustment in shares, and the possible role for ad hoc increases. All the simulations include ad hoc increases to protect the quota shares of the poorest members (see below). In addition, the last set of simulations illustrates the potential effect of allocating 5 percent of the overall increase as ad hoc increases to a sub-set of members who have made voluntary financial contributions to the Fund.²² As discussed in previous papers, there are many possible ways of measuring such contributions and further work on this topic will be needed, including on how to define “very significant” contributions. Annex IV updates

²¹ A quota increase of 112 percent of post-14th Review quotas would be needed to restore the ratio of quotas relative to an average of relevant economic indicators (external financing needs, GDP, current payments, capital inflows of EMDCs, external liabilities) to the average level of the last four reviews with quota increases (i.e., the 8th, 9th, 11th, and 14th Reviews), except for external liabilities where the benchmark is the average value during 1995-2000.

²² As noted above, in concluding the 2013 QFR, Executive Directors agreed to consider whether and how to take into account very significant voluntary financial contributions through ad hoc adjustments as part of the 15th Review.

(continued)

staff's earlier work on possible composite measures of voluntary financial contributions, and one such measure has been used in the final simulation set.²³

33. **As noted, the quota shares of the poorest members are protected against declines below their 14th Review shares in all scenarios.** This is in line with the commitment in Board of Governors Resolution 66-2, which was reiterated in the outcome of the quota formula review, and the latest guidance by the IMFC.²⁴ For illustrative purposes, the definition of the poorest members is the same as that used in the 14th Review, namely those countries that are PRGT-eligible and meet the IDA per capita GNI cut-off or twice that amount for small states. Based on the 2016 IDA cut-off—a per capita GNI of up to US\$1,215 (previously US\$1,135)—this approach generates a list of 36 members eligible for protection (compared with 52 members at the time of the 14th Review). The cost of protection under this approach is less than 1 percent of the overall increase under all scenarios. Other options for defining the poorest members in the context of the 15th Review could also be considered, and Annex III describes three additional country groupings, including all PRGT-eligible countries, the United Nations list of least developed countries and the WEO's low income developing countries.

34. **Summary results for 35 members with the largest quotas and for major country groups are presented below** (Tables 19-23). Table 18 provides an overview of the results for major country groups. The following points may be noted:

- All the simulations show a further shift towards EMDCs from their 14th Review quota share.
- In the simulations with only selective increases (plus protection for the poorest):
 - Based on the current formula, the aggregate share of EMDCs increases by 3.0 percentage points with a 70 percent overall quota increase and by 3.9 percentage points with a 115 percent overall quota increase.
 - The shifts towards EMDCs are larger in all the alternative formulas considered here. The largest shifts—3.5 percentage points for a 70 percent quota increase and 4.5 percentage points for a 115 percent increase—are indicated by Formula 3.3.c (which drops variability, shifts all the weight to GDP, and introduces a cap on openness).
- The inclusion of ad hoc increases to recognize voluntary financial contributions reduces the size of this shift. In the example illustrated here, the reduction is about 0.6 percentage points for a 70 percent increase and 0.7 percentage points for a 115 percent increase.
- Within the group of advanced countries, using the current formula modestly increases the

²³ Voluntary financial contributions are calculated here as each member's share across four types of contributions, with weights of 0.3 for the NAB, 0.3 for the 2012 Bilateral Borrowing Agreements, 0.2 for PRGT loans and subsidies combined, and 0.2 for Capacity Development (see VFCS II in Annex IV).

²⁴ "We are committed to protecting the voice and representation of the poorest members." See the [Communiqué of the Thirty-Third Meeting of the IMFC](#), April 16, 2016, Washington, D.C.

share of other advanced countries as a group, while the major advanced countries would lose share. Both groups lose share under the alternative formulas considered here, though the declines are dampened somewhat under the simulations that include recognition of voluntary financial contributions. Clearly, the results for individual countries may differ significantly.

Table 18. Illustration of Allocation Mechanisms: Summary

	Actual Quota Shares (in percent)			
	Major Advanced	Other Advanced	EMDCs	LICs
14th Review Quota Share	43.36	14.28	42.36	3.31
Based on the Current Formula				
1. 70 percent overall Increase	40.27	14.37	45.36	3.12
2. 115 percent overall Increase	39.34	14.40	46.26	3.06
Based on Formula 1.2				
1. 70 percent overall Increase	40.50	13.97	45.54	3.12
2. 115 percent overall Increase	39.64	13.88	46.49	3.07
Based on Formula 1.3				
1. 70 percent overall Increase	40.56	13.76	45.67	3.13
2. 115 percent overall Increase	39.73	13.61	46.66	3.08
Based on Formula 3.2.c				
1. 70 percent overall Increase	41.04	13.22	45.74	3.14
2. 115 percent overall Increase	40.35	12.90	46.75	3.09
Based on Formula 3.3.c				
1. 70 percent overall Increase	41.03	13.12	45.85	3.14
2. 115 percent overall Increase	40.33	12.77	46.89	3.10
Based on Formula 1.3, includes 5 percent ad hoc distribution based on voluntary financial contributions				
1. 70 percent overall Increase	40.99	13.91	45.11	3.11
2. 115 percent overall Increase	40.28	13.80	45.93	3.05

Source: Finance Department

Table 19. Illustration of Allocation Mechanisms: Current Formula 1/
(In percent)

	Overall Increase		70%	115%
	14th General Review	CQS based on the Current Formula	A1	A2
Advanced economies	57.6	50.7	54.6	53.7
Major advanced economies	43.4	36.1	40.3	39.3
United States	17.4	14.3	16.1	15.7
Japan	6.5	5.3	6.0	5.8
Germany	5.6	5.1	5.4	5.3
France	4.2	3.3	3.8	3.7
United Kingdom	4.2	3.6	3.9	3.9
Italy	3.2	2.5	2.9	2.8
Canada	2.3	2.1	2.2	2.2
Other advanced economies	14.3	14.6	14.4	14.4
Spain	2.0	1.8	1.9	1.9
Netherlands	1.8	2.1	1.9	2.0
Australia	1.4	1.5	1.4	1.4
Belgium	1.3	1.1	1.3	1.2
Switzerland	1.2	1.6	1.4	1.4
Sweden	0.9	0.9	0.9	0.9
Austria	0.8	0.7	0.8	0.8
Norway	0.8	0.8	0.8	0.8
Ireland	0.7	0.7	0.7	0.7
Denmark	0.7	0.6	0.7	0.6
Emerging Market and Developing Countries 2/	42.4	49.3	45.4	46.3
Africa	4.4	3.7	4.4	4.3
South Africa	0.6	0.5	0.6	0.6
Nigeria	0.5	0.7	0.6	0.6
Asia	16.0	23.4	19.0	19.9
China 3/	6.4	12.0	8.7	9.4
India	2.7	3.0	2.9	2.9
Korea, Republic of	1.8	2.0	1.9	1.9
Indonesia	1.0	1.3	1.1	1.1
Singapore	0.8	1.3	1.0	1.1
Malaysia	0.8	0.8	0.8	0.8
Thailand	0.7	1.0	0.8	0.8
Middle East, Malta and Turkey	6.7	7.2	6.9	7.0
Saudi Arabia	2.1	1.7	1.9	1.9
Turkey	1.0	1.1	1.0	1.0
Iran, I.R. of	0.7	0.8	0.8	0.8
Western Hemisphere	7.9	7.4	7.7	7.6
Brazil	2.3	2.3	2.3	2.3
Mexico	1.9	1.7	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.7	0.6
Argentina	0.7	0.6	0.7	0.6
Transition economies	7.2	7.6	7.4	7.4
Russia	2.7	2.7	2.7	2.7
Poland	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0
Memorandum items:				
EU28	30.4	27.5	29.1	28.7
LICs 4/	3.3	2.2	3.1	3.1
Updated 14th Review Poorest 5/	1.7	1.2	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 plus Zimbabwe.

5/ Updated 14th Review list to include countries that are PRGT-eligible and meet the current IDA per capita GNI cut-off of US\$1,215 (previously US\$1,135) and twice that amount for small states, as defined by the IMF. Currently includes 36 member countries.

Table 20. Illustration of Allocation Mechanisms: Formula 1.2 1/
(In percent)

	Overall Increase		70%	115%
	14th General Review	CQS based Formula 1.2	A1	A2
Advanced economies	57.6	50.3	54.5	53.5
Major advanced economies	43.4	36.7	40.5	39.6
United States	17.4	14.9	16.3	16.0
Japan	6.5	5.3	6.0	5.8
Germany	5.6	5.0	5.3	5.3
France	4.2	3.3	3.8	3.7
United Kingdom	4.2	3.4	3.9	3.8
Italy	3.2	2.5	2.9	2.8
Canada	2.3	2.1	2.2	2.2
Other advanced economies	14.3	13.6	14.0	13.9
Spain	2.0	1.8	1.9	1.9
Netherlands	1.8	1.9	1.9	1.9
Australia	1.4	1.5	1.4	1.5
Belgium	1.3	1.1	1.2	1.2
Switzerland	1.2	1.5	1.3	1.3
Sweden	0.9	0.8	0.9	0.9
Austria	0.8	0.7	0.8	0.8
Norway	0.8	0.7	0.7	0.7
Ireland	0.7	0.6	0.7	0.7
Denmark	0.7	0.6	0.7	0.6
Emerging Market and Developing Countries 2/	42.4	49.7	45.5	46.5
Africa	4.4	3.6	4.4	4.3
South Africa	0.6	0.6	0.6	0.6
Nigeria	0.5	0.7	0.6	0.6
Asia	16.0	24.6	19.5	20.5
China 3/	6.4	12.7	8.9	9.7
India	2.7	3.3	3.0	3.0
Korea, Republic of	1.8	2.1	1.9	2.0
Indonesia	1.0	1.4	1.1	1.2
Singapore	0.8	1.2	1.0	1.0
Malaysia	0.8	0.8	0.8	0.8
Thailand	0.7	0.9	0.8	0.8
Middle East, Malta and Turkey	6.7	6.8	6.7	6.7
Saudi Arabia	2.1	1.5	1.8	1.8
Turkey	1.0	1.1	1.0	1.1
Iran, I.R. of	0.7	0.8	0.8	0.8
Western Hemisphere	7.9	7.6	7.8	7.7
Brazil	2.3	2.4	2.4	2.4
Mexico	1.9	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.6	0.6
Argentina	0.7	0.7	0.7	0.7
Transition economies	7.2	7.2	7.2	7.2
Russia	2.7	2.7	2.7	2.7
Poland	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0
Memorandum items:				
EU28	30.4	26.5	28.7	28.2
LICs 4/	3.3	2.1	3.1	3.1
Updated 14th Review Poorest 5/	1.7	1.1	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 plus Zimbabwe.

5/ Updated 14th Review list to include countries that are PRGT-eligible and meet the current IDA per capita GNI cut-off of US\$1,215 (previously US\$1,135) and twice that amount for small states, as defined by the IMF. Currently includes 36 member countries.

Table 21. Illustration of Allocation Mechanisms: Formula 1.3 1/
(In percent)

	Overall Increase		70%		115%	
	14th General Review	CQS based Formula 1.3	A1	A2		
Advanced economies	57.6	50.0	54.3	53.3		
Major advanced economies	43.4	36.8	40.6	39.7		
United States	17.4	15.2	16.5	16.2		
Japan	6.5	5.4	6.0	5.9		
Germany	5.6	4.9	5.3	5.2		
France	4.2	3.3	3.8	3.7		
United Kingdom	4.2	3.4	3.9	3.7		
Italy	3.2	2.5	2.9	2.8		
Canada	2.3	2.1	2.2	2.2		
Other advanced economies	14.3	13.1	13.8	13.6		
Spain	2.0	1.8	1.9	1.9		
Netherlands	1.8	1.8	1.8	1.8		
Australia	1.4	1.5	1.4	1.5		
Belgium	1.3	1.0	1.2	1.2		
Switzerland	1.2	1.4	1.3	1.3		
Sweden	0.9	0.8	0.9	0.9		
Austria	0.8	0.7	0.8	0.7		
Norway	0.8	0.7	0.7	0.7		
Ireland	0.7	0.6	0.7	0.7		
Denmark	0.7	0.5	0.6	0.6		
Emerging Market and Developing Countries 2/	42.4	50.0	45.7	46.7		
Africa	4.4	3.6	4.4	4.3		
South Africa	0.6	0.6	0.6	0.6		
Nigeria	0.5	0.7	0.6	0.6		
Asia	16.0	24.8	19.6	20.6		
China 3/	6.4	12.9	9.0	9.8		
India	2.7	3.4	3.0	3.1		
Korea, Republic of	1.8	2.1	1.9	1.9		
Indonesia	1.0	1.4	1.2	1.2		
Singapore	0.8	1.1	0.9	1.0		
Malaysia	0.8	0.7	0.8	0.7		
Thailand	0.7	0.9	0.8	0.8		
Middle East, Malta and Turkey	6.7	6.8	6.7	6.8		
Saudi Arabia	2.1	1.5	1.8	1.8		
Turkey	1.0	1.1	1.0	1.1		
Iran, I.R. of	0.7	0.8	0.8	0.8		
Western Hemisphere	7.9	7.7	7.8	7.8		
Brazil	2.3	2.5	2.4	2.4		
Mexico	1.9	1.8	1.8	1.8		
Venezuela, R.B. de	0.8	0.5	0.7	0.6		
Argentina	0.7	0.7	0.7	0.7		
Transition economies	7.2	7.1	7.2	7.2		
Russia	2.7	2.8	2.7	2.7		
Poland	0.9	0.9	0.9	0.9		
Total	100.0	100.0	100.0	100.0		
Memorandum items:						
EU28	30.4	25.7	28.4	27.8		
LICs 4/	3.3	2.1	3.1	3.1		
Updated 14th Review Poorest 5/	1.7	1.1	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 plus Zimbabwe.

5/ Updated 14th Review list to include countries that are PRGT-eligible and meet the current IDA per capita GNI cut-off of US\$1,215 (previously US\$1,135) and twice that amount for small states, as defined by the IMF. Currently includes 36 member countries.

Table 22. Illustration of Allocation Mechanisms: Formula 3.2.c 1/
(In percent)

	Overall Increase		70%	115%
	14th General Review	CQS based Formula 3.2.c	A1	A2
Advanced economies	57.6	49.8	54.3	53.2
Major advanced economies	43.4	38.0	41.0	40.3
United States	17.4	15.4	16.5	16.3
Japan	6.5	5.5	6.1	5.9
Germany	5.6	5.2	5.4	5.4
France	4.2	3.5	3.9	3.8
United Kingdom	4.2	3.6	3.9	3.9
Italy	3.2	2.6	2.9	2.9
Canada	2.3	2.2	2.3	2.3
Other advanced economies	14.3	11.8	13.2	12.9
Spain	2.0	1.8	1.9	1.9
Netherlands	1.8	1.3	1.6	1.5
Australia	1.4	1.6	1.5	1.5
Belgium	1.3	0.8	1.1	1.0
Switzerland	1.2	1.2	1.2	1.2
Sweden	0.9	0.8	0.9	0.9
Austria	0.8	0.7	0.8	0.7
Norway	0.8	0.7	0.8	0.7
Ireland	0.7	0.4	0.6	0.5
Denmark	0.7	0.5	0.6	0.6
Emerging Market and Developing Countries 2/	42.4	50.2	45.7	46.8
Africa	4.4	3.7	4.4	4.4
South Africa	0.6	0.6	0.6	0.6
Nigeria	0.5	0.7	0.6	0.6
Asia	16.0	24.7	19.5	20.6
China 3/	6.4	13.0	9.1	9.9
India	2.7	3.4	3.0	3.1
Korea, Republic of	1.8	2.2	2.0	2.0
Indonesia	1.0	1.4	1.2	1.2
Singapore	0.8	0.7	0.8	0.7
Malaysia	0.8	0.8	0.8	0.8
Thailand	0.7	1.0	0.8	0.8
Middle East, Malta and Turkey	6.7	6.8	6.8	6.8
Saudi Arabia	2.1	1.6	1.9	1.8
Turkey	1.0	1.2	1.1	1.1
Iran, I.R. of	0.7	0.8	0.8	0.8
Western Hemisphere	7.9	7.8	7.8	7.8
Brazil	2.3	2.5	2.4	2.4
Mexico	1.9	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.7	0.6
Argentina	0.7	0.7	0.7	0.7
Transition economies	7.2	7.2	7.2	7.2
Russia	2.7	2.8	2.7	2.8
Poland	0.9	1.0	0.9	0.9
Total	100.0	100.0	100.0	100.0
Memorandum items:				
EU28	30.4	25.3	28.2	27.5
LICs 4/	3.3	2.2	3.1	3.1
Updated 14th Review Poorest 5/	1.7	1.1	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 plus Zimbabwe.

5/ Updated 14th Review list to include countries that are PRGT-eligible and meet the current IDA per capita GNI cut-off of US\$1,215 (previously US\$1,135) and twice that amount for small states, as defined by the IMF. Currently includes 36 member countries.

Table 23. Illustration of Allocation Mechanisms: Formula 3.3.c 1/
(In percent)

	Overall Increase		70%		115%	
	14th General Review	CQS based Formula 3.3.c	A1	A2		
Advanced economies	57.6	49.5	54.2	53.1		
Major advanced economies	43.4	38.0	41.0	40.3		
United States	17.4	15.6	16.6	16.4		
Japan	6.5	5.6	6.1	6.0		
Germany	5.6	5.1	5.4	5.3		
France	4.2	3.4	3.9	3.8		
United Kingdom	4.2	3.5	3.9	3.8		
Italy	3.2	2.6	2.9	2.8		
Canada	2.3	2.2	2.3	2.2		
Other advanced economies	14.3	11.6	13.1	12.8		
Spain	2.0	1.8	1.9	1.9		
Netherlands	1.8	1.2	1.6	1.5		
Australia	1.4	1.6	1.5	1.5		
Belgium	1.3	0.8	1.1	1.0		
Switzerland	1.2	1.1	1.2	1.2		
Sweden	0.9	0.8	0.9	0.9		
Austria	0.8	0.6	0.7	0.7		
Norway	0.8	0.7	0.7	0.7		
Ireland	0.7	0.4	0.6	0.5		
Denmark	0.7	0.5	0.6	0.6		
Emerging Market and Developing Countries 2/	42.4	50.5	45.8	46.9		
Africa	4.4	3.7	4.4	4.4		
South Africa	0.6	0.6	0.6	0.6		
Nigeria	0.5	0.7	0.6	0.6		
Asia	16.0	24.9	19.6	20.7		
China 3/	6.4	13.2	9.1	10.0		
India	2.7	3.5	3.0	3.1		
Korea, Republic of	1.8	2.2	1.9	2.0		
Indonesia	1.0	1.5	1.2	1.2		
Singapore	0.8	0.6	0.7	0.7		
Malaysia	0.8	0.7	0.8	0.8		
Thailand	0.7	1.0	0.8	0.8		
Middle East, Malta and Turkey	6.7	6.9	6.8	6.8		
Saudi Arabia	2.1	1.5	1.9	1.8		
Turkey	1.0	1.2	1.1	1.1		
Iran, I.R. of	0.7	0.9	0.8	0.8		
Western Hemisphere	7.9	7.9	7.9	7.9		
Brazil	2.3	2.6	2.4	2.4		
Mexico	1.9	1.8	1.8	1.8		
Venezuela, R.B. de	0.8	0.5	0.7	0.6		
Argentina	0.7	0.7	0.7	0.7		
Transition economies	7.2	7.2	7.2	7.2		
Russia	2.7	2.8	2.8	2.8		
Poland	0.9	0.9	0.9	0.9		
Total	100.0	100.0	100.0	100.0		
Memorandum items:						
EU28	30.4	24.7	28.0	27.2		
LICs 4/	3.3	2.2	3.1	3.1		
Updated 14th Review Poorest 5/	1.7	1.1	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 plus Zimbabwe.

5/ Updated 14th Review list to include countries that are PRGT-eligible and meet the current IDA per capita GNI cut-off of US\$1,215 (previously US\$1,135) and twice that amount for small states, as defined by the IMF. Currently includes 36 member countries.

Table 24. Illustration of Allocation Mechanisms: Formula 1.3, Includes 5 percent Ad Hoc Distribution based on Voluntary Financial Contributions 1/2/
(In percent)

	Overall Increase	70%	115%	
Ad Hoc Increase based on Financial Contribution		5%	5%	
	14th General Review	CQS based on Formula 1.3	A1	A2
Advanced economies	57.6	50.0	54.9	54.1
Major advanced economies	43.4	36.8	41.0	40.3
United States	17.4	15.2	16.3	15.9
Japan	6.5	5.4	6.4	6.3
Germany	5.6	4.9	5.3	5.3
France	4.2	3.3	3.9	3.8
United Kingdom	4.2	3.4	3.9	3.8
Italy	3.2	2.5	2.9	2.9
Canada	2.3	2.1	2.3	2.2
Other advanced economies	14.3	13.1	13.9	13.8
Spain	2.0	1.8	1.9	1.9
Netherlands	1.8	1.8	1.9	1.9
Australia	1.4	1.5	1.4	1.5
Belgium	1.3	1.0	1.2	1.2
Switzerland	1.2	1.4	1.3	1.3
Sweden	0.9	0.8	0.9	0.9
Austria	0.8	0.7	0.8	0.7
Norway	0.8	0.7	0.8	0.8
Ireland	0.7	0.6	0.7	0.6
Denmark	0.7	0.5	0.7	0.6
Emerging Market and Developing Countries 3/	42.4	50.0	45.1	45.9
Africa	4.4	3.6	4.3	4.3
South Africa	0.6	0.6	0.6	0.6
Nigeria	0.5	0.7	0.6	0.6
Asia	16.0	24.8	19.3	20.3
China 4/	6.4	12.9	8.9	9.6
India	2.7	3.4	3.0	3.1
Korea, Republic of	1.8	2.1	1.9	1.9
Indonesia	1.0	1.4	1.1	1.2
Singapore	0.8	1.1	0.9	1.0
Malaysia	0.8	0.7	0.7	0.7
Thailand	0.7	0.9	0.8	0.8
Middle East, Malta and Turkey	6.7	6.8	6.7	6.7
Saudi Arabia	2.1	1.5	1.9	1.8
Turkey	1.0	1.1	1.0	1.0
Iran, I.R. of	0.7	0.8	0.8	0.8
Western Hemisphere	7.9	7.7	7.7	7.6
Brazil	2.3	2.5	2.4	2.4
Mexico	1.9	1.8	1.8	1.8
Venezuela, R.B. de	0.8	0.5	0.6	0.6
Argentina	0.7	0.7	0.7	0.7
Transition economies	7.2	7.1	7.1	7.0
Russia	2.7	2.8	2.7	2.7
Poland	0.9	0.9	0.9	0.9
Total	100.0	100.0	100.0	100.0
Memorandum items:				
EU28	30.4	25.7	28.7	28.2
LICs 5/	3.3	2.1	3.1	3.1
Updated 14th Review Poorest 6/	1.7	1.1	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 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 calculated aggregate measure with weights of 0.3 for NAB, 0.3 for 2012 Bilateral Borrowing Agreements, 0.2 for PRGT loans and subsidies combined, and 0.2 for Capacity Development. See Annex IV 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 plus Zimbabwe.

6/ Updated 14th Review list to include countries that are PRGT-eligible and meet the current IDA per capita GNI cut-off of US\$1,215 (previously US\$1,135) and twice that amount for small states, as defined by the IMF. Currently includes 36 member countries.

UPDATING COUNTRY GROUPINGS

35. **The current country groupings used for quota work date back to the 11th Review.** The current groupings were derived from earlier WEO classifications at the time and have not been updated since 1998, while there have been several modifications to country classifications used in the WEO. The main reason for maintaining the current country groupings was to facilitate comparisons in the cumulative impact of the quota reform process initiated in 2006—including the cumulative shifts of quota share from AEs to EMDCs—in a way that is not affected by country reclassifications. The Board considered updating the country classifications used for quotas early in the 14th Review but there was general support at that time to maintain the current classifications to ensure continuity with previous quota papers.²⁵

36. **The country classifications used for quotas have become increasingly outdated.** Since the 11th Review, several modifications have been introduced to the WEO country groups, but these have not been reflected in the country groups used for quota purposes. In particular, Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia are all now classified as advanced economies in the current WEO but are still included in EMDCs for the purposes of quota work (see Annex II).

37. **With a new round of quota discussions now getting underway, staff believes this would be an appropriate time to align the country groups with the current WEO classification.** Aligning the country groups used for quota purposes with the WEO classification would make them consistent with those used by the Fund for most other purposes, and provide a more meaningful basis for country comparisons and organizing the data. It would also signal recognition that country groupings are dynamic and that countries can be expected to “graduate” over time from the EMDC group to the AE group. While this would make it harder to measure cumulative changes in the shares of major country groups over time, the dynamic nature of country groupings also means that their importance as an indicator of governance reform should not be overstated.

38. **The immediate impact of such a realignment is discussed in Annex II.** Aligning the country groups used for quota purposes with the current WEO classification would move 3.7 percentage points of AQS from EMDCs to AEs, and the corresponding shift of CQS from EMDCs to AEs would be 4.5 percentage points (see Table 25). Staff proposes that starting from the next quota paper, the country groups should be aligned with the current WEO groupings. The WEO country classifications are likely to continue to evolve over time and, in the event of future changes, staff would come back to the Board with a proposal on whether and when to further update the country groups used for quota purposes.

²⁵ This issue was also discussed in the context of QFR; see Appendix I in [Quota Formula Review-Initial Considerations Supplement](#) (2/10/12).

Table 25. Changes in CQS resulting from WEO Classification

Country Groups according to WEO 3/	14th Review Quota Shares 1/			Calculated Quota Shares (2014) 2/		
	Current Classification	WEO Classification	Change resulting from WEO classification	Current Classification	WEO Classification	Change resulting from WEO classification
Advanced economies 4/	57.6	61.3	3.7	50.7	55.2	4.5
Major advanced economies	43.4	43.4	0.0	36.1	36.1	0.0
Other advanced economies	14.3	17.9	3.7	14.6	19.1	4.5
Emerging Market and Developing Countries 5/	42.4	38.7	-3.7	49.3	44.8	-4.5
<i>Sub-Saharan Africa</i> (Africa)	4.4	3.6	-0.9	3.7	2.8	-0.9
<i>Developing Asia</i> (Asia)	16.0	13.0	-3.1	23.4	19.8	-3.7
<i>Middle East, North Africa, Afghanistan and Pakistan</i> (Middle East, Malta & Turkey)	6.7	7.1	0.4	7.2	7.4	0.2
<i>Latin America and the Caribbean</i> (Western Hemisphere)	7.9	7.9		7.4	7.4	
<i>CIS and Emerging and Developing Europe</i> (Transition economies) 6/	7.2	7.2	0.0	7.6	7.5	-0.1
Total	100.0	100.0		100.0	100.0	

Source: Finance Department

1/ Includes South Sudan and Nauru which became members on April 18, 2012 and April 12, 2016, respectively; reflects their quota increases proposed in their respective membership resolutions after the effectiveness of the 14th Review.

2/ Based on the following formula: $CQS = (0.50 \cdot GDP + 0.30 \cdot Openness + 0.15 \cdot Variability + 0.05 \cdot Reserves) \cdot K$. GDP blend using 60 percent market and 40 percent PPP exchange rates. K is a compression factor of 0.95. The 2016 data update covers data through end-2014.

3/ World Economic Outlook April 2016.

4/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

5/ The group name under WEO classification is in bold letter. The group name under current classification is in parentheses.

6/ Comprises the WEO categories "Commonwealth of Independent States" and "Emerging and Developing Europe." This grouping is broadly comparable to the Transition Economies. Includes Turkey.

CONCLUDING REMARKS

39. **This paper seeks to provide a basis for an informal discussion of several issues relating to the 15th Review.** It presents the results of updating the quota database by one year to 2014, and also updates the illustrative simulations presented in previous quota data update papers of possible reforms of the quota formula based on the outcome of the QFR in 2013. In addition, it provides some initial simulations to illustrate how possible changes in the quota formula might feed through into shifts in actual quota shares in the context of the 15th Review. The paper also proposes to update the current country groupings used in quota work, and presents an updated list of the poorest members based on the definition used in the 14th Review along with available alternative options (see Annex III) as well as updated calculations of members' voluntary financial contributions (Annex IV).

40. **In order to help guide future staff work, Directors' views on the following issues would be helpful:**

- What do Directors see as the relative merits of alternative possible reforms of the quota formula in light of the latest data update, and have views changed since the previous data update?

- Should future staff work on the formula continue to be guided by the outcome of the QFR, or are there areas where Directors believe a different approach could help achieve a broad consensus?
- More generally, do Directors have any suggestions on how best to bridge the remaining differences of view and reach agreement on a new quota formula?
- What considerations should guide future work on realigning shares under the 15th Review? Would it be helpful to seek agreement on a target for the overall shift in shares and if so, do Directors have any preliminary thoughts on how to define such a target?
- Do Directors agree that the country groups used for quota purposes should be aligned with the current WEO country groups, and that country groupings could be reviewed again in the future when WEO groupings are changed?
- What are Directors' views on the alternative measures of voluntary financial contributions presented in this paper, and how to define the poorest members for the purpose of protecting their voice and representation?

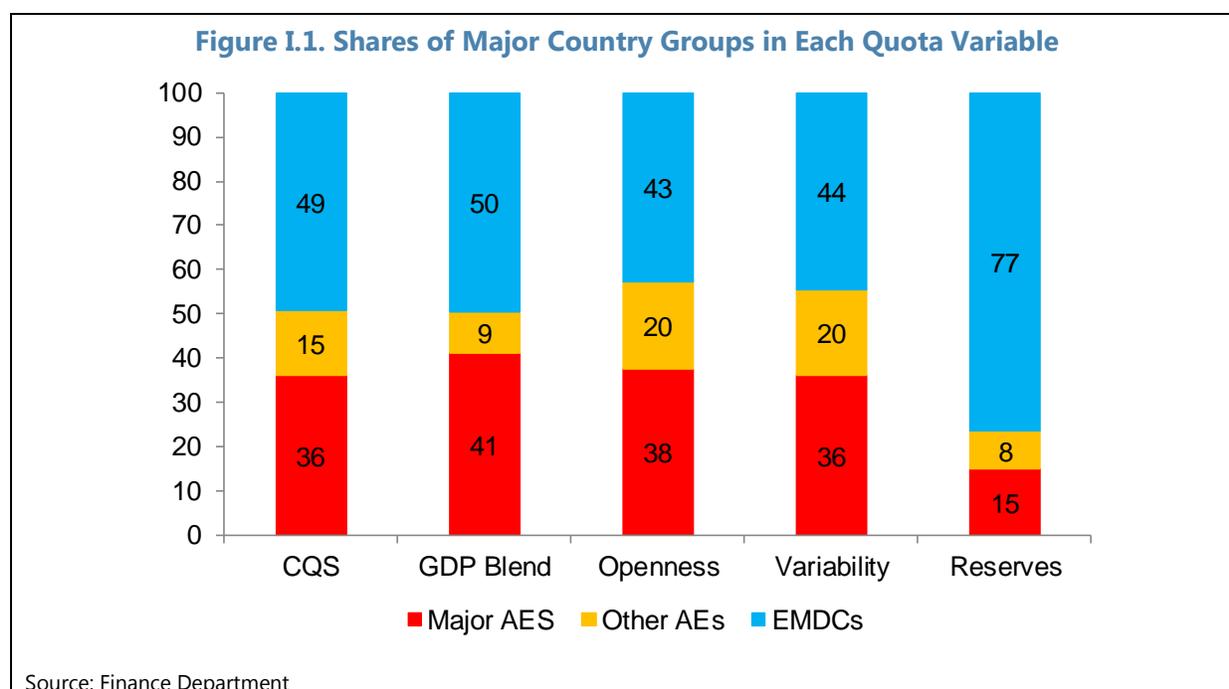
Annex I. Quota Formula Variables

This annex presents an overview of the variables in the current quota formula, including the rationale for their inclusion, and updates previous analysis of their distributional effects using the latest data.

A. Overview of Quota Variables

1. **The quota formula seeks to capture the multiple roles of quotas.** These include their key role in determining the Fund’s financial resources, their role in decisions on members’ access to Fund resources, and their close link with members’ voting rights. Thus, the formula has typically sought to capture members’ relative positions in the world economy, their financial strength and ability to contribute usable resources, as well as their potential need to borrow from the Fund. Some individual quota variables are intended to capture more than one aspect.
2. **The current quota formula was agreed in 2008 and includes four variables and a compression factor.** The four variables are GDP (measured as a blend of market and PPP GDP), openness, variability, and reserves. All of them are expressed in shares of global totals, with the variables assigned weights totaling to 1.0. The formula also includes a compression factor that reduces dispersion in calculated quota shares.¹ Figure I.1 presents the calculated quota shares of major country groups and their shares in each variable in the quota formula, based on the latest data update. A few points are worth noting: (i) the aggregate shares of AEs and EMDCs in the GDP blend variable are broadly equal; (ii) AEs have a larger share in openness and variability, but this reflects the relatively large share of the group of other advanced economies (more than double their share in GDP); (iii) EMDCs have a much larger share in the reserves variable; and (iv) the aggregate group shares in openness and variability are virtually identical.

¹ The current formula is $CQS = (0.50 \cdot GDP + 0.30 \cdot Openness + 0.15 \cdot Variability + 0.05 \cdot Reserves)^K$. GDP is blended using 60 percent market and 40 percent PPP exchange rates; K is a compression factor of 0.95. For more details, see Box 2 in the main text of the paper.



3. **The quota variables are all partly related to economic size, and therefore are quite highly correlated in most cases.** The correlations between variables are shown in Table I.1. At the aggregate level, the correlations between GDP, openness, and variability are relatively high, while shares in reserves are less correlated with the other variables. This is particularly the case for AEs, where there is a very low correlation between reserves and the other variables. Excluding the ten largest members (by GDP blend share), the correlations between the GDP blend variable and the other variables in the quota formula decline significantly, while the correlation between openness and variability remains very high.

Table I.1. Correlation between Quota Variables

Advanced Economies				
	Blend GDP	Openness	Variability	Reserves
Blend GDP	1.00			
Openness	0.92	1.00		
Variability	0.96	0.98	1.00	
Reserves	0.27	0.24	0.32	1.00
EMDCs				
	Blend GDP	Openness	Variability	Reserves
Blend GDP	1.00			
Openness	0.96	1.00		
Variability	0.94	0.97	1.00	
Reserves	0.95	0.94	0.93	1.00
All Countries 1/				
	Blend GDP	Openness	Variability	Reserves
Blend GDP	1.00			
Openness	0.93	1.00		
Variability	0.94	0.98	1.00	
Reserves	0.62	0.57	0.55	1.00
All Members excluding Top 10 2/				
	Blend GDP	Openness	Variability	Reserves
Blend GDP	1.00			
Openness	0.78	1.00		
Variability	0.76	0.92	1.00	
Reserves	0.55	0.55	0.66	1.00

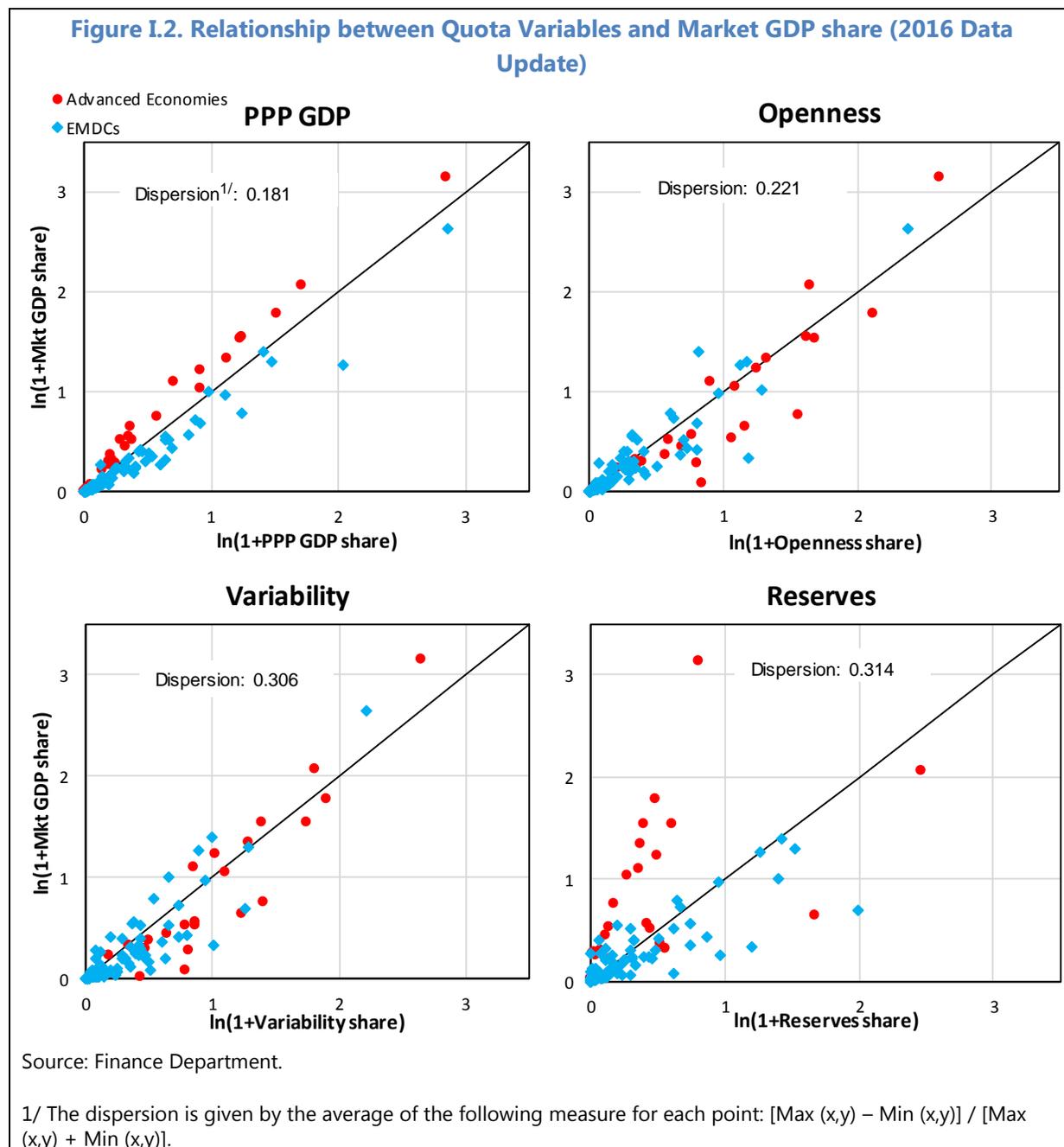
Source: Finance Department.

1/ Given the heterogeneity of data and differing distributions, it is possible for correlations for the full sample to fall outside of the range for the two sub samples.

2/ Large members in terms of share of GDP blend (60 percent market GDP and 40 percent PPP GDP).

4. **These effects can be observed also in the relationship between market GDP shares and shares of the other quota formula variables.** Figure I.2 plots this relationship using the latest data through 2014. As can be seen from the upper left-hand side (LHS) panel, the relationship between members' shares in the GDP PPP variable and market GDP is reasonably close for most members. However, there is a clear distinction between advanced economies and EMDCs: all AEs have higher shares in market GDP than in PPP GDP, while the converse is true for almost all EMDCs. The dispersion is wider for openness and variability (upper RHS and lower LHS), where a number of smaller AEs have significantly higher shares than in market GDP (and conversely, some larger AEs have larger shares in GDP). A marked differentiation among country groups is evident for reserves,

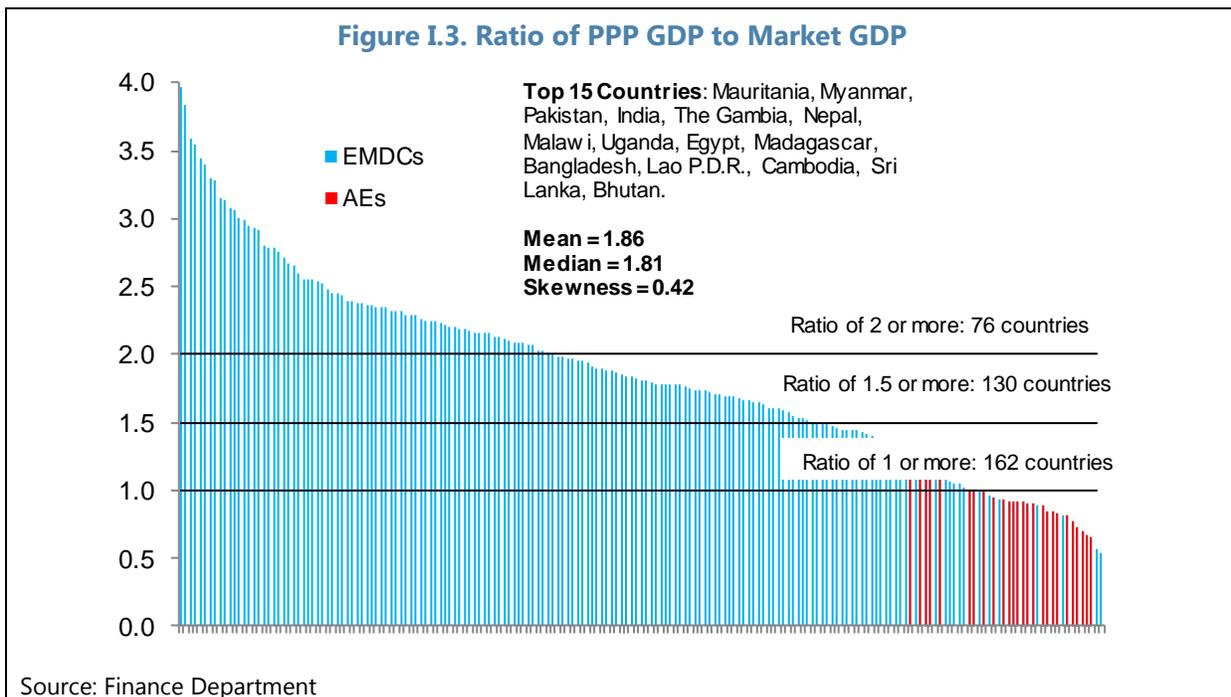
with several large EMDCs having higher shares in reserves in relation to market GDP, while the reverse is true for most AEs (lower RHS).



B. Variables in the Quota Formula

GDP Blend

5. **GDP provides a comprehensive measure of economic size and is relevant for the multiple roles of quotas.** Market GDP is viewed as the single most relevant indicator of a member’s ability to contribute to the Fund’s finances, though it is not the only such measure. It is also relevant to a member’s potential demand for Fund resources, and capacity to repay. PPP GDP has been viewed as a relevant measure of a members’ weight in the global economy from the perspective of the Fund’s non-financial activities. The GDP blend variable also captures dynamism, as reflected in the rising share of EMDCs in the global total for this variable in light of their more rapid economic growth. As Figure I.3 shows, the distribution of members’ ratios of nominal PPP GDP relative to market GDP has a relatively even downward slope with most EMDCs having a ratio above 1 and most AEs having a ratio below 1. The statistical measure of skewness is very low.



6. **Relative to market GDP, most EMDCs and LICs benefit from PPP GDP, and the relative benefits are larger for countries with lower per capita incomes.** All but one country in the bottom quartile of the income distribution benefits from a higher weight on PPP GDP relative to market GDP, and they also record the largest relative gains (see Table I.2). This pattern is to be expected, as PPP GDP seeks to capture the output of economies, and the market price of many non-tradable goods tends to be lower in countries with lower per capita incomes, reflecting in part low wage costs in services that are not tradable. However, there are no significant differences in terms of

countries that benefit from PPP GDP when countries are grouped by size of their market GDP, except the top quartile.

Table I.2. Countries that Benefit from PPP GDP

	By Size (Market GDP) 1/				By Income (GDP per Capita) 1/				By Grouping			Total
	Top Quartile	3rd	2nd	Bottom Quartile	Top Quartile	3rd	2nd	Bottom Quartile	AE (26)	EMDC excl. LIC (93)	LIC (70)	
	<i>PPP / Market GDP Shares</i>											
Number of countries who benefit (ratio >1)	24	42	43	36	16	44	38	47	0	85	60	145
Median 2/	1.4	1.6	1.6	1.4	1.2	1.3	1.7	1.8		1.4	1.7	1.6
Average 2/	1.6	1.6	1.7	1.6	1.2	1.4	1.7	1.9		1.5	1.8	1.6

Source: Finance Department

1/ Each quartile includes 47 countries, except the bottom quartile that includes 48 countries.

2/ Average or median ratio among the countries which have ratios greater than 1.

7. **Current PPP GDP data are based on the 2011 International Comparison Program (ICP) global estimates of purchasing power parity rates.** The 2011 PPP rates are based on broader country coverage than the 2005 estimates that had been used until then, as well as further methodological improvements. Incorporation of these estimates led to a markedly higher aggregate share of EMDCs in global PPP GDP (58.1 percent vs. 52.8 percent on the basis of the 2005 ICP data). As a consequence, the CQS of EMDCs increased by 1.0 percentage point.²

8. **The current GDP blend variable represented a difficult compromise.** PPP GDP was introduced into the formula for the first time as part of the 2008 reform. It was given a 40 percent weight in the GDP blend, taking account of the central role of quotas in the Fund's financial operations for which market GDP is the most relevant indicator. It was also agreed to include PPP GDP (and compression) in the formula for a period of 20 years, after which the scope for retaining them should be reviewed. Since the 2008 reforms, Directors have continued to express diverging views on the relative importance of market vs. PPP GDP in the formula. Some have favored a higher or lower weight of PPP GDP in the blend variable, while others have argued that, given the difficult compromise reached in 2008, the weights in the blend should not be reopened.

Openness

9. **Openness has been viewed as an indicator of a member's integration and stake in the global economy.** The basic premise underlying its inclusion in the quota formula is that countries that are relatively more open to trade and financial flows may have a greater stake in promoting global economic and financial stability. Openness may also have a bearing on a member's ability and willingness to make financial contributions to the Fund as well as on its potential need for Fund resources. However, some question the validity of these arguments, noting that larger economies

² See [Quota Formula-Data Update and Further Considerations](#) (7/2/14).

(continued)

tend to be less open but still have major stakes in the global economy. They also argue that the current gross measure leads to double counting of cross border flows which can exaggerate the importance of openness,³ and that intra-currency union flows should be excluded. Previous staff work has also highlighted the very large boost that the current openness variable provides for some countries, resulting in CQS that appear large in relation to other measures of their relative economic positions.

10. **Key characteristics of the openness variable noted in previous papers include the following** (Table I.3):

- **Openness benefits many smaller economies.** More than two-thirds of the membership (131 countries based on the latest data update) gain from the inclusion of openness in the formula. The number of countries that benefit from openness is inversely related to size.
- **The gains from openness are positively related to income.** Over 90 percent of countries (43 out of 47) in the top quartile in terms of per capita income gain from openness, compared with less than half (22 countries) in the bottom quartile. Among the gainers, high income countries also gain more on average than low income countries.
- **These results are also reflected in the distribution of openness shares across major country groupings** (Figure I.1 in the previous section). The main gainers from openness at the aggregate level are small advanced countries, whose openness share on average is roughly double their share in the GDP blend. Smaller EMDCs in aggregate gain modestly from openness (though some individual countries have large gains), while other country groups, including LICs as a whole, do not gain from openness.

Table I.3. Countries that Benefit from Openness

	By Size (Market GDP) 1/				By Income (GDP per Capita) 1/				By Grouping			Total
	Top Quartile	3rd	2nd	Bottom Quartile	Top Quartile	3rd	2nd	Bottom Quartile	AE (26)	EMDC excl. LIC (93)	LIC (70)	
	<i>Openness / GDP Blend Shares</i>											
Number of countries who benefit (ratio >1)	26	29	36	40	43	31	35	22	23	64	44	131
Median 2/	1.5	1.5	1.4	1.8	1.9	1.5	1.5	1.3	1.6	1.5	1.5	1.5
Average 2/	2.0	2.2	1.7	2.1	2.7	1.7	1.8	1.5	2.9	1.8	1.8	2.0

Source: Finance Department

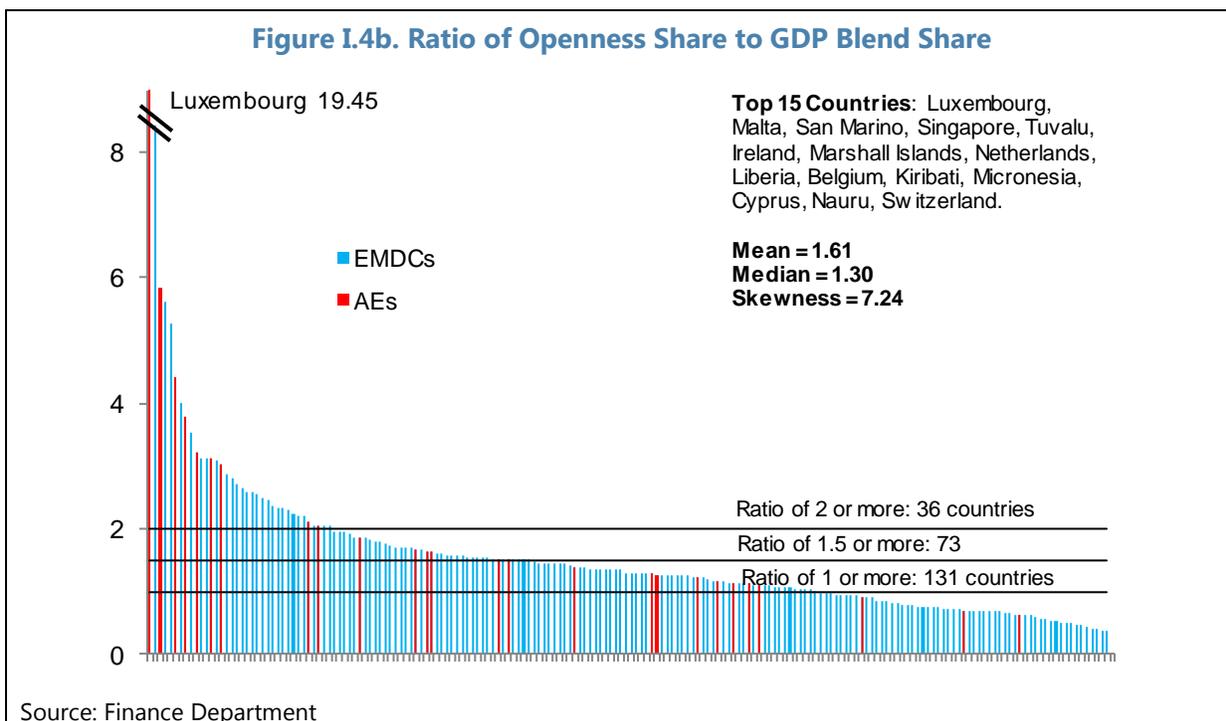
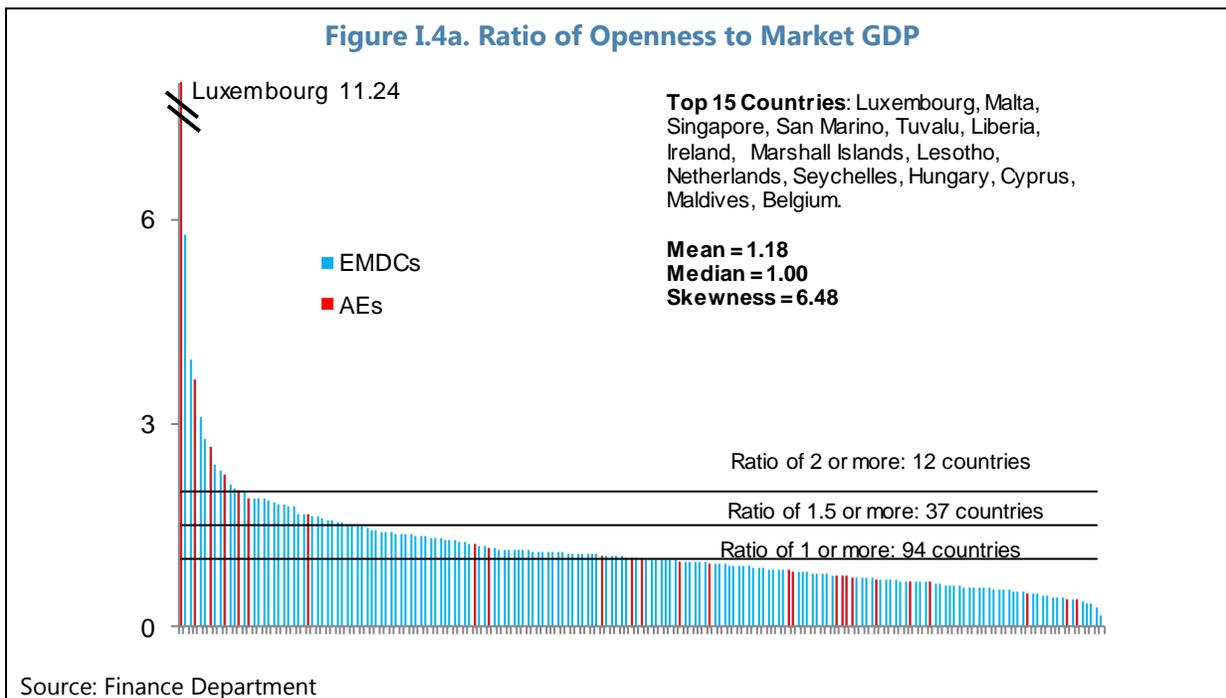
1/ Each quartile includes 47 countries, except the bottom quartile that includes 48 countries.
 2/ Average or median ratio among the countries which have ratios greater than 1.

11. **The distribution of members' shares in openness relative to GDP is highly skewed.**

While the median ratio of openness to market GDP for the membership as a whole is 1, 12 countries have ratios greater than 2 (with the highest being above 10) and 37 have ratios above 1.5 (Figure

³ Available trade data on a value added basis are not sufficiently comprehensive to be used in quota calculations (see, for example, [Quota Formula—Data Update and Further Considerations \(6/6/13\)](#)).

I.4a). In terms of openness relative to GDP blend shares, roughly 60 percent of members have shares of less than 1.5. However, 36 members have a share of openness that is more than double their share in the GDP blend variable, and one member has ratio of openness to GDP blend share above 19 (Figure I.4b). The combined effect of openness and variability, which have similar highly skewed distributions (see below) and a collective weight in the formula of 45 percent, generates very large CQS for some countries relative to their GDP shares.



12. **Previous staff work has explored options to address these issues.** One approach is to maintain the current definition of openness but to modestly lower its weight in the formula. If combined with dropping variability, such an approach would significantly moderate the overall impact on CQS of the highly skewed distribution of openness (and variability). Staff has also explored the possibility of introducing a cap on the overall boost that individual countries can receive from openness. Two types of caps have been considered: one based on capping the absolute level of openness in relation to market GDP (absolute cap) and the second based on capping the ratio of openness to GDP blend shares (shares cap).⁴ Both approaches require an element of judgment in determining where to set the cap, and also add some complexity to the calculations. Table I.4 updates earlier calculations to illustrate the impact of capping openness. The thresholds are the same as in the June 2015 paper.⁵ Further work to refine the thresholds would be needed if there is interest in pursuing such an approach.

13. **Table I.4 also updates previous estimates of the impact of excluding intra-currency union trade.**⁶ Staff has explored this idea on several occasions in the past, and noted conceptual and practical issues with such an approach.⁷ At a conceptual level, the euro area crisis highlighted that balance of payments crises can also occur at the intra-currency union level and the importance of focusing on each member's external position. Also, potential distortions associated with cross-border flows arise whenever there is vertical integration in the production process and are not limited to currency unions, though the existence of a currency union may contribute to the growth of such flows. At a practical level, available data only cover merchandise trade and are not available on a comprehensive basis for intra-currency union services flows.⁸ Also, except for the euro area, only very few member countries of currency unions report data on intra-currency union trade, and such an approach is not able to address the issue of relatively large openness shares of financial centers.

⁴ Staff also explored the approach of compressing the openness ratio. See [Quota Formula – Data Update and Further Considerations – Annexes](#) (6/6/13), Annex III for a detailed discussion.

⁵ In the June 2013 paper, the 1.7 cap on the ratio of the openness share to GDP blend share was equivalent to the 75th percentile of the distribution of this ratio. In the July 2014 paper and June 2015 paper, the 1.8 cap was applied to maintaining the cap at a level broadly corresponding to the top quartile of the distribution based on the updated data. Based on the current data, 1.8 would be close to the 76th percentile (1.7 would be equal to the 74th percentile).

⁶ Staff has presented the results of excluding intra-currency union trade as part of the annual update of additional quota variables.

⁷ For example, see [Quotas—Updated Calculations and Quota Variables](#) (8/28/09), [Quota Formula Review—Additional Considerations—Annexes](#) (9/5/12), and [Quota Formula Review—Data Update and Issues](#) (8/17/11).

⁸ The data on intra-currency union trade in goods is obtained from the IMF's Direction of Trade database. These data include all trade in goods, including goods for processing gross flows, while the data underlying openness is on a BPM6 basis, including in trade flows only the processing fees (services). For the euro area countries as well as the other currency unions, no adjustment of goods for processing was made due to data constraints. Data on intra-currency union services flows are not fully available and thus no adjustments are made for these flows.

Table I.4. Openness Shares Under Caps and Excluding Intra Currency Union Trade 1/
 (In percent)

	Openness Shares	Capped Openness (Shares)			Capped Openness (Absolute)			Openness Excluding Intra Currency Union	GDP blend Shares
		2.0	1.8	1.5	95th 2/	85th 2/	75th 2/		
Advanced economies	57.29	56.12	55.94	55.36	57.32	56.93	56.91	53.86	50.46
Major advanced economies	37.66	41.03	41.57	42.13	38.61	39.50	40.40	36.48	41.01
United States	12.56	13.68	13.93	14.91	12.87	13.17	13.47	13.67	19.82
Japan	4.16	4.53	4.61	4.94	4.26	4.36	4.46	4.53	5.93
Germany	7.27	7.92	7.86	6.55	7.45	7.62	7.79	5.66	4.37
France	4.07	4.43	4.51	4.80	4.17	4.27	4.36	3.06	3.20
United Kingdom	4.37	4.77	4.85	4.72	4.48	4.59	4.69	4.76	3.15
Italy	2.75	2.99	3.05	3.26	2.82	2.88	2.95	2.09	2.51
Canada	2.49	2.71	2.76	2.95	2.55	2.61	2.67	2.71	2.04
Other advanced economies	19.63	15.09	14.37	13.22	18.71	17.43	16.51	17.38	9.45
Spain	1.99	2.17	2.21	2.36	2.04	2.09	2.13	1.50	1.70
Netherlands	3.75	1.98	1.78	1.49	3.74	2.82	2.41	2.85	0.99
Australia	1.46	1.59	1.61	1.73	1.49	1.53	1.56	1.58	1.61
Belgium	1.91	1.19	1.07	0.90	1.96	1.71	1.46	1.00	0.60
Switzerland	2.19	1.45	1.30	1.09	2.25	2.26	1.93	2.39	0.72
Sweden	1.15	1.24	1.11	0.93	1.18	1.21	1.23	1.25	0.62
Austria	1.01	0.98	0.88	0.73	1.03	1.05	1.08	0.66	0.49
Norway	0.82	0.89	0.91	0.81	0.84	0.86	0.88	0.89	0.54
Ireland	1.23	0.55	0.50	0.41	1.04	0.78	0.67	1.20	0.28
Denmark	0.76	0.73	0.65	0.55	0.78	0.80	0.82	0.83	0.36
Luxembourg	1.31	0.13	0.12	0.10	0.26	0.20	0.17	1.36	0.07
Emerging Market and Developing Countries 3/	42.71	43.88	44.06	44.64	42.68	43.07	43.09	46.14	49.54
Africa	2.80	3.00	3.03	3.14	2.86	2.90	2.94	3.03	3.26
South Africa	0.50	0.55	0.56	0.60	0.51	0.53	0.54	0.55	0.55
Nigeria	0.43	0.46	0.47	0.51	0.44	0.45	0.46	0.46	0.79
Asia	21.23	21.45	21.63	21.85	20.73	20.85	20.97	23.11	25.77
China 4/	9.76	10.64	10.83	11.59	10.01	10.24	10.47	10.63	14.42
India	2.09	2.28	2.32	2.49	2.15	2.20	2.25	2.28	4.19
Korea	2.64	2.88	2.93	2.56	2.71	2.77	2.83	2.88	1.71
Indonesia	0.84	0.91	0.93	0.99	0.86	0.88	0.90	0.91	1.70
Singapore	2.29	0.81	0.73	0.61	1.31	0.99	0.84	2.49	0.41
Malaysia	0.97	1.05	0.97	0.81	0.99	1.01	0.92	1.05	0.54
Thailand	1.08	1.18	1.20	1.09	1.11	1.14	1.15	1.18	0.73
Middle East, Malta and Turkey	5.98	6.12	6.07	5.98	6.06	6.16	6.06	6.50	6.06
Saudi Arabia	1.23	1.34	1.36	1.46	1.26	1.29	1.32	1.34	1.19
Turkey	0.89	0.97	0.98	1.05	0.91	0.93	0.95	0.96	1.20
Iran, Islamic Republic of	0.38	0.41	0.42	0.45	0.38	0.39	0.40	0.41	0.96
Western Hemisphere	5.39	5.86	5.94	6.30	5.53	5.65	5.77	5.87	8.17
Brazil	1.27	1.39	1.41	1.51	1.31	1.34	1.37	1.39	3.06
Mexico	1.62	1.77	1.80	1.92	1.66	1.70	1.74	1.76	1.80
Venezuela, República Bolivariana de	0.32	0.35	0.36	0.38	0.33	0.34	0.35	0.35	0.50
Argentina	0.38	0.41	0.42	0.45	0.39	0.40	0.40	0.41	0.79
Transition economies	7.33	7.45	7.38	7.38	7.51	7.50	7.35	7.64	6.28
Russian Federation	2.25	2.45	2.49	2.67	2.30	2.36	2.41	2.45	2.95
Poland	1.02	1.12	1.14	1.15	1.05	1.08	1.10	1.12	0.77
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Memorandum items:									
EU28	36.63	33.94	33.33	31.16	36.08	35.04	34.58	31.02	21.31
LICs 5/	1.52	1.63	1.65	1.70	1.56	1.58	1.60	1.64	1.90

Source: Finance Department

1/ Shading indicates countries with capped openness shares or excluding intra currency union trade lower than their original openness shares.

 2/ These correspond to the thresholds on absolute ratios of openness to market GDP of 2.19, 1.62, and 1.35 for the 95th, 85th and 75th percentile caps, respectively.

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 plus Zimbabwe.

Variability

14. **Variability is intended to capture members' vulnerability to balance of payments shocks and potential need for Fund resources.** However, extensive staff work has failed to find any significant link between the current variable and actual or potential external vulnerabilities, or to identify a superior measure. The current measure is also relatively complex, and adds significant instability to the CQS for a wide range of members. As discussed below, it also generates very similar results to openness for many countries.

15. **Key characteristics of variability identified previously include** (Table I.5):

- **Variability tends to benefit smaller economies.** About 87 percent of the countries (42 out of 48) in the bottom quartile have variability/GDP blend shares larger than 1.
- **Countries with lower per capita incomes benefit less compared to middle and high income economies.** Only 60 percent of the countries (29 out of 48) in the bottom quartile in terms of per capita income gain from variability, compared with more than 70 percent of the countries in the other quartiles.
- **As with openness, these results are also reflected in the distribution of variability shares across major country groupings.** The main gainers from variability at the aggregate level are small advanced countries, whose share on average is roughly double their share in the GDP blend (Figure I.1). Over 70 percent of LICs and other EMDCs also gain from variability, though on average to a much lesser extent than other advanced countries.

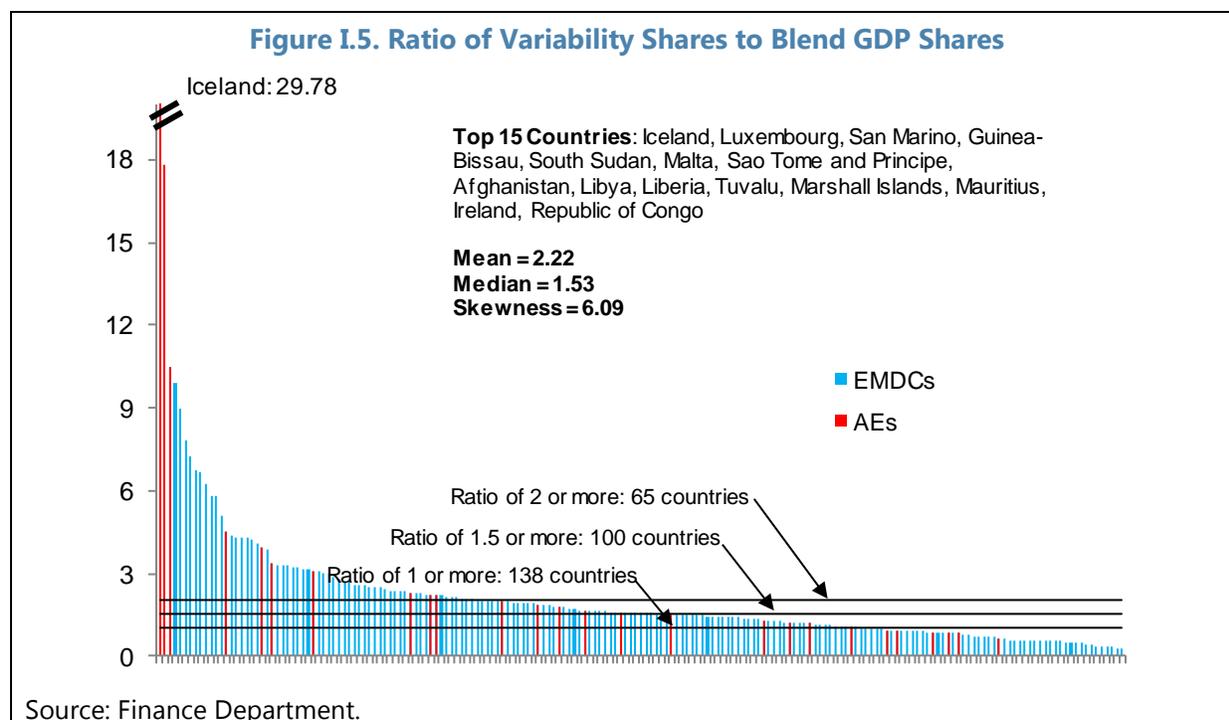
Table I.5. Countries that Benefit from Variability

	By Size (Market GDP) 1/				By Income (GDP per Capita) 1/				By Grouping			Total
	Top Quartile	3rd	2nd	Bottom Quartile	Top Quartile	3rd	2nd	Bottom Quartile	EMDC AE (26)	excl. LIC (70)	LIC (93)	
	<i>Variability / GDP Blend Shares</i>											
Number of countries who benefit (ratio >1)	25	31	40	42	40	34	35	29	20	67	51	138
Median 2/	1.7	1.9	1.9	2.1	2.2	1.7	1.6	2.0	2.1	1.8	2.0	2.0
Average 2/	2.0	2.8	3.2	2.9	3.7	2.2	2.2	2.9	4.7	2.2	2.8	2.8

Source: Finance Department

1/ Each quartile includes 47 countries, except the bottom quartile that includes 48 countries.
2/ Average or median ratio among the countries which have ratios greater than 1.

16. **The distribution of members' shares in variability relative to GDP is also highly skewed.** While the median ratio of variability to GDP blend for the membership as a whole is 1.53, 65 countries have ratios greater than 2 (with the highest being close to 30) and 100 have ratios above 1.5 (Figure I.4).

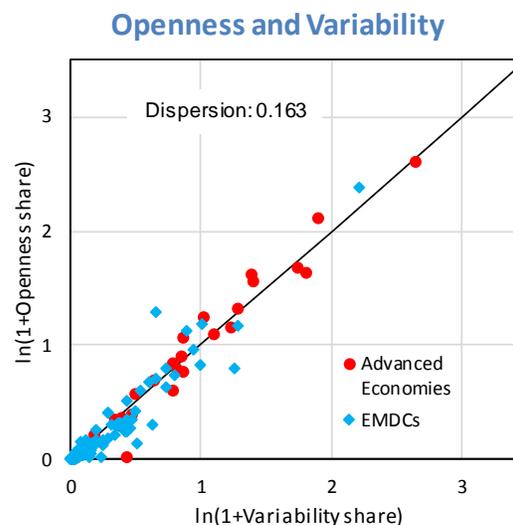


Links between Openness and Variability

17. **While the specific measures differ, both openness and variability produce similar results in terms of shares.** Both variables use

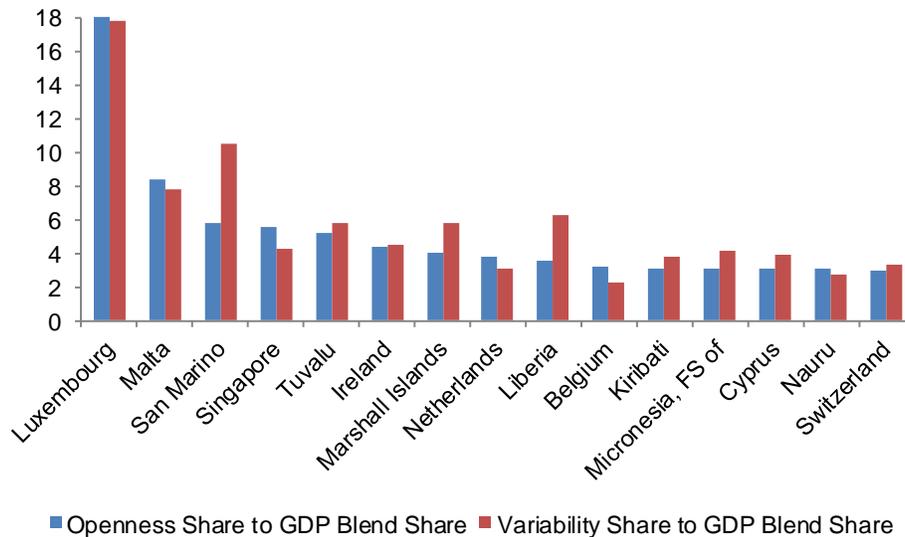
nominal data on the scale of external flows. In particular, openness measures the size of current payments and current receipts, whereas variability seeks to capture volatility in the level of current receipts and net capital flows. For many countries, these yield very similar results. This can be seen from several angles:

- The overall dispersion in the distribution of openness and variability shares is low, e.g., below that between market and PPP GDP and between other quota variables and market GDP (see Text Table and Figure I.2 in Section I).
- The distribution of openness and variability shares among the main country groups is almost identical (Figure I.1 in Section I).
- As noted, once the largest economies are excluded (their weight tends to dominate the comparisons of size-related variables), the correlation between openness and variability is 0.92, well above that between other variables (Table I.1).



- The distribution of gainers from variability is broadly similar to that for openness, in terms of both size and income levels, as well as across the major country groupings as shown above (Tables I.3 and I.5). Small advanced countries gain the most from variability, benefiting almost as much as from openness. Smaller EMDCs and LICs also gain from variability relative to GDP, but the gains are more modest.
- At the individual country level, the countries that gain the most from openness also have relatively high shares in variability (Figure I.6).
- A hypothetical calculation showing the impact of dropping variability and moving all its weight to openness shows that the distribution of CQS would be broadly unchanged across the largest individual countries and major country groups (Table I.6).

Figure I.6. Top 15 Countries—Ratio of Openness Share to GDP Blend Share and Variability Share to GDP Blend Share 1/



Source: Finance Department

1/ Countries ranked by openness share to GDP blend share.

**Table I.6 Illustrative Calculations - Current GDP and Openness Measures, Dropping Variability, and All Weight to Openness
(In percent)**

	14th General Review Quotas	Current Formula	All to openness
Advanced economies	57.6	50.7	51.0
Major advanced economies	43.4	36.1	36.4
United States	17.4	14.3	14.3
Japan	6.5	5.3	5.2
Germany	5.6	5.1	5.3
France	4.2	3.3	3.4
United Kingdom	4.2	3.6	3.5
Italy	3.2	2.5	2.5
Canada	2.3	2.1	2.2
Other advanced economies	14.3	14.6	14.6
Spain	2.0	1.8	1.8
Netherlands	1.8	2.1	2.2
Australia	1.4	1.5	1.5
Belgium	1.3	1.1	1.2
Switzerland	1.2	1.6	1.6
Sweden	0.9	0.9	0.9
Austria	0.8	0.7	0.7
Norway	0.8	0.8	0.7
Ireland	0.7	0.7	0.7
Denmark	0.7	0.6	0.6
Emerging Market and Developing Countries 1/	42.4	49.3	49.0
Africa	4.4	3.7	3.5
South Africa	0.6	0.5	0.6
Nigeria	0.5	0.7	0.6
Asia	16.0	23.4	24.1
China 2/	6.4	12.0	12.2
India	2.7	3.0	3.1
Korea, Republic of	1.8	2.0	2.2
Indonesia	1.0	1.3	1.3
Singapore	0.8	1.3	1.4
Malaysia	0.8	0.8	0.8
Thailand	0.7	1.0	1.0
Middle East, Malta and Turkey	6.7	7.2	6.8
Saudi Arabia	2.1	1.7	1.5
Turkey	1.0	1.1	1.1
Iran, I.R. of	0.7	0.8	0.8
Western Hemisphere	7.9	7.4	7.3
Brazil	2.3	2.3	2.3
Mexico	1.9	1.7	1.7
Venezuela, R.B. de	0.8	0.5	0.4
Argentina	0.7	0.6	0.6
Transition economies	7.2	7.6	7.3
Russia	2.7	2.7	2.7
Poland	0.9	0.9	0.9
Total	100.0	100.0	100.0
Memorandum items:			
EU28	30.4	27.5	27.9
LICs 3/	3.3	2.2	2.1
Coefficients for quota variables			
GDP		0.30	0.30
PPP GDP		0.20	0.20
Openness		0.30	0.45
Variability		0.15	0.00
Reserves		0.05	0.05
Compression factor		0.95	0.95

Source: Finance Department.

1/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

2/ Including China, P.R., Hong Kong SAR and Macao SAR.

3/ Currently PRGT-eligible countries plus Zimbabwe.

Reserves

18. **Reserves provide an indicator of a member’s financial strength and ability to contribute to the Fund’s finances.** Reserves have long been included in the quota formula, though different views have been expressed on their continued relevance and some concerns been raised about potential distortions associated with excess reserve accumulations. Previous work by the staff revisited the case of including reserves in the formula and found no clear relationship between reserves and members’ contributions to resource mobilization.⁹ However, some countries with relatively large reserve holdings have made important contributions.

19. **Some key characteristics of the impact of reserves include** (Table I.7):

- **Reserves benefit many smaller economies.** About two thirds of the countries (30 out of 48) in the bottom quartile have reserves/GDP blend shares larger than 1, compared with about one-third for the other 3 quartiles.
- **Low per capita income countries benefit less compared to middle and high income economies.** Only one-fourth of the counties (12 out of 48) in the bottom quartile in terms of per capita income gain from reserves, compared with more than 50 percent of the countries (28 and 26 out of 47) in the second and third quartiles.
- **In relative terms, EMDCs (excluding LICs) are the main gainers from reserves,** with over half of the countries in this group benefiting. Roughly 45 percent of LICs benefit from reserves, and only a quarter of AEs.

Table I.7. Countries that Benefit from Reserves

	By Size (Market GDP) 1/				By Income (GDP per Capita) 1/				By Grouping			Total
	Top Quartile	3rd	2nd	Bottom Quartile	Top Quartile	3rd	2nd	Bottom Quartile	AE (26)	EMDC excl. LIC (93)	LIC (70)	
<i>Reserves / GDP Blend Shares</i>												
Number of countries who benefit (ratio >1)	18	21	19	30	22	28	26	12	7	50	31	88
Median 2/	1.8	1.7	1.4	1.5	1.7	1.6	1.7	1.4	1.9	1.6	1.4	1.5
Average 2/	2.4	2.2	1.6	2.8	2.1	2.1	3.1	1.4	2.4	2.1	2.7	2.3

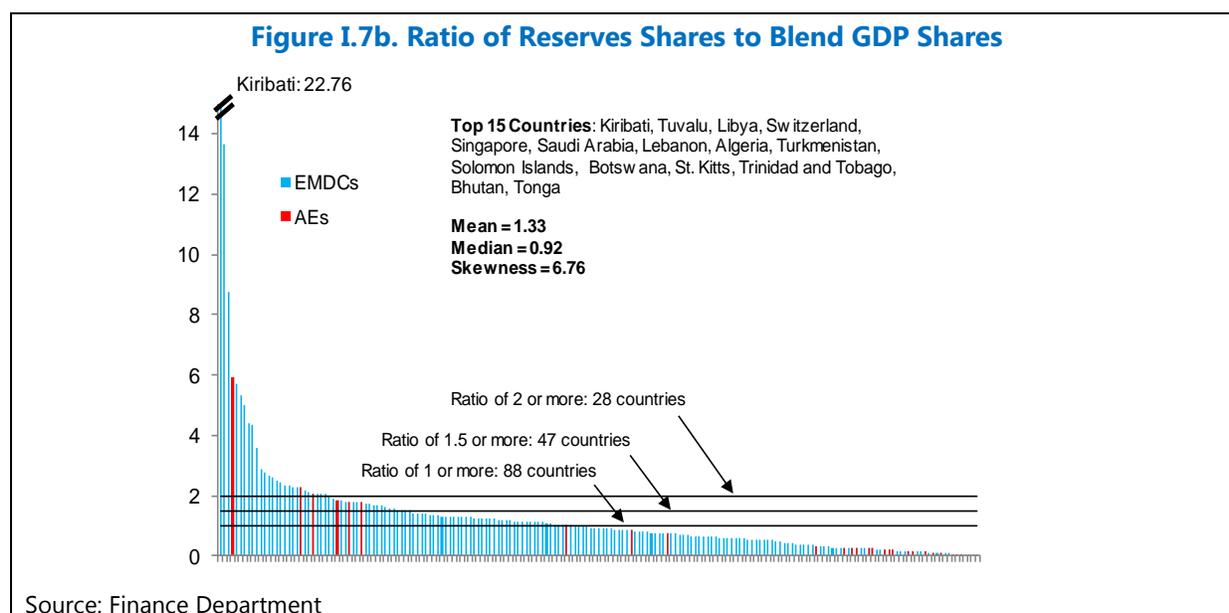
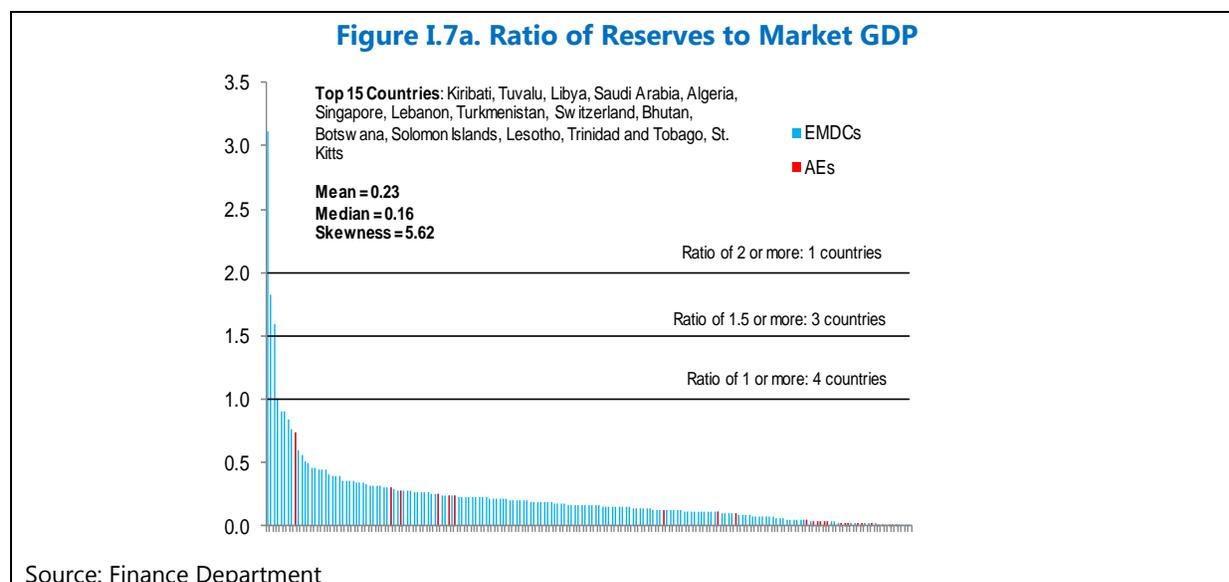
Source: Finance Department

1/ Each quartile includes 47 countries, except the bottom quartile that includes 48 countries.

2/ Average or median ratio among the countries which have ratios greater than 1.

20. **The distribution of members’ reserves relative to GDP is quite skewed** (Figures I.7a and I.7b). In terms of shares, 28 members have reserves shares more than double their shares in GDP blend (the highest ratio is more than 20 times) and 47 members have ratios greater than 1.5. Based on the latest data, 88 members benefit to some extent from the inclusion of reserves in the formula.

⁹ See [Quota Formula Review-Initial Considerations](#) (2/10/12).



Compression factor

21. **Compression was introduced in the 2008 reform to moderate the role of size in the formula.** In particular, the current formula includes a compression factor of 0.95 applied to a linear combination of the four variables. Compression maintains the original ranking of the countries and does not require any additional data. Recognizing that the inclusion of this element was one of the most difficult aspects of the 2008 reform, the Executive Board decided to include it in the formula for a period of 20 years, at which point the scope for retaining it would be reviewed.

22. **The characteristics of the compression factor are summarized below** (Table I.8):

- **The compression factor benefits all but the largest economies.** The CQS of the largest 9 members (based on the uncompressed formula and using the current quota database) are reduced, while the CQS of all other members are increased. In total, compared with a linear combination of the quota formula variables, the compression factor shifts almost 3 percentage points of shares from the 9 largest members to the remaining 180 members.
- **As a group, low income countries benefit more compared to high income economies.** While the compression factor is unrelated to income, almost all countries in the bottom two quartiles in terms of per capita income gain from its inclusion.
- **In terms of major country groups, EMDCs and LICs are the main gainers.** All LICs benefit as do all but three EMDCs. Twenty out of 26 AEs also benefit from compression.

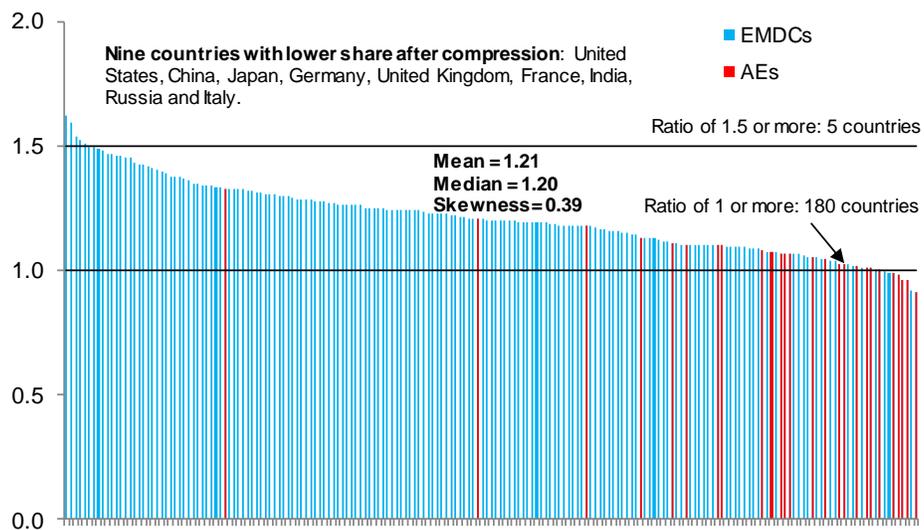
Table I.8. Countries that Benefit from Compression

	By Size (Market GDP) 1/				By Income (GDP per Capita) 1/				By Grouping			Total
	Top Quartile	3rd	2nd	Bottom Quartile	Top Quartile	3rd	2nd	Bottom Quartile	AE (26)	EMDC excl. LIC (93)	LIC (70)	
	<i>CQS / uncompressed linear combination</i>											
Number of countries who benefit (ratio >1)	38	47	47	48	41	45	47	47	20	90	70	180
Median 2/	1.1	1.2	1.2	1.4	1.1	1.2	1.3	1.3	1.1	1.2	1.3	1.2
Average 2/	1.1	1.2	1.2	1.4	1.1	1.2	1.3	1.3	1.1	1.2	1.3	1.2

Source: Finance Department
 1/ Each quartile includes 47 countries, except the bottom quartile that includes 48 countries.
 2/ Average or median ratio among the countries which have ratios greater than 1.

23. **The benefits of compression are inversely related to the country size.** As noted, the nine largest countries lose from compression. The median ratio for the membership as a whole is 1.20, and 5 countries have ratios greater than 1.5. (Figure I.8). As the figure shows, the lower share of the nine large countries after including the compression factor enables the allocation of a larger share for the rest of the 180 countries (ratio of CQS to uncompressed linear combination > 1).

Figure I.8. Ratio of CQS to Uncompressed Linear Combination



Source: Finance Department

Annex II. Country Groups

This annex discusses the implications of updating the country group classification used in quota work to align it with that used in the current WEO.

Background

1. The current country group classification used for quota work dates back to the 11th Quota Review, and has remained unchanged except for the inclusion of new Fund members.

The country classification in the 11th Review adopted the 1998 WEO classification with some exceptions:

- Starting in May 1997, *Israel, Korea, and Singapore* have been classified as advanced economies in the WEO. However, for quota purposes, among these three countries, only Israel was included into the advanced economies group during the 11th Review in 1998.
- With the 11th Review in 1998, San Marino has been classified as an advanced economy although it was not listed in any of the WEO classifications until October 2012.
- The 11th Review in 1998 classified Cyprus as an advanced economy, although was not classified as advanced in the WEO until May 2001.

2. Country classifications in the WEO have evolved over the years since 1998:

- Cyprus (2001), Slovenia (2007), Malta (2008), Czech Republic (2009), Slovak Republic (2009), Estonia (2011), Latvia (2014), and Lithuania (2015) were removed from the EMDCs group and included into the Advanced Economies group.
- Prior to 2012, San Marino was excluded entirely from the WEO classification due to data restrictions. In 2012, it was introduced into the classification as an advanced economy.

3. Several new member countries were included in the EMDC group for quota work:

- Palau in 1998, Timor-Leste in 2003, Kosovo in 2010, Tuvalu in 2011, and South Sudan in 2013 were introduced into the country classification in quota work as EMDCs.¹

4. The possibility of updating the country group classifications was discussed at the time of the 14th Review. However, there was broad support not to change the country classifications at

¹ Nauru became an IMF member in 2016 and it is classified as an EMDC in quota work. However, it has not been introduced in any of the WEO classifications yet.

(continued)

that time in order to provide continuity in the quota discussions as unchanged classifications would facilitate comparisons of the changes in quota shares for the main country groups since the start of the quota reform in 2006. This issue was also discussed in the context of the QFR.²

Implications of aligning with the current WEO classifications

5. **With a new round of quota discussions now getting underway, staff proposes aligning the country groups used for quota purposes with the current WEO.** Aligning the country groups used for quota purposes with the WEO classification would make them consistent with those used by the Fund for most other purposes, and would ensure a more up-to-date classification of EMDCs and AEs. It would also recognize that country groups are dynamic, and that some countries “graduate” over time from the EMDC group to the AE group. Based on these considerations and with a new round of quota discussion getting underway, staff proposes that starting from the next quota paper, the country groups be aligned with the current WEO groupings. Going forward, country groups used for quota purposes would be updated to reflect changes in the WEO group, as appropriate.

6. **Moving to the WEO classification would increase the quota share of AEs due to the shift of nine EMDCs to the AE group** (Table II.1):

- AE’s share of 14th Review quotas would be 61.3 percent, a 3.7 pp increase relative to the current classification. Conversely, EMDCs’ share of quotas would be 3.7 pp lower.
- Calculated quota shares of AEs would increase by 4.5 pp to 55.2 percent, whereas calculated quota shares of EMDCs decline correspondingly.
- The difference between the calculated quota shares and 14th Review quota shares of AEs would be reduced from -6.9 pp to -6.1 pp, with a corresponding reduction in the difference for EMDCs.

7. **For the EMDC subgroups, there would also be several changes:**

- The classification “Transition economies” would be eliminated, and replaced with two groups: Commonwealth of Independent States (CIS) and Emerging and Developing Europe.
- Africa would be split into a new Sub-Saharan Africa group and an expanded Middle East group: Middle East and North Africa.
- Among the EMDC regions, developing Asia would lose significant quota share (3 pp) due to the reclassification of Korea and Singapore as advanced economies (see Table II.2 for a summary of country classification changes).

² See Appendix I in [Quota Formula Review- Initial Considerations Supplement](#) (2/10/12).

Table II.1. Distribution of Quotas and Calculated Quotas using the WEO Classification
(In percent)

Country Groups according to WEO 3/	14th Review Quota Shares 1/			Calculated Quota Shares (2014) 2/		
	Current Classification	WEO Classification	Change resulting from WEO classification	Current Classification	WEO Classification	Change resulting from WEO classification
Advanced economies 4/	57.6	61.3	3.7	50.7	55.2	4.5
Major advanced economies	43.4	43.4	0.0	36.1	36.1	0.0
United States	17.4	17.4		14.3	14.3	
Japan	6.5	6.5		5.3	5.3	
Germany	5.6	5.6		5.1	5.1	
France	4.2	4.2		3.3	3.3	
United Kingdom	4.2	4.2		3.6	3.6	
Italy	3.2	3.2		2.5	2.5	
Canada	2.3	2.3		2.1	2.1	
Other advanced economies	14.3	17.9	3.7	14.6	19.1	4.5
Spain	2.0	2.0		1.8	1.8	
Netherlands	1.8	1.8		2.1	2.1	
Korea, Republic of 5/	1.8	1.8		2.0	2.0	
Australia	1.4	1.4		1.5	1.5	
Belgium	1.3	1.3		1.1	1.1	
Switzerland	1.2	1.2		1.6	1.6	
Sweden	0.9	0.9		0.9	0.9	
Austria	0.8	0.8		0.7	0.7	
Singapore 5/	0.8	0.8		1.3	1.3	
Norway	0.8	0.8		0.8	0.8	
Ireland	0.7	0.7		0.7	0.7	
Denmark	0.7	0.7		0.6	0.6	
Emerging Market and Developing Countries 6/	42.4	38.7	-3.7	49.3	44.8	-4.5
Sub-Saharan Africa (Africa)	4.4	3.6	-0.9	3.7	2.8	-0.9
South Africa	0.6	0.6		0.5	0.5	
Nigeria	0.5	0.5		0.7	0.7	
Developing Asia (Asia)	16.0	13.0	-3.1	23.4	19.8	-3.7
China 7/	6.4	6.4		12.0	12.0	
India	2.7	2.7		3.0	3.0	
Indonesia	1.0	1.0		1.3	1.3	
Malaysia	0.8	0.8		0.8	0.8	
Thailand	0.7	0.7		1.0	1.0	
Middle East, North Africa, Afghanistan and Pakistan (Middle East, Malta & Turkey)	6.7	7.1	0.4	7.2	7.4	0.2
Saudi Arabia	2.1	2.1		1.7	1.7	
Iran, Islamic Republic of	0.7	0.7		0.8	0.8	
Latin America and the Caribbean (Western Hemisphere)	7.9	7.9		7.4	7.4	
Brazil	2.3	2.3		2.3	2.3	
Mexico	1.9	1.9		1.7	1.7	
Venezuela, República Bolivariana de	0.8	0.8		0.5	0.5	
Argentina	0.7	0.7		0.6	0.6	
CIS and Emerging and Developing Europe (Transition economies) 8/	7.2	7.2	0.0	7.6	7.5	-0.1
Russian Federation	2.7	2.7		2.7	2.7	
Turkey 5/	1.0	1.0		1.1	1.1	
Poland	0.9	0.9		0.9	0.9	
Total	100.0	100.0		100.0	100.0	
Memorandum Item:						
EU 28	30.4	30.4		27.5	27.5	
LICs 9/	3.3	3.3		2.2	2.2	

Source: Finance Department

1/ Includes South Sudan and Nauru which became members on April 18, 2012 and April 12, 2016, respectively; reflects their quota increases proposed in their respective membership resolutions after the effectiveness of the 14th Review.

2/ Based on the following formula: $CQS = (0.50 \cdot GDP + 0.30 \cdot Openness + 0.15 \cdot Variability + 0.05 \cdot Reserves)^K$. GDP blend using 60 percent market and 40 percent PPP exchange rates. K is a compression factor of 0.95. The 2016 data update covers data through end-2014.

3/ World Economic Outlook April 2016.

4/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

5/ Korea and Singapore moved from the group currently called "Asia" to the group of "Advanced Economies". Turkey moved from the group called "Middle East, Malta and Turkey" to the group "CIS and Emerging and Developing Europe".

6/ The group name under WEO classification is in bold letter. The group name under current classification is in parentheses.

7/ Including China, P.R., Hong Kong SAR and Macao SAR.

8/ Comprises the WEO categories "Commonwealth of Independent States" and "Emerging and Developing Europe." This grouping is broadly comparable to the Transition Economies. Includes Turkey.

9/ Currently PRGT-eligible countries plus Zimbabwe.

Table II.2. Comparison of Current with WEO Classification 1/

Current Classification	Updated WEO Classification	Current Classification	Updated WEO Classification
Advanced Economies		Emerging Market and Developing Countries continued	
Australia	Australia	Transition Economies	
Austria	Austria	CIS and Emerging and Developing Europe 2/	
Belgium	Belgium	Albania	Albania
Canada	Canada	Armenia	Armenia (CIS)
Cyprus	Cyprus	Azerbaijan	Azerbaijan (CIS)
	Czech Republic	Belarus	Belarus (CIS)
Denmark	Denmark	Bosnia-Herzegovina	Bosnia-Herzegovina
	Estonia	Bulgaria	Bulgaria
Finland	Finland	Croatia	Croatia
France	France	Czech Republic	
Germany	Germany	Estonia	
Greece	Greece	Georgia	Georgia (CIS)
Iceland	Iceland	Hungary	Hungary
Ireland	Ireland	Kazakhstan	Kazakhstan (CIS)
Israel	Israel	Kosovo	Kosovo
Italy	Italy	Kyrgyz Republic	Kyrgyz Republic (CIS)
Japan	Japan	Latvia	
	Korea	Lithuania	
	Latvia	Macedonia, FYR	Macedonia, FYR
	Lithuania	Moldova	Moldova (CIS)
Luxembourg	Luxembourg	Mongolia	
	Malta	Montenegro	Montenegro
Netherlands	Netherlands	Poland	Poland
New Zealand	New Zealand	Romania	Romania
Norway	Norway	Russia	Russia
Portugal	Portugal	Serbia, Republic of	Serbia, Republic of
San Marino	San Marino	Slovak Republic	
	Singapore	Slovenia	
	Slovak Republic	Tajikistan	Tajikistan (CIS)
	Slovenia		Turkey
Spain	Spain	Turkmenistan	Turkmenistan (CIS)
Sweden	Sweden	Ukraine	Ukraine (CIS)
Switzerland	Switzerland	Uzbekistan	Uzbekistan (CIS)
United Kingdom	United Kingdom		
United States	United States		
Emerging Market and Developing Countries		Africa	Sub-Saharan Africa
Developing Asia		Algeria	
Afghanistan, IR		Angola	Angola
Bangladesh	Bangladesh	Benin	Benin
Bhutan	Bhutan	Botswana	Botswana
Brunei Darussalam	Brunei Darussalam	Burkina Faso	Burkina Faso
Cambodia	Cambodia	Burundi	Burundi
China	China	Cameroon	Cameroon
Fiji	Fiji	Cape Verde	Cape Verde
India	India	Central African Republic	Central African Republic
Indonesia	Indonesia	Chad	Chad
Kiribati	Kiribati	Comoros	Comoros
Korea		Congo, Dem. Republic of	Congo, Dem. Republic of
Lao, People's Dem. Republic	Lao, People's Dem. Republic	Congo, Republic of	Congo, Republic of
Malaysia	Malaysia	Cote d'Ivoire	Cote d'Ivoire
Maldives	Maldives	Djibouti	
Marshall Islands	Marshall Islands	Equatorial Guinea	Equatorial Guinea
Micronesia, Fed. States of	Micronesia, Fed. States of	Eritrea	Eritrea
	Mongolia	Ethiopia	Ethiopia
Myanmar	Myanmar	Gabon	Gabon
Nauru*		Gambia, The	Gambia, The
Nepal	Nepal	Ghana	Ghana
Pakistan		Guinea	Guinea
Palau, Republic of	Palau, Republic of	Guinea-Bissau	Guinea-Bissau
Papua New Guinea	Papua New Guinea	Kenya	Kenya
Philippines	Philippines	Lesotho	Lesotho
Samoa	Samoa	Liberia	Liberia
Singapore		Madagascar	Madagascar
Solomon Islands	Solomon Islands	Malawi	Malawi
Sri Lanka	Sri Lanka	Mali	Mali
Thailand	Thailand	Mauritania	
Timor Leste	Timor Leste	Mauritius	Mauritius
Tonga	Tonga	Morocco	
Tuvalu	Tuvalu	Mozambique	Mozambique
Vanuatu	Vanuatu	Namibia	Namibia
Vietnam	Vietnam	Niger	Niger
		Nigeria	Nigeria

Table II.2. Comparison of Current with WEO Classification (concluded)

<u>Current Classification</u>	<u>Updated WEO Classification</u>	<u>Current Classification</u>	<u>Updated WEO Classification</u>
<i>Emerging Market and Developing Countries continued</i>		<i>Emerging Market and Developing Countries continued</i>	
<i>Africa continued</i>	<i>Sub-Saharan Africa continued</i>	<i>Western Hemisphere continued</i>	<i>Latin America and the Caribbean cont</i>
Rwanda	Rwanda	Mexico	Mexico
Sao Tome and Principe	Sao Tome and Principe	Nicaragua	Nicaragua
Senegal	Senegal	Panama	Panama
Seychelles	Seychelles	Paraguay	Paraguay
Sierra Leone	Sierra Leone	Peru	Peru
Somalia	Somalia*	St. Kitts and Nevis	St. Kitts and Nevis
South Africa	South Africa	St. Lucia	St. Lucia
South Sudan	South Sudan	St. Vincent and the Grenadines	St. Vincent and the Grenadines
Sudan		Suriname	Suriname
Swaziland	Swaziland	Trinidad and Tobago	Trinidad and Tobago
Tanzania	Tanzania	Uruguay	Uruguay
Togo	Togo	Venezuela	Venezuela
Tunisia			
Uganda	Uganda		
Zambia	Zambia		
Zimbabwe	Zimbabwe		
		<i>Middle East, Malta & Turkey</i>	<i>Middle East, North Africa, Afghanistan and Pakistan</i>
<i>Western Hemisphere</i>	<i>Latin America and the Caribbean</i>	Bahrain	Afghanistan, IR
Antigua and Barbuda	Antigua and Barbuda		Algeria
Argentina	Argentina	Egypt	Bahrain
Bahamas, The	Bahamas, The	Iran	Djibouti
Barbados	Barbados	Iraq	Egypt
Belize	Belize	Jordan	Iran
Bolivia	Bolivia	Kuwait	Iraq
Brazil	Brazil	Lebanon	Jordan
Chile	Chile	Libya	Kuwait
Colombia	Colombia		Lebanon
Costa Rica	Costa Rica	Malta	Libya
Dominica	Dominica		Mauritania
Dominican Republic	Dominican Republic	Oman	Morocco
Ecuador	Ecuador		Oman
El Salvador	El Salvador	Qatar	Pakistan
Grenada	Grenada	Saudi Arabia	Qatar
Guatemala	Guatemala		Saudi Arabia
Guyana	Guyana	Syrian Arab Republic	Sudan
Haiti	Haiti		Syrian Arab Republic
Honduras	Honduras	Turkey	Tunisia
Jamaica	Jamaica	United Arab Emirates	
		Yemen, Republic of	United Arab Emirates
			Yemen, Republic of

Source: Finance Department

1/ Based on the April 2016 World Economic Outlook.

2/ Comprises the WEO categories "Emerging and Developing Europe" and "Commonwealth of Independent States."

*Countries not covered by WEO.

Annex III. Defining the Poorest Members

Board of Governors Resolution 66-2 states that steps shall be taken to protect the voice and representation of the poorest members under the 15th Review. Accordingly, it will be necessary to define how such protection would be provided and the definition of members who would qualify for protection. This annex discusses some available options.

1. **In the 14th Review, the poorest members were defined as those PRGT-eligible countries with annual per capita GNI below the prevailing operational IDA cut-off in 2008 (US\$1,135) or below twice the IDA's cut-off for countries meeting the definition of a "small country" under the PRGT eligibility criteria.** The countries covered included 52 members plus Zimbabwe, which was not PRGT-eligible at the time. South Sudan, which joined the Fund subsequently, also met this criterion and was protected through the 14th Review quota increase included in its membership resolution. The combined AQS for these countries is 3.3 percent.
2. **Other options were discussed at the time.** These included the full list of 71 PRGT-eligible countries, as well as the list of 42 low income countries as defined in the IBRD's World Development Indicators with an annual per capita GNI of US\$975 or less. However, the above definition was seen as the preferred approach. It was also decided that protection should be provided through ad hoc quota increases at the individual country level rather than for the group as a whole.
3. **Using the same approach and the 2016 IDA income cut-off of US\$1,215, the current list of the poorest members would include 36 countries.**¹ The reduction in the number of qualifying members reflects the fact that the IDA cut-off has been increased relatively modestly since the 14th Review, while many of the poorest countries have enjoyed relatively strong income growth. The combined AQS for these countries is 1.7 percent.
4. **In addition to the approach followed under the 14th Review, other options could also be considered.** These include the full list of PRGT-eligible countries, as well as approaches such as United Nations list of least developed countries and the WEO's low income developing countries (see Table III.1).

The United Nations list of 48 least developed countries (LDCs)

5. **This list includes 6 countries that are not among the 54 in the 14th Review list of poorest country members**—Angola, Equatorial Guinea, Samoa, Timor-Leste, Tuvalu, and Vanuatu. LDCs are defined as low-income countries confronting severe structural impediments to sustainable

¹ The IDA per capita GNI threshold is reviewed annually, every July. The threshold was set at US\$1,215 for both FY 2015 (July 1, 2014 – June 30, 2015) and FY 2016 (July 1, 2015 – June 30, 2016). The IDA threshold for FY 2017 was reduced to US\$ 1,185 recently.

(continued)

development, and the list of LDCs is reviewed every three years. Three criteria are used for identifying countries as LDCs:

- Gross National Income (GNI) per capita²
- The human asset index (HAI)³
- The economic vulnerability index (EVI)⁴

Both HAI and EVI are composed of several indicators.

The WEO's Low Income Developing Countries (LIDCs)

6. **This group was introduced in 2014 and currently includes 60 countries, of which 43 were included among those eligible for protection under the 14th Review.** LIDCs are defined as countries that have markedly different economic features to higher income countries and are eligible for concessional financing from both the IMF and the World Bank. More specifically, the LIDC definition includes countries that (i) were designated PRGT-eligible in the 2013 PRGT eligibility review and (ii) had a level of per capita GNI less than the PRGT income graduation threshold for non-small states (that is, twice the IDA operational threshold, or US\$2,390 in 2011 as measured by the World Bank's Atlas method), and also Zimbabwe. This list is expected to be updated in early 2017.

² The threshold for inclusion is based on a three-year average of the level of GNI per capita, and is the same which the World Bank uses for identifying low-income countries; the threshold is currently US\$1,035.

³ The HAI is a measure of the level of human capital, and consists of four indicators, two on health and nutrition (percentage of population undernourished, and mortality rate for children aged five years or under) and two on education (gross secondary school enrolment ratio, and the adult literacy rate).

⁴ The EVI measures the structural vulnerability of countries to exogenous economic and environmental shocks and contains, five of which are grouped into an exposure index and three into a shock index.

Table III.1. Alternative Lists of Poorest Member Countries Qualifying for Protection

Country	PRGT-eligible countries 1/	14th Review List 2/	Updated IDA Cut-Off List 3/	United Nations List	WEO LIDC List	Country	PRGT-eligible countries 1/	14th Review List 2/	Updated IDA Cut-Off List 3/	United Nations List	WEO LIDC List
1 Afghanistan	*	*	*	*	*	39 Maldives	*				
2 Angola	*			*	*	40 Mali	*	*	*	*	*
3 Bangladesh	*	*	*	*	*	41 Marshall Islands	*				
4 Benin	*			*	*	42 Mauritania	*	*		*	*
5 Bolivia	*			*	*	43 Micronesia	*				
6 Bhutan	*	*	*	*	*	44 Moldova	*				*
7 Burkina Faso	*	*	*	*	*	45 Mongolia	*				*
8 Burundi	*	*	*	*	*	46 Mozambique	*	*	*	*	*
9 Cabo Verde	*			*	*	47 Myanmar	*	*		*	*
10 Cambodia	*	*	*	*	*	48 Nepal	*	*	*	*	*
11 Cameroon	*	*	*	*	*	49 Nicaragua	*	*		*	*
12 Central African Rep.	*	*	*	*	*	50 Niger	*	*	*	*	*
13 Chad	*	*	*	*	*	51 Nigeria	*			*	*
14 Comoros	*	*	*	*	*	52 Papua New Guinea	*	*		*	*
15 Congo, Dem. Rep. of	*	*	*	*	*	53 Rwanda	*	*	*	*	*
16 Congo, Rep. of	*	*	*	*	*	54 Samoa	*			*	*
17 Côte d'Ivoire	*	*	*	*	*	55 São Tomé and Príncipe	*	*	*	*	*
18 Djibouti	*	*	*	*	*	56 Senegal	*	*	*	*	*
19 Dominica	*			*	*	57 Sierra Leone	*	*	*	*	*
20 Equatorial Guinea	*	*	*	*	*	58 Solomon Islands	*	*	*	*	*
21 Eritrea	*	*	*	*	*	59 Somalia	*	*	*	*	*
22 Ethiopia	*	*	*	*	*	60 South Sudan	*	*	*	*	*
23 Gambia, The	*	*	*	*	*	61 St. Lucia	*			*	*
24 Ghana	*	*	*	*	*	62 St. Vincent and the Grenadines	*			*	*
25 Grenada	*	*	*	*	*	63 Sudan	*	*		*	*
26 Guinea	*	*	*	*	*	64 Tajikistan	*	*	*	*	*
27 Guinea-Bissau	*	*	*	*	*	65 Tanzania	*	*	*	*	*
28 Guyana	*	*	*	*	*	66 Timor-Leste	*	*	*	*	*
29 Haiti	*	*	*	*	*	67 Togo	*	*	*	*	*
30 Honduras	*	*	*	*	*	68 Tonga	*			*	*
31 Kenya	*	*	*	*	*	69 Tuvalu	*			*	*
32 Kiribati	*	*	*	*	*	70 Uganda	*	*	*	*	*
33 Kyrgyz Republic	*	*	*	*	*	71 Uzbekistan	*	*		*	*
34 Lao P.D.R.	*	*	*	*	*	72 Vanuatu	*			*	*
35 Lesotho	*	*	*	*	*	73 Vietnam	*	*		*	*
36 Liberia	*	*	*	*	*	74 Yemen	*	*		*	*
37 Madagascar	*	*	*	*	*	75 Zambia	*	*	*	*	*
38 Malawi	*	*	*	*	*	76 Zimbabwe	*	*	*	*	*
No. of countries							70	54	36	48	60

Source: Finance Department

1/ Effective October 16, 2015; plus Zimbabwe (which was removed from the PRGT-eligibility list by a Board decision in connection with its overdue obligations to the PRGT).

2/ Countries that are PRGT-eligible and met the IDA per capita GNI cut-off of US\$1,135 in 2008 (or twice that amount for small states, as defined by the IMF), plus Zimbabwe.

3/ Countries that are PRGT-eligible and meet the current (2016) IDA per capita GNI cut-off of US\$1,215 (or twice that amount for small states, as defined by the IMF), plus Zimbabwe.

Annex IV. Voluntary Financial Contributions

This Annex updates earlier staff estimates of members' voluntary financial contributions to the Fund. The calculations cover the main forms of financial contributions, including bilateral and multilateral loans to the GRA, loan and subsidy contributions to the PRGT, and financing for capacity development. It also illustrates alternative forms of aggregating such diverse contributions, recognizing the difficulties involved. The calculations are only intended to be illustrative at this stage and further work would be needed to refine such a measure.

1. **Options for recognizing financial contributions were discussed extensively during the QFR.**¹ Directors recognized the importance of financial contributions to the Fund. Much of the discussion focused on whether to include a measure of financial contributions in the quota formula, and different views were expressed on this issue. One view was that voluntary financial contributions should be included in the quota formula as it would help incentivize the provision of such contributions to the Fund. Another view was that such inclusion was inconsistent with the Fund's role as a quota-based institution. Following an extensive debate, the Executive Board's QFR report to the Board of Governors noted that: *"Views diverged on the merits of such an approach. It was agreed to consider whether and how to take into account very significant voluntary financial contributions through ad hoc adjustments as part of the 15th Review."*²
2. **This Annex updates earlier staff estimates of members' voluntary financial contributions.** In light of the outcome of the QFR, it focuses solely on voluntary contributions; for example, members' participation in the Financial Transactions Plan, which was considered in some of the earlier calculations, is not covered here as this is an obligation of membership. As discussed below, there are multiple ways of combining the different forms of financial contributions, and further work on this topic would be needed to determine which contributions should be included and how they should be aggregated. Also, further consideration would need to be given to how to define "very significant" contributions, which is not considered further in this Annex.
3. **Members' voluntary financial contributions to the Fund come in a variety of forms. In particular,** these include: (i) bilateral and multilateral support for Fund liquidity in the General Resources Account, (ii) loan contributions to the PRGT, (iii) subsidy contributions for concessional financing, (iv) voluntary SDR trading arrangements, and (v) technical assistance and training, i.e., capacity development (CD). Not all of these contributions lend themselves to ready comparison across members. For example, members' voluntary SDR trading arrangements are not published and may be amended at any time. Also, some contributions involve budget outlays while others involve the temporary provision of loans.

¹ See [Quota Formula Review—Initial Considerations](#) (2/10/12), [Quota Formula Review—Data Update and Further Considerations](#) (6/28/12), and [Quota Formula Review—Additional Considerations](#) (9/4/12), and the Chairman's Summing Up of these Board Meetings. See also [Quota Formula Review—Further Considerations](#) (11/8/12).

² See [Outcome of the Quota Formula Review—Draft Report of the Executive Board to the Board of Governors](#) (1/18/13).

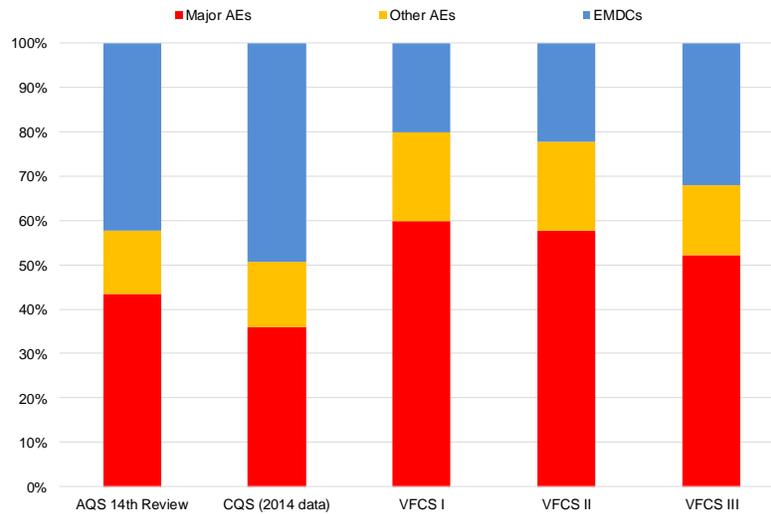
4. **Therefore, constructing an aggregate measure of voluntary financial contributions raises a number of issues that require judgment.** As recognized during previous discussions, these include the need to determine the relevant time frame for considering contributions, how to combine contributions that differ substantially both in magnitude and in form, and how to aggregate diverse contributions over time. Although in principle computing the opportunity cost of different contributions would be one way to address issues of comparability, in practice this would be challenging, requiring an estimate of when resources are actually used and the relevant discount factors. For example, both the NAB and bilateral loan resources are commitments and the timing and magnitude of actual drawings is uncertain. Thus, it was recognized during previous discussions that the only practical way to include such contributions would be on a commitment basis, which reflects the amounts that members stand ready to provide to the Fund, regardless of how much is actually drawn.

5. **For illustrative purposes, three aggregate measures of voluntary financial contributions are constructed.** Building on the approaches illustrated during the QFR discussions, and focusing on voluntary contributions consistent with the outcome of the QFR, members' contribution shares for the following five categories of voluntary contributions are first calculated: NAB, bilateral borrowing agreements, PRGT loans, subsidy contributions for concessional financing, and capacity building (see Box IV.1 for more details and Table IV.1 for a summary of selected indicators of members' financial contributions to the Fund). These are then used to construct three aggregate measures of voluntary financial contributions to the Fund (see Table IV. 2 for a summary of the distribution across broad country groups of these three aggregate measures of voluntary financial contributions). These measures are defined as follows:

- **VFCS I** – the simple average of member contribution shares to the following five voluntary financial contributions: i) NAB, ii) the 2012 Bilateral borrowing agreements, iii) PRGT loans, iv) PRGT subsidies, and v) technical assistance and training (capacity development).
- **VFCS II** – a weighted average of member contributions to the NAB (0.3), the 2012 Bilateral borrowing agreements (0.3), PRGT loans and subsidies combined (0.2), and capacity development (0.2). The higher weight on NAB/bilateral resources would reflect to some extent the large magnitude of resources provided compared to contributions to concessional financing and capacity development.
- **VFCS III** – uses the higher of the 14th Review quota share or VFCS I share rebased to ensure that total shares add up to 100 percent. This metric recognizes members that have provided financial contributions in excess of their respective quota shares. One implication of this approach, however, is that members that have contributed, but less than their 14th Review quota shares, are treated the same as other members that have not contributed.

6. **Based on all three measures, AEs account for a much larger share of voluntary financial contributions than their 14th Review AQS or current CQS (see Figure IV.1).**

Figure IV.1. Financial Contributions: Distribution of Aggregate Measures by Major Country Grouping



Source: Finance Department.

7. **The main part of the paper illustrates one possible approach to recognizing significant voluntary financial contributions through ad hoc adjustments as part of the 15th Review.** These calculations use the measure VFCS II above, and allocate 5 percent of the overall quota increase to be distributed based on shares in this measure. As noted, considerable further work would be required to refine such a measure and also to determine how to define “very significant” for such a purpose.³

³ Box IV.2 provides background information on how liquidity and financial contributions have been taken into account on several occasions in past quota increases.

Box IV.1. Components of Voluntary Financial Contributions Shares

Aggregate measures of Voluntary Financial Contributions by member countries comprise five key components:

- All credit arrangements under the New Arrangements to Borrow (NAB) that were effective as of end-March 2016.
- All bilateral borrowing agreements with the Fund that were effective as of end-March 2016.
- All loan commitments by member countries to the PRGT Trust (and its predecessors), cumulative from 1988 to end-December 2015.
- Contributions to various Subsidy Accounts,^{1/} including:
 - (i) the PRGF-ESF Trust (1987);
 - (ii) the PRG-HIPC Trust (1999);
 - (iii) the MDRI and ESF (2005);
 - (iv) the PRGT Subsidy Account (2009); and
 - (v) the CCRT (2015); as well as
 - (vi) the distribution in 2012/13 of windfall profits from the sale of gold in 2009/10 to the PRGT Subsidy Account.
- Net disbursements for capacity development (technical assistance and training) over the period FY1999-FY2016.

1/ Years refer to start of new fundraising round (in some cases multi-year) approved by the Executive Board.

Box IV.2. Liquidity and Financial Contributions: Considerations in the Past

Liquidity provision by members to the Fund has played a role in several earlier quota reviews. [Several countries with strong external positions received ad hoc quota increases to improve the liquidity of the Fund. In this context, financial contributions to the Fund that went beyond the provision of quota resources have played a role (e.g., GAB, NAB participation). Liquidity considerations and the provision of financial resources have generally been a supplementary criterion in determining the recipients of ad hoc increases. In general, the quotas of these recipients were considered to not adequately reflect their economic positions.]

1958/1959 Review: Special increases in addition to the overall 50 percent increase were given to Canada, Germany, and Japan to reflect both economic factors (their position in world trade) and their ability to contribute to the Fund's liquidity.

4th Quinquennial Review (1965) and ad hoc increase for Italy (1964): Special increases for 16 members (including Germany, Canada, Japan, and Sweden, which were among the 10 GAB participants at the time) were provided in addition to the overall 25 percent increase in quotas resulting in a total increase of 30.7 percent. Just prior to the conclusion of the 4th Quinquennial Review, the quota of Italy—another GAB participant—had been almost doubled to improve Fund liquidity and for comparability with quotas of other members.

Ad hoc increase for Saudi Arabia (1981): The ad hoc increase for Saudi Arabia which resulted in almost a doubling of its quota was partly based on the need to improve Fund liquidity and the conclusion of the borrowing arrangement with the Saudi Arabia Monetary Authority (SAMA).

9th General Review (1990): Japan received an ad hoc increase on top of the overall 50 percent general increase in light of the large deviation between its actual and calculated quota share as well as its large potential to strengthen the Fund's liquidity.

11th General Review (1997): One percent of the overall increase was distributed to five members (Korea, Luxembourg, Singapore, Malaysia, and Thailand—all NAB participants) whose quotas were significantly out of line with their relative economic positions and which were expected to contribute to the Fund's liquidity over the medium term.

Table IV.1. Financial Contributions to the Fund: Selected Indicators

	14th Review		Share in Financial Contributions to			
	Quota Share	NAB with Rollback 1/	Bilateral Borrowing Agreements 2/	PRGT Loans 3/	PRGT Subsidies 4/	Capacity Development 5/
Advanced Economies	57.6	75.0	68.4	91.4	80.2	84.8
Major advanced economies	43.4	57.9	46.0	73.7	60.1	61.7
United States	17.4	15.6	0.0	0.0	12.4	0.9
Japan	6.5	18.6	15.1	26.5	13.8	37.8
Germany	5.6	7.2	11.9	10.5	6.4	2.0
France	4.2	5.3	9.0	18.7	7.5	1.6
United Kingdom	4.2	5.3	3.3	5.1	9.7	9.6
Italy	3.2	3.8	6.7	8.3	5.1	0.9
Canada	2.3	2.1	0.0	4.6	5.2	8.9
Other advanced economies	14.3	17.1	22.4	17.7	20.0	23.1
Spain	2.0	1.9	4.3	4.3	1.3	0.6
Netherlands	1.8	2.5	3.9	3.6	3.2	3.6
Australia	1.4	1.2	1.6	0.0	1.2	3.9
Belgium	1.3	2.2	2.9	2.7	2.4	1.8
Switzerland	1.2	3.1	0.0	4.2	2.2	7.1
Sweden	0.9	1.3	2.4	0.0	3.0	0.9
Austria	0.8	1.0	1.8	0.0	1.4	0.0
Norway	0.8	1.1	2.1	1.7	1.4	2.5
Ireland	0.7	0.0	0.0	0.0	0.2	0.0
Denmark	0.7	0.9	1.5	1.1	1.4	0.9
Emerging Market and Developing Count	42.4	25.0	31.6	8.6	19.8	15.2
Africa	4.4	0.2	1.2	0.0	2.2	5.7
South Africa	0.6	0.2	0.0	0.0	0.4	0.0
Nigeria	0.5	0.0	0.0	0.0	0.4	0.0
Asia	16.0	14.0	18.0	6.1	7.5	1.7
China	6.4	8.8	9.9	3.8	2.0	0.4
India	2.7	2.5	2.5	0.0	1.3	0.0
Korea	1.8	1.9	3.8	2.3	1.6	1.2
Indonesia	1.0	0.0	0.0	0.0	0.2	0.0
Malaysia	0.8	0.2	0.3	0.0	0.8	0.0
Singapore	0.8	0.4	1.0	0.0	0.5	0.0
Thailand	0.7	0.2	0.3	0.0	0.4	0.0
Middle East, Malta, and Turkey	6.7	3.3	4.7	2.5	4.3	5.9
Saudi Arabia	2.1	3.1	3.4	1.9	2.6	0.3
Turkey	1.0	0.0	1.2	0.0	0.4	0.0
Iran, Islamic Republic of	0.7	0.0	0.0	0.0	0.3	0.0
Western Hemisphere	7.9	4.3	2.3	0.0	2.9	1.8
Brazil	2.3	2.5	0.0	0.0	0.2	0.2
Mexico	1.9	1.4	2.3	0.0	1.2	0.9
Venezuela, R.B. de	0.8	0.0	0.0	0.0	0.0	0.0
Argentina	0.7	0.0	0.0	0.0	1.0	0.0
Transition economies	7.2	3.2	5.5	0.0	2.9	0.1
Russia	2.7	2.5	2.5	0.0	1.4	0.1
Poland	0.9	0.7	1.8	0.0	0.2	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum Item:						
Total contributions (in millions of SDRs) 7/		180,233	281,834	26,158	7,438	1,125
EU28	30.4	33.6	52.3	54.4	44.6	22.6
LICs 8/	3.3	0.0	0.0	0.0	0.9	2.8

Source: Finance Department.

1/ NAB credit arrangements incorporating the rollback agreed by the Executive Board in December 2011.

2/ Based on USD/SDR exchange rate as of March 31, 2016.

3/ Cumulative loan commitments to the PRGT as of End-December 2015.

4/ Total bilateral resources received since 1987 for subsidizing concessional lending, and HIPC and MDRI debt relief, as of End-December 2015.

5/ Cash contributions to the IMF for technical assistance and training (excluding in kind contributions), FY1999-FY2016.

6/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

7/ Except for capacity development, which is in millions of US dollars.

8/ Currently PRGT-eligible countries plus Zimbabwe.

Table IV.2. Financial Contributions to the Fund: Aggregate Measures

	14th Review	Calculated	Various aggregate measures		
	Quota Share	Quota Share (CQS)	VFCS I 1/	VFCS II 2/	VFCS III 3/
Advanced Economies	57.6	50.7	79.9	77.8	68.0
Major advanced economies	43.4	36.1	59.9	57.7	52.1
United States	17.4	14.3	5.8	5.4	12.7
Japan	6.5	5.3	22.4	22.4	16.3
Germany	5.6	5.1	7.6	8.0	5.5
France	4.2	3.3	8.4	7.9	6.1
United Kingdom	4.2	3.6	6.6	5.7	4.8
Italy	3.2	2.5	5.0	4.9	3.6
Canada	2.3	2.1	4.2	3.4	3.0
Other advanced economies	14.3	14.6	20.0	20.1	15.9
Spain	2.0	1.8	2.5	2.7	1.8
Netherlands	1.8	2.1	3.4	3.4	2.5
Australia	1.4	1.5	1.6	1.7	1.2
Belgium	1.3	1.1	2.4	2.4	1.7
Switzerland	1.2	1.6	3.3	3.1	2.4
Sweden	0.9	0.9	1.5	1.4	1.1
Austria	0.8	0.7	0.8	0.9	0.6
Norway	0.8	0.8	1.8	1.8	1.3
Ireland	0.7	0.7	0.0	0.0	0.5
Denmark	0.7	0.6	1.2	1.1	0.9
Emerging Market and Developing Countries 4/	42.4	49.3	20.1	22.2	32.0
Africa	4.4	3.7	1.9	1.7	3.7
South Africa	0.6	0.5	0.1	0.1	0.5
Nigeria	0.5	0.7	0.1	0.0	0.4
Asia	16.0	23.5	9.5	11.2	11.9
China 5/	6.4	12.0	5.0	6.4	4.7
India	2.7	3.0	1.3	1.6	2.0
Korea	1.8	2.0	2.1	2.3	1.6
Indonesia	1.0	1.3	0.0	0.0	0.7
Malaysia	0.8	0.8	0.3	0.2	0.6
Singapore	0.8	1.3	0.4	0.4	0.6
Thailand	0.7	1.0	0.2	0.2	0.5
Middle East, Malta, and Turkey	6.7	7.2	4.1	4.2	5.3
Saudi Arabia	2.1	1.7	2.3	2.4	1.7
Turkey	1.0	1.1	0.3	0.4	0.7
Iran, Islamic Republic of	0.7	0.8	0.1	0.0	0.5
Western Hemisphere	7.9	7.4	2.3	2.5	5.8
Brazil	2.3	2.3	0.6	0.8	1.7
Mexico	1.9	1.7	1.2	1.3	1.4
Venezuela, R.B. de	0.8	0.5	0.0	0.0	0.6
Argentina	0.7	0.6	0.2	0.0	0.5
Transition economies	7.2	7.6	2.3	2.7	5.3
Russia	2.7	2.7	1.3	1.6	2.0
Poland	0.9	0.9	0.5	0.8	0.6
Total	100.0	100.0	100.0	100.0	100.0
Memorandum Item:					
EU28	30.4	27.5	41.5	40.7	32.7
LICs 6/	3.3	2.2	0.8	0.6	2.5

Source: Finance Department.

1/ Average of contribution shares in NAB, 2012 Bilateral Agreements, PRGT-loans, PRGT-subsidies, and TA activities.

2/ Same as 1/ with weights of 0.3 for NAB, 0.3 for 2012 Bilateral Agreements, 0.2 for PRGT loans and subsidies combined, and 0.2 for Capacity Development.

3/ Measure of "generous" contributions which uses the higher of 14th Review quota share or VFCS I share rebased to ensure that total shares add up to 100 percent.

4/ Including Czech Republic, Estonia, Korea, Latvia, Lithuania, Malta, Singapore, Slovak Republic, and Slovenia.

5/ Including China, P.R., Hong Kong SAR, and Macao SAR.

6/ Currently PRGT-eligible countries plus Zimbabwe.