

INTERNATIONAL MONETARY FUND

STAFF COMMENTARY ON THE EXTERNAL REVIEW OF THE QUOTA FORMULAS

Prepared by the Treasurer's Department

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Research, and Statistics Departments

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## I. INTRODUCTION

1. **The report of the Executive Board to the Fund's Board of Governors on the increases in quotas of Fund members under the Eleventh General Review reaffirmed the view of the Interim Committee that the quota formulas should be reviewed following the completion of that review.**<sup>1</sup> Accordingly, in 1999 the Managing Director requested a group of external experts to provide the Executive Board with an independent report on the adequacy of the quota formulas, including proposals for changes if appropriate. This Quota Formula Review Group (QFRG) recently submitted its report to the Executive Board. As called for in the Terms of Reference of the Review of the Quota Formulas, this commentary presents the staff's views on the report.
2. **The report of the Quota Formula Review Group (QFRG) addresses many of the complex issues that the Executive Board has discussed over the years regarding the role, structure, and content of the quota formulas.** The QFRG has made a proposal for a new formula which involves a major simplification and updating of the formula to enhance transparency and to take account of changes in the world economy. Adoption and implementation of the QFRG proposal could have significant implications for the distribution of quotas with important consequences for members' financial relations with, and governance of, the IMF.
3. **This commentary presents the staff's views on the QFRG's approach and indicates areas where further work is required on a number of key conceptual and data related issues.** The remainder of this paper is organized as follows. Section II provides background on how quota formulas have been utilized in the past and how a reformed formula would need to be introduced in the future. Section III discusses the method used by the QFRG to derive a new quota formula, including the role that the different functions of quotas should play in quota formulas and the specific criteria that might be used to guide any changes in the quota formulas. Section IV assesses the quota formulas proposed by the QFRG, discusses data-related issues, and presents the results of mechanically applying an incomplete version of the QFRG formula to the data ending in 1994 that were used for the Eleventh Review. Section V discusses the next steps that could be undertaken by the staff.

## II. ROLE OF QUOTA FORMULAS

4. **Since the IMF's inception, the quota formulas have been used primarily to help guide decisions regarding the size and distribution of members' actual quotas.** In recent years, the calculated quotas derived from the formulas have served to distribute a portion of the quota increases in the context of general quota reviews, to determine the initial quotas of

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<sup>1</sup> *Selected Decisions and Selected Documents of the International Monetary Fund*, Twenty-Fourth Issue, June 30, 1999, p. 723.

new members, and to guide ad hoc quota increases to a portion of the membership.<sup>2</sup> The quota formulas affect members' actual quotas and thus members' financial relationships with the IMF and, through the effect on voting power, members' role in IMF decision making and representation on the Executive Board.

5. **In practice, however, the role of the quota formulas in determining actual quotas and quota share adjustments has been quite limited.** Thus, quota increases in the context of general reviews have been distributed largely on the basis of a uniform proportionate increase in actual quotas, and the selective element based on calculated quotas has been provided to all members (Box 1). The convergence of actual quotas toward the calculated quotas as measured by the formulas has therefore been quite modest, reflecting (i) the Executive Board's view that general quota reviews should provide all members with an adequate increase in quota; (ii) a general reluctance to make politically difficult quota share adjustments; and (iii) widespread dissatisfaction with formulas that were viewed as overly complex, lacking in transparency and unrepresentative of actual conditions in the world economy. Moreover, even in those cases where it was decided to provide ad hoc or special increases in quotas to a subset of the membership, the role of the quota formulas has been limited. During the Eleventh Review (1999) of quotas, a portion of the quota increase was distributed solely to members that were considered to have quotas seriously out of line with their relative position. However, in other cases where ad hoc quota increases have been provided to some members, the formulas and/or calculated quotas played little or no role.

6. **The question therefore arises as to what role quota formulas might have in any future realignment of quota shares in the Fund. Such changes in actual quota shares can only be brought about through one of three methods:**

- decreases in quotas for certain members, which, under the Articles of Agreement, can only be done with the member's consent;<sup>3</sup>
- ad hoc quota increases for a subset of members (outside a general quota review); or
- nonproportional quota increases for all members within the context of a general increase in quotas.

The probability of the first of these possibilities—rearranging quota shares through selected voluntary reductions of absolute quotas—would appear to be exceedingly small. The second possibility—ad hoc increases in absolute quotas—may be feasible if it involved a relatively small number of members which were judged to be clearly disadvantaged under the current quota distribution. However, in any significant realignment of quota shares through ad hoc

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<sup>2</sup> Quota formulas are not mentioned in the Articles. While the Executive Board has agreed to modifications in the formulas, it has not formally adopted any formula(s). The Board does not need to take any formal decision in considering the QFRG's proposals.

<sup>3</sup> An increase in a member's quota requires the member's consent as well.

### Box. How Quota Shares Can be Adjusted

In the past, the Fund has adjusted quota shares within the context of general reviews and on an ad hoc basis outside of general reviews. In either case, an 85 percent majority of voting shares is needed to change quotas. Adjustments in quota shares have tended to take place within general reviews, usually in the context of an urgent need for resources on the part of the Fund. This reflects the fact that it has been easier to reach agreement if all members receive an increase in quotas. Agreement is more difficult to reach when only a subset of members receives an increase, as the quotas of all other members would remain unchanged and their quota shares would decline.

**General increases.** Increases in quotas during general reviews consist of two elements: (1) an equiproportional element which is distributed to all members according to their shares of actual quotas; and (2) a selective element which is distributed to either all members or a subset of members. The selective element is used to attain a change in quota shares among members. For any overall increase in quotas, the larger the selective increase, the greater the redistribution of quotas. In practice, the selective component has tended to be relatively small (usually under 50 percent). Both the list of members eligible for a selective increase and the way of apportioning the selective element can be based on the Executive Board's judgement or on the quota formulas. The formulas determine calculated quotas, which can play a role in determining which members receive a selective increase and how it is apportioned.<sup>1</sup> The following examples illustrate the methods used.

During the Sixth Review in 1976, the Executive Board decided to double the quota share of the major oil exporters with the stipulation that the collective share of all the developing countries should not fall. The decision was based on the Executive Board's judgement that such a reallocation would strengthen the Fund's liquidity. The quota formulas played no role in identifying the members' eligible for the selective increase.

Under the recently-concluded Eleventh Review, 25 percent of the quota increase was selective. The quota formulas helped determine each member's share of the selective increase as follows: (1) 15 percent of the total increase (three-fifths of the selective element) was distributed to all members; (2) in addition, 10 percent of the total increase was distributed to those countries whose ratio of calculated to actual quotas was considered to be most "out of line".<sup>2</sup>

**Ad hoc increases.** A member can request an adjustment of its quota at any time, in which case the Executive Board must, after consulting with the member, report to the Board of Governors.<sup>3</sup> Ad hoc quota increases can occur both within and outside the context of a general review. In recent years, they have tended to occur within a general review. As with selective increases, both the quota formulas and the Executive Board's judgement have played a role in determining the amount of the ad hoc adjustment. The following are examples.

Five members (France, Iran, Egypt, Paraguay and the Philippines) received ad hoc increases between 1947 and 1959. The main factor underlying these increases was the view that the initial quotas of these members at the time of the Bretton Woods conference had been set at unduly low levels. Between 1959 and 1969, the quotas of another nine countries were adjusted on an ad hoc basis. All of the foregoing increases occurred outside the context of a general review.

Since 1969, there have been only three ad hoc increases in quotas outside the framework of a general review. Ad hoc increases in the quotas of China in 1980 and of Cambodia in 1994 were associated with the resumption of active relations of these members with the Fund, given the fact that China's quota had never been increased and Cambodia's quota had not been increased since 1970. Saudi Arabia received an ad hoc increase in 1981. A major factor underlying Saudi Arabia's ad hoc increase was the desire to strengthen the Fund's liquidity position. For each of the post-1969 cases, the quota formulas played a role in determining the extent of the ad hoc increase.

Japan received an ad hoc increase within the Ninth General Review. In this case, the seven largest countries agreed to redistribute quota increases among themselves in such a manner that the quota increases for the rest of the membership were unaffected.<sup>4</sup> The quota formulas were not used to reallocate the quota shares of these countries.

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<sup>1</sup> Since the Eighth Review in 1982/83, all members have received a selective increase so that each member has received an increase comprised of an equiproportional element and a selective element that reflected a member's share in calculated quotas.

<sup>2</sup> The Executive Board determined that "out of line" should apply to those countries with ratios of calculated to actual quotas above unity. Thirty-eight members met this criterion.

<sup>3</sup> Under Article III, Section 2, the Fund "may if it thinks fit, consider at any other time the adjustment of any particular quota at the request of the member concerned".

<sup>4</sup> As a result of this redistribution among the seven largest industrial countries to accommodate an ad hoc increase in the quota of Japan, the new quotas for Germany and Japan were equalized, as were the quotas of France and the United Kingdom (ranked just below those of Japan and Germany), and adjustments were made to the quotas of the United States, Canada, and Italy so that the total quotas for the seven countries as a group was maintained unchanged.

increases for a substantial subset of the membership, all other members would see their quota shares decline without a compensating increase in the absolute amount of their respective quota, which might represent a formidable obstacle to obtaining the 85 percent majority required for the approval of any quota increase.

7. **In practice, it has proved easier to rearrange quota shares through the third method, i.e., within the context of a general quota increase. However, such a general increase would appear to be some way off.** The next general quota review is scheduled to be completed by early 2003 and the strength of the Fund's current and prospective liquidity position does not provide a basis for advancing the timing of the next general review.<sup>4</sup> In these circumstances, the staff believes that consideration should be given to a work program, based on the QFRG report, that focuses on the conceptual underpinnings for a formula, with a view to deriving a formula that could form the basis for a broadly acceptable rearrangement of quotas shares within the context of a future general increase in quotas.

8. **The staff notes that the QFRG's desire to focus on conceptual issues has led to its reluctance to undertake quota calculations based on its proposed formula.** The experience of previous quota formula reviews and quota negotiations suggests that a premature focus on outcomes can detract from a reasoned consideration of first principles on which quota shares should be based. On the other hand, quota shares are a highly sensitive issue for members, and the acid test for any formula is that it must produce results that are reasonable and widely accepted. Therefore, staff believes that full and judicious consideration of the QFRG recommendation would call for quantification of the distribution of quota shares which would result from it.

9. On this basis, and because of numerous inquiries from Executive Directors regarding the implications of the QFRG's proposed quota formula for the quota distribution, **this commentary includes a quantification of an incomplete version of the proposal based on the data base from the Eleventh Review, which ends in 1994 and does not include data for all required variables.** In particular, the quantification does not include the variability of net long-term capital flows, which represents a major innovation of the proposal. Once a data base is assembled for all required variables, with series extending to the end of the 1990s, it would be possible to examine in detail the quota distribution resulting from the QFRG's proposed formula. While at this point it is difficult to judge the effort that would be required to assemble such a data base, staff would caution Directors that such an endeavor will entail

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<sup>4</sup> The Twelfth General Review of Quotas is to be completed by January 30, 2003, five years after the conclusion of the Eleventh Review. At least one year prior to the time when a general review of quotas is to be completed, the Executive Board must appoint a Committee of the Whole to study the matter and report to the Board of Governors. However, it is possible to extend the completion date of a review, as was done during both the Ninth Review (by two years and three months) and the Tenth Review (by one year and nine months). Moreover, as under the Tenth Review, quotas do not have to be increased in a general review.

a very substantial and resource-intensive effort that, even if begun forthwith, would be unlikely to bear significant fruit for some time.

### III. SELECTION OF A QUOTA FORMULA: GENERAL CONSIDERATIONS

#### A. Normative Approach

10. **The QFRG has taken a “normative” approach to reforming the quota formulas** based on *a priori* criteria for assessing alternative proposals rather than deriving formulas which produce a particular outcome (§84).<sup>5</sup> However, successful implementation of a normative approach requires a broad consensus among diverse constituencies. The QFRG has also undertaken extensive econometric analysis in an effort to determine the factors that have driven actual quotas over time, and has also investigated (including through hypothetical simulations) the degree and pace of convergence of actual to calculated quota shares over time (Chapter V). However, this empirical work has not been used in support of the QFRG’s conclusions and recommendations. Instead, based on the criteria which it has outlined, the QFRG has recommended a single linear formula with only two variables.

11. **A normative approach has a number of attractions, even if a quota formula is to be judged ultimately on the calculated quota distribution it produces.** First, it elicits a reasoned examination of the principles on which quotas should be based. Second, it calls for a clear statement of the ultimate objectives to be achieved by the quota structure, while allowing for separate consideration of the pace at which to approach such a structure. Third, it allows for the reform to be forward looking and to provide a formula that is more likely to stand the test of time. Finally, it avoids some of the problems associated with the “positive” approach of trying to find a formula which explains current quotas, including, as the QFRG econometric analysis demonstrates, the difficulty of econometrically fitting present quotas to purely economic variables when such quotas have also been determined by judgmental or political factors which are very difficult to quantify.

12. **Under a normative approach, the Board would continue to decide the speed at which the actual quota distribution would move toward a new distribution of calculated quotas.** While, as the QFRG notes, “provision can be made for convergence toward any chosen quota formula over a period of time” (§112), it should be noted that, to the extent that quota share redistributions are made within the context of general quota increases, the pace of convergence would be faster, the larger are: (i) the proportion of a quota increase which is allocated selectively (i.e., according to the formula) and; (ii) the size of the overall quota increase. Also, since calculated quotas evolve over time, a rate of “convergence” which is too slow could in fact result in a further divergence of the actual and calculated quota distributions.

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<sup>5</sup> Paragraph references are to the QFRG Report.

## B. Functions of Quotas

13. **Any reassessment of the quota formulas should take into account the functions of quotas.** Multiple functions can be found in the Fund's Articles of Agreement (¶20).<sup>6</sup> Quotas (i) fix the maximum amount of financing a member is obligated to provide to the Fund, (ii) determine voting power in the Executive Board,<sup>7</sup> (iii) bear on a member's access to Fund resources, and (iv) determine a member's share of general SDR allocations.

14. Traditionally, a critical role of quotas has been the **provision of financial resources** to the Fund since a monetary and financial institution could not function without an adequate supply of resources. This remains the case, although the financial role of quotas has been affected somewhat as alternative sources of finance have been developed, particularly the increased availability of borrowed resources to supplement quotas and the growing role of administered resources to provide concessional assistance to the Fund's poorest members.

15. Quotas determine the distribution of **voting power in the Fund**. The Fund's responsibilities outside of those directly related to lending have grown over the years, most recently with the various initiatives related to the reform of the international financial architecture (e.g., the fostering of international standards). Measures have been taken in the past to seek to ensure adequate representation for all members (e.g., increases in small quotas). However, for many smaller and medium-size emerging market and developing country members, quota-based votes may not adequately reflect the role these countries play in the world economy.

16. Quotas continue to play a crucial role in determining the **demand for Fund resources**. Quotas serve as the basis for access to such resources in the great majority of Fund-supported programs. Over the years, however, the relationship between quotas and access has become more elastic, especially as of late when the demand for Fund resources has become more unpredictable because of the increased role of capital flows in causing balance of payments disequilibria. Waivers of the Articles' limits on access to Fund resources have been granted where necessary to allow access in line with operational limits.<sup>8</sup> More recently, the Supplemental Reserve Facility (SRF), which was approved in 1997, allows for substantial Fund financing without formal access limits. Similarly, access levels under the Contingent Credit Line (CCL) are not subject to formal limits, although

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<sup>6</sup> The QFRG has excluded from consideration any proposals for changes in the quota formulas that would require an amendment of the Fund's Articles of Agreement (¶83).

<sup>7</sup> The Articles of Agreement provide that a member's voting power is equal to 250 "basic" votes plus one additional vote for each SDR 100,000 in quota. Basic votes therefore help to strengthen the relative voting power of members with smaller quotas. A change in basic votes would require an amendment of the Articles.

<sup>8</sup> The Articles of Agreement restrict the Fund's holdings of a member's currency to no more than 200 percent of quota (Article V, Section 3 (b) (iii)).



commitments under the CCL are expected to be in the range of 300–500 percent of quota. More generally, the role of quotas in determining access could be changed by instituting a different approach for access decisions than for the provision of resources and voting power.

17. The Articles of Agreement also specify that quotas determine a member's share in a general **allocation of SDRs**,<sup>9</sup> although this issue is not addressed in the QFRG report since there has been no general allocation for nearly 20 years and the proposed Fourth Amendment, providing for a special allocation of SDRs, is considered a one-time event.

### C. Assessment Criteria

18. The QFRG report has **identified most of the key criteria** by which any proposed reform of the quota formula should be assessed **with the notable exception of broad acceptability** to the membership. In the staff's view, the most compelling assessment criterion is that the calculated quotas resulting from the new quota formulas should be broadly acceptable to the membership. There would be little point to the exercise if, in the end, a new quota formula generated calculated quotas that played no more of a role in determining actual quotas than in the past.

19. Preliminary illustrative calculations based on an incomplete version of the QFRG proposal indicate that the **proposed formula could result in a significant shift in quota shares toward the advanced, large, and relatively closed economies**. This shift is due to the much larger weight of GDP than in the current formulas and the deletion of the openness variable. It should be noted that the preliminary calculations reported in paragraphs 52 and 53 provide only an illustration of resulting quota shares, based on data ending in 1994 as used for the Eleventh Review (1999) and a limited version of the proposed variability measure. In the staff's view, nevertheless, the broad qualitative conclusion of such a shift in quota shares may not change much once the required data base has been assembled to apply updated data to the proposed formula in full. As noted above, the calculations do not include the variability of net long-term capital flows, which the QFRG proposed in light of the increased integration of world capital markets.

20. Regarding the other criteria identified in the QFRG report (¶84), the staff agrees that any new quota formula should:

- (a) **“have a sound economic basis.”** Variables in the formulas need to be grounded in solid economic reasoning and related to the Fund's activities as an international monetary institution;
- (b) **“reflect the relevant changes in the world economy” that have occurred since the last modification of the formulas in the early 1980s.** In particular, any new formula should try to capture the increased size and volatility of capital markets—a factor not reflected in the current formulas;

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<sup>9</sup> Article XVIII, Section 2 (b).

(c) **“be consistent with the several functions of quotas,”** including the provision of financial resources to the Fund, the distribution of voting power in the Fund, and the determination of the demand for Fund resources.

(d) **“be more transparent and easier to comprehend than the existing set of formulas.”**

- Transparency would be enhanced by a normatively chosen formula for which the economic rationale is clear. However, since each member can only have one quota under the Articles, transparency will remain inherently limited by the problem that results from a single quota serving multiple functions. That is, since there is not a separate instrument to determine each function of quotas in the Fund, a compromise inevitably needs to be struck among the different functions. The choice of weights assigned to the variables related to each function in the formula represents an implicit compromise.
  - The criterion of simplifying the formulas is particularly compelling. Simplification would mean that any formula should satisfy the **principle of parsimony**, with a few key variables used to determine quotas. The current set of formulas is certainly not simple, even though the calculated quota of the majority of members is determined by just one formula (the Bretton Woods formula).
- (e) **“be feasible [to implement], and where problems of data quality or availability arise, such modification [to the formulas] should be contingent on the resolution of these problems.”** As quota formulas are to be used to determine calculated quotas, proposed modifications of the formulas should be “feasible” in the sense that it should be possible to apply them using timely, high-quality, and widely available data. In particular, minimizing the amount of estimation needed to produce the data underlying quota calculations should be an important criterion in the choice of variables, although due regard could be given to likely statistical improvements in the future.
- (f) **“not give incentives to members to adjust their policies adversely.”** The staff considers the possible adverse incentive effects from the quota formulas to be minimal.

#### IV. EVALUATION OF QFRG PROPOSALS

21. **The QFRG recommends a linear, one-equation, two-variable formula comprised of GDP and the variability of current receipts and net long term capital flows (¶107–08).** The central proposal of the QFRG, made with several caveats to be sure, represents a major reform of the quota formulas and raises several important issues which are discussed below.

## A. Specification

22. **The QFRG's proposed formula is mathematically simple and a more transparent compromise between the different quota functions than the current five-formula system.** However, there may be analytical and other factors which would merit consideration of other alternatives regarding the number of formulas, their mathematical form, and the variable weights.

### Number of formulas

23. **The single formula proposed by the QFRG incorporates the multiple functions of quotas by including variables which bear on both the supply of, and demand for, Fund resources.** Such a single formula could be interpreted as a weighted average of two formulas, each addressing a single quota function. In this sense, the QFRG formula could be seen as a weighted average of a supply formula which would contain GDP and a demand formula which would contain variability, as well as GDP, which is also an important indicator of the size of a country's potential demand for resources.

24. **The QFRG notes the possibility of a two-formula system with the second formula having the same variables and specification as the first, but with the weights of the variables reversed** (§110). In discussing its two-formula variant, the QFRG proposes that a member would get the higher of the two quotas calculated by the formulas. This may be seen as an attempt to address the problem of multiple functions of quotas noted above, in that it would assign a more demand-related formula to members more likely to demand resources from the Fund, and a more supply-related formula to those members more likely to supply resources to the Fund. As quotas are recalculated periodically, it would be possible for a given member's calculated quota to be determined by a different formula over time.

### Mathematical form

25. **The current formulas**, in which the openness ratio (current receipts as a proportion of GDP) enters multiplicatively, **can produce the anomalous result that, at the margin, a calculated quota declines when GDP increases.** Moreover, with a nonlinear formula, a straightforward interpretation of the relative weights given to the variables can be difficult.

26. **A linear formula can address both of these problems.** A linear specification is appealing in that it is amenable to a fairly straightforward interpretation in terms of the relative weights given to the variables in the formula.<sup>10</sup> However, entering GDP linearly in a formula might be considered to lead to too wide a dispersion of calculated quotas due to the very wide dispersion of nominal GDP across countries. One alternative which would dampen the degree of dispersion would be to enter the right-hand side variables in logs, which would

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<sup>10</sup> An openness ratio, even if entered additively instead of multiplicatively, can still lead to the anomalous result just noted. In such a case, the formula would not, of course, be linear in GDP.

permit a nonlinear relationship between the untransformed variables and calculated quotas. Another alternative would be a log-linear functional form (where both quotas and the right-hand side variables are entered in logs) which would have the appealing interpretation that the coefficients of the variables would represent the constant elasticities of quotas with respect to each of the determining variables.

### **Variable weights**

27. **The weights in the original Bretton Woods formula were devised to approximate a specific, politically determined result.** In the reforms which introduced the current multiple-formula system during the Fourth Quinquennial Review (1963–65), the weights in the non-Bretton Woods formulas were to some extent derived normatively to give more importance, relative to the Bretton Woods formula, to external trade and the variability of exports. However, positive factors played a role in the choice of weights as well in that, among the variety of weighting schemes considered, the ones which were chosen were those which produced calculated quotas that best fit the then-existing quotas.

28. **The choice of variable weights in the formula is difficult, given the absence of a clear analytical framework which could be brought to bear on the issue.**<sup>11</sup> The QFRG suggests assigning a larger weight to the GDP variable, “twice that of the indicator of external vulnerability” (¶108) reflecting the QFRG’s *a priori* judgements about the relative importance of the various functions which quotas perform. The staff also believes that giving more weight to the function of providing resources to the Fund (by assigning a larger coefficient to GDP than variability), as the QFRG’s proposal does, is appropriate, although a decision on the precise weighting is a matter of judgement.

### **B. Proposed Variables**

29. **The proposed variables, GDP and the variability of current receipts and net long-term capital account transactions, satisfy several of the selection criteria discussed above.** They can be justified on an economic basis and they clearly reflect an attempt to incorporate relevant changes in the world economy because of the inclusion of capital flows. The QFRG’s proposed variables, as well as other possibilities, are discussed below.

### **GDP**

30. **The QFRG “agreed unanimously that the single most relevant variable for measuring a country’s ability to contribute to the IMF resources is GDP”** (¶87). The QFRG proposes to retain the central importance of GDP in the quota formula. GDP tends to have a relatively large influence on the calculated quota for those members under the original Bretton Woods formula, and has provided the biggest contribution to calculated quotas for many members. Moreover, GDP represents the total amount of resources generated by an

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<sup>11</sup> A similar issue of weights arises if multiple formulas are combined in a weighted average to generate a single calculated quota.

economy, and therefore remains the best single distillation of a member's ability to contribute resources to the Fund. Finally, GDP is also likely to be correlated with the amount of financial resources required to deal with a member's balance of payments problems, and therefore could be considered a reasonable element in a quantification of potential demand for Fund resources.

31. **The QFRG considers that GDP should be averaged over several years to mitigate the effects of sharp swings in exchange rates and short run variations in economic activity** (¶92, ¶107). There is a tradeoff in choosing a GDP measure between using a single year, which better reflects recent conditions, and using a multiple-year average, which lessens the possibility that members' single-year GDPs could be observed at different points in the business cycle, or that the exchange rate used might be a misaligned one. On balance, choosing a representative measure would seem to be more important than choosing a current one, and a multiple-year average of GDP instead of the single-year GDP currently included in the quota formulas may be a more appropriate measure.

32. **The QFRG majority argue that GDP converted at market exchange rates is the most relevant measure of a country's ability to contribute resources to the Fund.** GDP converted at market rates into SDRs (or any other common currency) provides a measure of the international market value of resources generated by an economy. The ability of a member to finance the Fund as measured in SDRs is clearly related to this value. Similarly, possible demands for financing from the Fund would be closely correlated with the general level of international flows of goods and services converted at market rates.

33. **Staff would note that GDP converted at PPP rates is appropriate for cross-country comparisons of the real value of output produced by an economy.**<sup>12</sup> However, the use of PPP rates in the context of quotas would yield a measure of GDP that is misleading as an indicator of a member's ability to contribute to the Fund, as well as of potential need for Fund resources.<sup>13</sup> There would also be practical drawbacks to using PPP rates, as they are still not available for all Fund members, can be quite out of date, and are subject to measurement error.

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<sup>12</sup> For this reason, the Fund's World Economic Outlook (WEO) uses GDPs converted at PPP rates as weights in aggregating individual countries' GDP growth rates to calculate world output growth.

<sup>13</sup> The empirical finding that, for developing countries, GDP based on market exchange rates is generally lower than PPP-based GDP is attributed to the relatively lower productivity levels in these countries' tradable sectors, which translate into lower wages in these countries and lower prices in their nontradable sectors (Annex Note 5). The PPP methodology essentially assigns one and the same price to a given good or service, no matter where produced. Since, in developing countries, these assigned prices for nontradables are higher than the market prices (in a common numéraire), such countries' GDPs are raised when PPPs are used for conversion.

### **Balance of payments variability**

34. **The QFRG considers that there is a compelling case for including some measure of capital flows in the quota formula**, if this is feasible. Staff is of the same opinion. The QFRG points out that “the size and volatility of private capital flows across national borders have greatly increased” (¶53) since the Fund was founded, and recent balance of payments crises have highlighted the increasing role of sudden reversals of capital flows in causing balance of payments difficulties.

35. The QFRG proposes to define variability as the **variability of current receipts and net long-term capital flows** (¶97 and Annex ¶93). The QFRG’s variability variable focuses on the vulnerability of a country to exogenous real shocks, such as a shift in the terms of trade. In that sense, it is in line with the measure of variability that is currently in the quota formula, which is based on current receipts only. However, the QFRG’s variability measure is not the only possible measure and no theoretical or empirical analysis is provided for it. Alternative measures of variability could take into account other components of the balance of payments, such as current payments or short-term capital flows.

36. **An important source of vulnerability to balance of payments difficulties is not captured by the QFRG’s variability variable.** By the balance of payments identity, the sum of current receipts and net long-term capital flows is equal to the sum of current payments, net short-term capital flows, and changes in official reserves.<sup>14</sup> Vulnerability resulting from sudden reversals of short-term capital flows could leave the QFRG’s variability variable directly unaffected in the short run (although there could be indirect effects, for example on current receipts, as occurred in recent crises in Mexico and Asia). If there were a sudden net outflow of short-term capital, the adjusting variable in the short run would generally be, in a fixed exchange rate regime, official reserves, or, in a floating exchange rate regime, imports. In either case, the QFRG’s variable would be unaffected.

### **Other variables considered by the QFRG**

37. **Openness (¶93, ¶100). The QFRG notes that openness can serve as both an indicator of ability to contribute resources and of vulnerability to external shocks.** While stressing that open economies reap substantial benefits from their exposure to foreign markets, staff would emphasize the link of openness to vulnerability, especially for developing countries, since the more an economy depends on trade, the more vulnerable it tends to be to disruptions in trade. This vulnerability arises because, when an economy is relatively more open, the achievement of external balance through exchange rate adjustments is accompanied by larger changes in internal price levels. If an openness variable were retained in the quota formula, it should reflect the openness of the capital account as well as

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<sup>14</sup> That is,  $X - M + K_L + K_S = R$ , where  $X$ ,  $M$ ,  $K_L$ ,  $K_S$  and  $R$  represent current receipts, current payments, net long-term capital flows, net short-term capital flows, and the change in official reserves, respectively. Rearranging to put the QFRG’s proposed variable on the left-hand side gives  $X + K_L = M - K_S + R$ .

the current account to take account of the increasing importance of capital flows. In any case, as noted by the QFRG (¶106), a measure of openness should not be included in the form of a ratio (to GDP) because of the anomalies that occur with a non-linear formula.

38. **The QFRG's variability measure, however, suffers from a basic disadvantage: it only captures vulnerability if the measurement period contains a shock.** A level variable such as openness, measured as, e.g., the average of current and long-term capital receipts and payments (¶94, ¶109), would not suffer from this drawback, and may be a reasonable indicator of the vulnerability associated with greater integration into global markets.<sup>15</sup>

39. **Official Reserves (¶100).** The QFRG points out that a case can be made that reserves provide a measure of a member's ability to finance the Fund. However, reserves are not a good measure of the ability to contribute resources for the subset of creditors that provide the bulk of the Fund's resources and whose currencies are used as international reserves. These countries are able to finance their balance of payments through the issuance of liabilities and are unlikely to hold a stock of international reserves commensurate with their financing capacity.<sup>16</sup> This situation is very different from that at the inception of the Fund, when reserves comprised mainly members' holdings of gold. In those circumstances, reserves accurately reflected members' ability to finance the Fund, and it made good economic sense to include reserves in the quota formula. Also, the use of reserves may have the effect of treating countries differently depending on their exchange rate regime, since, everything else equal, countries with pegged exchange rates would tend to hold more reserves than countries with floating rates.

40. **Current payments (¶100).** While current payments could serve as an alternative measure of vulnerability, the QFRG observes that current payments (and current receipts) can overstate the degree of economic activity related to the external sector because it gives greater weight to countries heavily engaged in processing imports for re-export. This is in contrast to GDP, which includes only net exports. Nonetheless, as noted above, current

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<sup>15</sup> While a relatively large country would tend to have a relatively large amount of current and capital transactions in absolute terms, openness as a variable in the quota formula would be scaled by the global total of the variable. Unlike the current set of quota formulas, which derives absolute amounts of quotas, the QFRG's proposed formula derives quota shares, and variables are entered as shares in global totals (¶108).

<sup>16</sup> This may be a reason why, in its empirical estimations, the QFRG consistently finds that the coefficient on reserves appears with a negative sign in equations with actual quotas as the dependent variable. For example, in the "benchmark equation" (Table 9), the coefficient on reserves is -0.034 and statistically significantly different from zero (t-ratio of 5.60). Staff believes that the negative and significant coefficient on reserves obtained by the QFRG is due to the inclusion of the subset of creditors whose currencies are used as international reserves. Rerunning the QFRG benchmark equation with identical data, but omitting just the United States, shrinks the coefficient to -0.001 and makes it statistically insignificant (t-ratio of 1.55).

payments (or current receipts) could be a component in an openness variable measured in levels.

41. **Per capita income** (¶100), entered with a negative sign. The QFRG considers that the relevance of per capita GDP to an institution concerned with international monetary issues is rather tenuous. As the QFRG observes, the rationale for using per capita income (or **population**, entered with a positive sign) is to give greater weight to more populated countries “on the grounds that the international community should move toward a system in which individuals begin to count as such on global decision-making.” However, per capita income and population are unlikely to be strongly correlated with the ability to supply resources to the Fund or with the potential need for financing balance of payments equilibria. It would be preferable to address such governance-related issues by means other than through the variables in a quota formula.

42. **External debt** (¶100). The QFRG does not consider external debt to be an appropriate measure of external vulnerability, noting that, among other things, the use of such a variable would raise moral hazard issues. Staff considers moral hazard to be a minor concern in the context of quota formulas, and notes that the level of debt may, in fact, be clearly correlated with a need for balance of payments financing. A high degree of debt may, for example, leave countries more vulnerable to balance of payments crises, since debt servicing flows are difficult and costly to adjust (e.g., through rescheduling) in the face of shortfalls of resources to finance such debt service. Also, depending on the contractual terms of the debt, sharp exchange rate and interest rate changes may be disruptive to a member's ability to continue to service such debt. The more that debt is concentrated at short maturities and is composed of unhedged foreign currency obligations, the higher the risk associated with sharp reversals of capital flows. However, as the QFRG points out, accurate data on foreign currency debt, especially short-term debt, continue to be hard to obtain on a consistent basis.<sup>17</sup>

43. **Share of food and energy in imports** (¶100). As the QFRG notes, other products could also lay legitimate claims to "essentiality," and the Compensatory Financing Facility (CFF) is already designed to deal directly with the need for temporary financing arising from volatility in cereal imports. Staff would agree with the first point, but would note that the second point is invalid because access to the CFF is tied to quotas. However, staff would add that a country may have a high ratio of food imports to total imports, but low ratios of (i) imports to GDP, and (ii) food and energy imports to total food and energy consumption. Such a country's balance of payments would not be very vulnerable to adverse changes in world food or energy prices.

44. **Access to capital markets** (¶100). As the QFRG points out, a key issue is to find an appropriate variable to measure such access. The difficulties of measuring access are

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<sup>17</sup> It could also be considered to include the stock of external assets in the quota formula. Apart from any conceptual considerations, data problems would appear to be at least as severe as with debt variables.



reflected in the available international classifications, e.g., of sovereign risk. Such classifications can change rapidly, and it is not clear that use of historical ratings data would be very relevant in the context of quota calculations. Moreover, these classifications raise issues of availability, comprehensiveness, and the difficult question of whether Fund quotas should be based in any way on the judgements of private sector companies. Also, the various international classifications may not be compatible with each other, giving rise to the issue of which classification to use in such circumstances.

45. **Exchange rate variability (¶100).** The QFRG notes that “changes in exchange rates provide an alternative source of adjustment to reliance on reserves and official borrowing to deal with payments imbalances, and on that account higher variability of exchange rates might be associated with lower quotas. On the other hand, high variability may also reflect a greater frequency and/or magnitude of shocks to a country’s international payments, and on that account might be an indicator of a greater need for reserves or official lines of credit. The implications for IMF quotas of high exchange rate variability are unclear.” Staff agrees with this conclusion and would add that, in comparison with other variables, exchange rates also may occasionally be subject to fluctuations and misalignments unrelated to changes in economic fundamentals.

### **C. Implications of EMU**

46. The QFRG does not agree with the notion that the eleven countries comprising the European Economic and Monetary Union (EMU) should be treated as a single economic unit for purposes of quota calculations (¶102–03). The QFRG rightly points out that, under the Fund’s Articles of Agreement (Article II), only countries may be members of the IMF. The QFRG also argues that a monetary union among several countries does not imply that a member cannot run into balance-of-payments difficulties of a type with which the IMF can help. These issues were discussed by the Executive Board in the context of its consideration of the implications of EMU for the Fund. At the time, it was noted that while the identification of balance of payments need is likely to be more difficult than in the case of a member with its own currency, circumstances could arise where such a need could be discerned, based on various indicators such as exceptional financing and movements in interest rate premia.

### **D. Data Limitations**

47. **The QFRG refers to statistical weaknesses associated with some of the variables considered above.** The staff believes that timely, high-quality and widely available data are needed to apply any proposed quota formula and derive calculated quotas. The data requirements are formidable because they apply equally to all 182 members and involve consistent, long time series.

48. A degree of data estimation has been accepted in previous reviews despite the inherent arbitrariness involved, but the order of **magnitude of data estimation that would currently be necessary to compute capital account variables would appear to be**

**markedly higher than with the variables used in previous quota reviews.**<sup>18</sup> As noted previously by staff, and recalled in the QFRG's report (Annex ¶61), capital transactions are recorded with varying degrees of netting and coverage across countries and individual capital account items. Furthermore, about 55 members do not provide timely and comprehensive data on capital and financial transactions for publication in the IMF's Balance of Payments (BOP) statistics. The QFRG notes that the extent of further work involving area departments and staff estimation to complete the data base needed for quota calculations would be comparable with that undertaken in the past with respect to current account transactions (Annex ¶70). Staff disagrees with this assessment. The current account data required in the past have been simple aggregates of receipts and of payments, and, even for countries that do not provide data for the Fund's BOP data base, current account data are routinely included in the IMF's country Staff Reports and maintained in the WEO data base from data submissions by area departments, making these data to a large extent readily available (albeit often subject to reliability and comparability problems). By contrast, the required long-term capital data cover particular categories in the capital and financial accounts which are not routinely provided by national authorities, nor are they collected by area departments or others, so that even a minimal basis on which to build the required data for countries with missing data in the IMF's BOP statistics is lacking.

49. A pragmatic **operational definition of net long-term capital flows** would probably include direct investment, long-term debt securities (i.e., bonds and notes in terms of the IMF's BOP classification), and long-term loans and other investments.<sup>19</sup> Thus, short-term flows would include capital transfers, short-term debt securities (money market instruments and financial derivatives), short-term loans, trade credits and other investments, and net errors and omissions. Equity securities might be included in short-term flows on the basis of their high degree of liquidity.

50. **Preliminary investigation by the staff indicates that assembling and/or constructing a complete data set on capital flows conforming to the QFRG's definition would be challenging.** Data on capital flows for the years 1982–94 (the period used in the Eleventh Review computation of variability)<sup>20</sup> are, as already noted, generally not available in the BOP statistics data base for about one-third of the Fund's membership and there is in

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<sup>18</sup> For a number of variables that could conceivably be included in the quota formula, such as short-term capital flows, debt, or access to capital markets, data problems would be particularly severe.

<sup>19</sup> In principle, consideration could be given to excluding official net capital flows from the definition of net long-term capital. However, in terms of their liquidity characteristics, official capital flows probably share generally the same properties as private medium and long-term flows, and therefore the case for excluding them is not clear cut.

<sup>20</sup> Variability is measured over the 9-year period 1984–92 by comparing the observation for each of these years with the 5-year averages centered on the respective years. This implies that data for a period of 13 years are needed.

fact hardly any country for which all the required capital and financial account data are available to compute the QFRG's proposed variability variable. Moreover, the data that are available are not always comparable across countries because national accounting procedures and definitions of variables differ. If capital account variables were to be included in quota formulas, a major effort by the membership would be required to collect the required data in the years to come. In the meantime, a very considerable degree of data verification and estimation by staff would be required.

51. **The QFRG views foreign trade variables as less appropriate indicators** of the importance of international trade for closely integrated countries (such as within the European Union) than for countries that are not as well integrated, as such variables are measured by statistical convention on a gross value basis (¶94, ¶100, ¶103). Therefore, these variables may tend to “double count” cross-border trade relative to value added in economic activity. Staff would point out that while there may be some conceptual validity to this point, trade data on a value added basis are highly unlikely to be assembled in the foreseeable future, even by countries with a relatively sophisticated statistical apparatus.

52. **The staff considers that a key criterion for a quota formula is that it produces results that are reasonable and widely accepted.** Therefore, and despite considerable data limitations, staff has undertaken calculations of quota shares based on a partial version of the QFRG formula. For this purpose, the data for the Eleventh Quota Review were used (ending in 1994). However, the staff calculations do not include the variability of net long-term capital flows, and GDP was averaged for 1992–94.<sup>21</sup> Thus, staff would caution that the calculations are preliminary and illustrative.

53. The results of this limited application suggest that the QFRG formulas could produce calculated quota shares that differ substantially from either current actual shares or those derived from the present five-formula approach for individual members, country groupings (Commentary Appendix Tables 1–3). In particular, the major industrial countries, especially the largest economies, would gain share relative to current actual shares and, to a lesser extent, when compared with the five-formula approach. The smaller advanced economies would generally have QFRG calculated shares that are lower than both current shares and those based on the current formulas. A number of emerging market countries would have QFRG calculated shares that are higher than those derived from present formulas, but lower than current shares.

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<sup>21</sup> In the absence of the necessary data on capital flows, the variability of current receipts was used. Variability is defined as a one-standard deviation from trend during 1982–94, where trend is a centered five-year moving average .

## V. NEXT STEPS

54. **The QFRG recommends a major simplification and updating of the quota formulas** based on a normative analysis of the principal functions of quotas and consideration of the principal changes in the world economy which affect members' ability to provide financing and the need for IMF resources. The staff supports major elements of the QFRG's recommendations, in particular the goal of simplicity; the use of variables representing ability to contribute and potential need to borrow; the inclusion of GDP at market exchange rates; and the inclusion of a measure of variability. However, staff believes that in addition to the QFRG's proposed variability measure, consideration should also be given to other measures of variability, including ones that could incorporate current payments or short-term capital flows, and would also favor exploring the possible inclusion of other variables, such as openness. Moreover, decisions on the definition and weights of variables will need to be informed by the degree of acceptability of the calculated quota distribution that any new formula produces. However, quantification would be a major undertaking and unlikely to bear fruit for some time. **Staff could undertake a work program that includes quantification as well as consideration of alternative formulas, based on guidance provided by the Executive Board on the above and other issues.**

Table 1. Preliminary Illustrative Calculations Based on Partial QFRG Formula and Data Ending in 1994 1/

	Actual	Calculated	Calculated	Difference Between	
	Quota	Quota Shares	Quota Shares	Col. (2) and	Col. (2) and
	Shares	Based on	Based on	Col. (1)	Col. (3)
	(In percent)	QFRG Formula	5-Formulas		
	(1)	(In percent)	(In percent)	(2) - (1)	(2) - (3)
United States	17.521	22.469	17.251	4.95	5.22
Japan	6.279	13.198	10.204	6.92	2.99
Germany	6.135	7.971	9.007	1.84	-1.04
France	5.065	5.088	5.580	0.02	-0.49
United Kingdom	5.065	3.913	4.992	-1.15	-1.08
Italy	3.328	4.034	4.181	0.71	-0.15
Saudi Arabia	3.295	1.059	1.312	-2.24	-0.25
Canada	3.004	2.881	3.269	-0.12	-0.39
Russia	2.804	1.971	1.843	-0.83	0.13
Netherlands	2.435	1.424	2.831	-1.01	-1.41
China	2.211	1.796	1.658	-0.42	0.14
Belgium	2.172	1.281	2.429	-0.89	-1.15
India	1.961	0.963	0.762	-1.00	0.20
Switzerland	1.631	1.015	1.594	-0.62	-0.58
Australia	1.526	1.254	1.202	-0.27	0.05
Spain	1.438	1.892	2.080	0.45	-0.19
Brazil	1.432	1.852	1.371	0.42	0.48
Venezuela	1.254	0.585	0.523	-0.67	0.06
Mexico	1.220	1.654	1.329	0.43	0.33
Sweden	1.130	0.863	1.262	-0.27	-0.40
Argentina	0.998	0.868	0.639	-0.13	0.23
Indonesia	0.981	0.792	0.792	-0.19	0.00
Austria	0.883	0.847	1.278	-0.04	-0.43
South Africa	0.881	0.408	0.445	-0.47	-0.04
Nigeria	0.827	0.547	0.412	-0.28	0.14
Norway	0.788	0.733	0.955	-0.06	-0.22
Denmark	0.775	0.583	0.999	-0.19	-0.42
Korea	0.770	1.392	1.659	0.62	-0.27
Iran	0.706	1.449	0.568	0.74	0.88
Malaysia	0.701	0.511	1.028	-0.19	-0.52
Kuwait	0.651	0.594	0.519	-0.06	0.08
Ukraine	0.647	0.391	0.398	-0.26	-0.01
Poland	0.646	0.422	0.487	-0.22	-0.07
Finland	0.596	0.503	0.635	-0.09	-0.13
Algeria	0.592	0.398	0.332	-0.19	0.07

1/ Excludes QFRG proposal to incorporate the variability of net long-term capital flows due to the absence of the necessary data. Based on data used in the Eleventh Review of Quotas for the other variables. Differences between actual quota shares and calculated quota shares may not add up due to rounding.

Table 1. Preliminary Illustrative Calculations Based on Partial QFRG Formula and Data Ending in 1994 1/

	Actual Quota Shares <i>(In percent)</i>	Calculated Quota Shares Based on QFRG Formula <i>(In percent)</i>	Calculated Quota Shares Based on 5-Formulas <i>(In percent)</i>	Difference Between Col. (2) and Col. (1)      Col. (2) and Col. (3)	
	(1)	(2)	(3)	(2) - (1)	(2) - (3)
Iraq	0.560	1.155	0.332	0.60	0.82
Libya	0.530	0.432	0.315	-0.10	0.12
Thailand	0.510	0.523	0.862	0.01	-0.34
Hungary	0.490	0.235	0.301	-0.26	-0.07
Pakistan	0.488	0.192	0.208	-0.30	-0.02
Romania	0.486	0.291	0.228	-0.20	0.06
Turkey	0.455	0.622	0.533	0.17	0.09
Egypt	0.445	0.300	0.377	-0.15	-0.08
Israel	0.438	0.260	0.385	-0.18	-0.13
New Zealand	0.422	0.211	0.262	-0.21	-0.05
Philippines	0.415	0.253	0.340	-0.16	-0.09
Portugal	0.409	0.382	0.558	-0.03	-0.18
Singapore	0.407	0.519	1.529	0.11	-1.01
Chile	0.404	0.185	0.256	-0.22	-0.07
Ireland	0.395	0.248	0.609	-0.15	-0.36
Greece	0.388	0.347	0.383	-0.04	-0.04
Czech Republic	0.386	0.290	0.318	-0.10	-0.03
Colombia	0.365	0.217	0.243	-0.15	-0.03
Bulgaria	0.302	0.193	0.192	-0.11	0.00
Peru	0.301	0.178	0.157	-0.12	0.02
United Arab Emirates	0.288	0.384	0.399	0.10	-0.02
Morocco	0.277	0.120	0.169	-0.16	-0.05
Bangladesh	0.252	0.089	0.089	-0.16	0.00
Congo, Dem. Republic of	0.251	0.066	0.055	-0.19	0.01
Zambia	0.231	0.031	0.034	-0.20	0.00
FRY (Serbia/Montenegro)	0.221	0.283	0.197	0.06	0.09
Sri Lanka	0.195	0.056	0.078	-0.14	-0.02
Belarus	0.182	0.100	0.119	-0.08	-0.02
Ghana	0.174	0.021	0.029	-0.15	-0.01
Kazakhstan	0.172	0.147	0.189	-0.03	-0.04
Croatia	0.172	0.147	0.158	-0.03	-0.01
Slovak Republic	0.169	0.123	0.137	-0.05	-0.02
Zimbabwe	0.167	0.034	0.043	-0.13	-0.01
Trinidad and Tobago	0.158	0.064	0.059	-0.09	0.01
Vietnam	0.155	0.054	0.063	-0.10	-0.01

1/ Excludes QFRG proposal to incorporate the variability of net long-term capital flows due to the absence of the necessary data. Based on data used in the Eleventh Review of Quotas for the other variables. Differences between actual quota shares and calculated quota shares may not add up due to rounding.

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	Actual Quota Shares <i>(In percent)</i>	Calculated Quota Shares Based on QFRG Formula <i>(In percent)</i>	Calculated Quota Shares Based on 5-Formulas <i>(In percent)</i>	Difference Between Col. (2) and Col. (1)	
	(1)	(2)	(3)	(2) - (1)	(2) - (3)
Cote d'Ivoire	0.153	0.057	0.069	-0.10	-0.01
Sudan	0.149	0.053	0.036	-0.10	0.02
Uruguay	0.145	0.054	0.055	-0.09	0.00
Ecuador	0.143	0.096	0.095	-0.05	0.00
Syrian Arab Republic	0.138	0.199	0.133	0.06	0.07
Tunisia	0.135	0.076	0.114	-0.06	-0.04
Angola	0.135	0.092	0.095	-0.04	0.00
Luxembourg	0.132	0.112	0.291	-0.02	-0.18
Uzbekistan	0.130	0.076	0.091	-0.05	-0.02
Jamaica	0.129	0.029	0.051	-0.10	-0.02
Kenya	0.128	0.039	0.050	-0.09	-0.01
Qatar	0.124	0.095	0.093	-0.03	0.00
Myanmar	0.122	0.128	0.115	0.01	0.01
Yemen, Republic of	0.115	0.112	0.077	0.00	0.03
Slovenia	0.109	0.116	0.142	0.01	-0.03
Dominican Republic	0.103	0.058	0.068	-0.05	-0.01
Brunei Darussalam	0.101	0.099	0.102	0.00	0.00
Guatemala	0.099	0.044	0.048	-0.06	0.00
Panama	0.097	0.058	0.068	-0.04	-0.01
Lebanon	0.096	0.054	0.080	-0.04	-0.03
Tanzania	0.094	0.023	0.026	-0.07	0.00
Oman	0.091	0.148	0.153	0.06	-0.01
Cameroon	0.088	0.058	0.052	-0.03	0.01
Uganda	0.085	0.018	0.016	-0.07	0.00
Bolivia	0.081	0.031	0.028	-0.05	0.00
El Salvador	0.081	0.030	0.035	-0.05	-0.01
Jordan	0.080	0.047	0.080	-0.03	-0.03
Bosnia-Herzegovina	0.080	0.030	0.072	-0.05	-0.04
Costa Rica	0.077	0.036	0.052	-0.04	-0.02
Afghanistan, Islamic State of	0.076	0.250	0.010	0.17	0.24
Senegal	0.076	0.025	0.029	-0.05	0.00
Azerbaijan	0.076	0.038	0.046	-0.04	-0.01
Gabon	0.073	0.067	0.070	-0.01	0.00
Georgia	0.071	0.029	0.020	-0.04	0.01
Lithuania	0.068	0.055	0.060	-0.01	-0.01

1/ Excludes QFRG proposal to incorporate the variability of net long-term capital flows due to the absence of the necessary data. Based on data used in the Eleventh Review of Quotas for the other variables. Differences between actual quota shares and calculated quota shares may not add up due to rounding.

Table 1. Preliminary Illustrative Calculations Based on Partial QFRG Formula and Data Ending in 1994 1/

	Actual Quota Shares <i>(In percent)</i>	Calculated Quota Shares Based on QFRG Formula <i>(In percent)</i>	Calculated Quota Shares Based on 5-Formulas <i>(In percent)</i>	Difference Between Col. (2) and Col. (1)      Col. (2) and Col. (3)	
	(1)	(2)	(3)	(2) - (1)	(2) - (3)
Cyprus	0.066	0.039	0.061	-0.03	-0.02
Namibia	0.064	0.022	0.035	-0.04	-0.01
Bahrain	0.064	0.074	0.108	0.01	-0.03
Ethiopia	0.063	0.029	0.024	-0.03	0.01
Papua New Guinea	0.062	0.033	0.043	-0.03	-0.01
Bahamas, The	0.061	0.025	0.035	-0.04	-0.01
Nicaragua	0.061	0.012	0.016	-0.05	0.00
Honduras	0.061	0.019	0.025	-0.04	-0.01
Liberia	0.061	0.009	0.006	-0.05	0.00
Latvia	0.060	0.041	0.046	-0.02	-0.01
Moldova	0.058	0.025	0.030	-0.03	-0.01
Madagascar	0.058	0.013	0.014	-0.05	0.00
Iceland	0.055	0.026	0.036	-0.03	-0.01
Mozambique	0.054	0.007	0.014	-0.05	-0.01
Guinea	0.051	0.018	0.019	-0.03	0.00
Sierra Leone	0.049	0.005	0.005	-0.04	0.00
Malta	0.048	0.018	0.058	-0.03	-0.04
Mauritius	0.048	0.018	0.037	-0.03	-0.02
Paraguay	0.047	0.035	0.036	-0.01	0.00
Mali	0.044	0.010	0.013	-0.03	0.00
Suriname	0.043	0.020	0.018	-0.02	0.00
Armenia	0.043	0.118	0.019	0.08	0.10
Guyana	0.043	0.006	0.011	-0.04	-0.01
Kyrgyz Republic	0.042	0.021	0.026	-0.02	-0.01
Cambodia	0.041	0.010	0.006	-0.03	0.00
Tajikistan	0.041	0.020	0.041	-0.02	-0.02
Congo, Republic of	0.040	0.039	0.042	0.00	0.00
Haiti	0.039	0.011	0.008	-0.03	0.00
Somalia	0.039	0.004	0.003	-0.04	0.00
Rwanda	0.038	0.007	0.006	-0.03	0.00
Burundi	0.036	0.005	0.006	-0.03	0.00
Turkmenistan	0.035	0.053	0.050	0.02	0.00
Togo	0.035	0.007	0.009	-0.03	0.00
Nepal	0.034	0.014	0.018	-0.02	0.00
Fiji	0.033	0.014	0.020	-0.02	-0.01

1/ Excludes QFRG proposal to incorporate the variability of net long-term capital flows due to the absence of the necessary data. Based on data used in the Eleventh Review of Quotas for the other variables. Differences between actual quota shares and calculated quota shares may not add up due to rounding.



Table 1. Preliminary Illustrative Calculations Based on Partial QFRG Formula and Data Ending in 1994 1/

	Actual Quota Shares <i>(In percent)</i>	Calculated Quota Shares Based on QFRG Formula <i>(In percent)</i>	Calculated Quota Shares Based on 5-Formulas <i>(In percent)</i>	Difference Between Col. (2) and Col. (1)      Col. (2) and Col. (3)	
	(1)	(2)	(3)	(2) - (1)	(2) - (3)
Malawi	0.033	0.012	0.014	-0.02	0.00
Macedonia, FYR	0.032	0.020	0.026	-0.01	-0.01
Barbados	0.032	0.019	0.022	-0.01	0.00
Niger	0.031	0.013	0.012	-0.02	0.00
Estonia	0.031	0.027	0.031	0.00	0.00
Mauritania	0.030	0.007	0.010	-0.02	0.00
Botswana	0.030	0.033	0.066	0.00	-0.03
Benin	0.029	0.013	0.013	-0.02	0.00
Burkina Faso	0.028	0.011	0.012	-0.02	0.00
Chad	0.026	0.007	0.008	-0.02	0.00
Central African Republic	0.026	0.006	0.007	-0.02	0.00
Lao, People's Dem. Republic	0.025	0.006	0.006	-0.02	0.00
Mongolia	0.024	0.015	0.016	-0.01	0.00
Swaziland	0.024	0.009	0.020	-0.02	-0.01
Albania	0.023	0.018	0.016	-0.01	0.00
Lesotho	0.016	0.009	0.017	-0.01	-0.01
Equatorial Guinea	0.015	0.001	0.001	-0.01	0.00
Gambia, The	0.015	0.003	0.005	-0.01	0.00
Belize	0.009	0.006	0.007	0.00	0.00
San Marino	0.008	0.008	0.017	0.00	-0.01
Vanuatu	0.008	0.002	0.003	-0.01	0.00
Djibouti	0.007	0.004	0.005	0.00	0.00
Eritrea	0.007	0.005	0.006	0.00	0.00
St. Lucia	0.007	0.003	0.006	0.00	0.00
Guinea-Bissau	0.007	0.003	0.002	0.00	0.00
Antigua and Barbuda	0.006	0.003	0.010	0.00	-0.01
Grenada	0.006	0.002	0.003	0.00	0.00
Samoa	0.005	0.001	0.002	0.00	0.00
Solomon Islands	0.005	0.003	0.004	0.00	0.00
Cape Verde	0.005	0.002	0.003	0.00	0.00
Comoros	0.004	0.001	0.002	0.00	0.00
St. Kitts and Nevis	0.004	0.001	0.002	0.00	0.00
Seychelles	0.004	0.003	0.005	0.00	0.00
St. Vincent and the Grenadines	0.004	0.002	0.003	0.00	0.00
Dominica	0.004	0.001	0.002	0.00	0.00

1/ Excludes QFRG proposal to incorporate the variability of net long-term capital flows due to the absence of the necessary data. Based on data used in the Eleventh Review of Quotas for the other variables. Differences between actual quota shares and calculated quota shares may not add up due to rounding.

Table 1. Preliminary Illustrative Calculations Based on Partial QFRG Formula and Data Ending in 1994 1/

	Actual Quota Shares <i>(In percent)</i>	Calculated Quota Shares Based on QFRG Formula <i>(In percent)</i>	Calculated Quota Shares Based on 5-Formulas <i>(In percent)</i>	Difference Between Col. (2) and Col. (1)	
	(1)	(2)	(3)	(2) - (1)	(2) - (3)
Maldives	0.004	0.002	0.004	0.00	0.00
Sao Tome and Principe	0.003	0.00	0.001	0.00	0.00
Tonga	0.003	0.001	0.002	0.00	0.00
Bhutan	0.003	0.002	0.003	0.00	0.00
Kiribati	0.003	0.001	0.002	0.00	0.00
Micronesia, Fed. States of	0.002	0.001	0.002	0.00	0.00
Marshall Islands	0.002	0.001	0.001	0.00	0.00
Palau, Republic of	0.001	0.001	0.001	0.00	0.00
Total	100.0	100.0	100.0	0.0	0.0

1/ Excludes QFRG proposal to incorporate the variability of net long-term capital flows due to the absence of the necessary data. Based on data used in the Eleventh Review of Quotas for the other variables. Differences between actual quota shares and calculated quota shares may not add up due to rounding.

**Table 2. Preliminary Illustrative Calculations Based on Partial QFRG Formula and Data Ending in 1994 1/  
By WEO Classification**

	Actual Quota Shares <i>(In percent)</i>	Calculated Quota Shares Based on QFRG Formula <i>(In percent)</i>	Calculated Quota Shares Based on 5-Formulas <i>(In percent)</i>	Difference Between Col. (2) and Col. (1)      Col. (2) and Col. (3)	
	(1)	(2)	(3)	(2) - (1)	(2) - (3)
<b>Advanced Economies</b>	63.195	73.457	75.479	10.26	-2.02
Major Industrial Countries	46.396	59.555	54.484	13.16	5.07
Other Advanced Economies	16.799	13.902	20.995	-2.90	-7.09
<b>Developing Countries</b>	29.205	21.248	19.221	-7.96	2.03
Africa	5.536	2.468	2.516	-3.07	-0.05
Asia	8.400	5.796	6.225	-2.60	-0.43
Middle East & Europe	7.754	6.781	5.197	-0.97	1.58
Western Hemisphere	7.515	6.204	5.283	-1.31	0.92
Net Creditor	5.082	2.811	2.894	-2.27	-0.08
Net Debtors	24.123	18.437	16.327	-5.69	2.11
of which HIPC or					
least developing countries	3.569	1.512	1.322	-2.06	0.19
of which PRGF eligible	10.354	5.712	5.127	-4.64	0.59
<b>Transition Economies</b>	7.601	5.295	5.301	-2.31	-0.01
<b>Total</b>	100.0	100.0	100.0	0.0	0.0

1/ Excludes QFRG proposal to incorporate the variability of net long-term capital flows due to the absence of the necessary data. Based on data used in the Eleventh Review of Quotas for the other variables. Differences between actual quota shares and calculated quota shares may not add up due to rounding.

**Table 3. Preliminary Illustrative Calculations Based on Partial QFRG Formula and Data Ending in 1994 1/  
By Geographical Region**

	Actual Quota Shares <i>(In percent)</i>	Calculated Quota Shares Based on QFRG Formula <i>(In percent)</i>	Calculated Quota Shares Based on 5-Formulas <i>(In percent)</i>	Difference Between Col. (2) and Col. (1)      Col. (2) and Col. (3)	
	(1)	(2)	(3)	(2) - (1)	(2) - (3)
<b>Advanced Economies</b>	63.195	73.457	75.479	10.26	-2.02
North America	20.525	25.350	20.520	4.83	4.83
Europe and Middle East	33.265	31.532	40.103	-1.73	-8.57
Asia	9.404	16.575	14.856	7.17	1.72
<b>Emerging Markets 2/</b>	33.312	24.576	25.331	-8.74	-0.76
Africa	3.372	1.548	1.616	-1.82	-0.07
Asia	9.141	7.186	9.128	-1.96	-1.94
Europe	7.483	5.360	5.467	-2.12	-0.11
Middle East	6.279	4.465	4.074	-1.81	0.39
Western Hemisphere	7.037	6.016	5.047	-1.02	0.97
<b>Other Developing Countries</b>	4.422	3.525	2.279	-0.90	1.25
Africa	2.165	0.920	0.900	-1.25	0.02
Asia	0.436	0.521	0.285	0.09	0.24
Europe and Middle East	1.344	1.897	0.857	0.55	1.04
Western Hemisphere	0.478	0.187	0.237	-0.29	-0.05
<b>Other Transitional Economies</b>	0.686	0.614	0.485	-0.07	0.13

1/ Excludes QFRG proposal to incorporate the variability of net long-term capital flows due to the absence of the necessary data. Based on data used in the Eleventh Review of Quotas for the other variables. Differences between actual quota shares and calculated quota shares may not add up due to rounding.

2/ Developing countries including Israel, Korea, and Singapore that have issued bonds, equities, and loans since 1997, as shown in the May 3, 2000 *Emerging Markets Financing Report* prepared by the Research Department.

These countries are: Angola, Argentina, Azerbaijan, Bahrain, Bangladesh, Bolivia, Brazil, Bulgaria, Cameroon, Chile, China, Colombia, Costa Rica, Cote d'Ivoire, Croatia, Cyprus, Czech Republic, Dominican Republic, Indonesia, Iran, Israel, Jamaica, Jordan, Kazakhstan, Korea, Kuwait, Latvia, Lebanon, Lesotho, Lithuania, Macedonia FYR, Malaysia, Mali, Malta, Mauritius, Mexico, Moldova, Morocco, Namibia, Nepal, Nigeria, Oman, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Qatar, Romania, Russia, Saudi Arabia, Senegal, Seychelles, Singapore, Slovak Republic, Slovenia, South Africa, Sri Lanka, Tajikistan, Thailand, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe.