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December 7, 1992

To: Members of the Executive Board
From: The Secretary
Subject: Quota Calculations for the Successor Republics of Yugoslavia

Attached for consideration by the Executive Directors is a paper on quota calculations for the successor republics of Yugoslavia, which is scheduled for discussion on Monday, December 14, 1992. Conclusions appear on pages 10-13.

Mr. Roncesvalles (ext. 37800) or Mr. O'Brien (ext. 37812) is available to answer technical or factual questions relating to this paper prior to the Board discussion.

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INTERNATIONAL MONETARY FUND

Quota Calculations for the Successor Republics of Yugoslavia

Prepared by the Treasurer's Department

(In consultation with the Legal and European I Departments)

Approved by David Williams

December 7, 1992

I. Introduction

This paper presents quota calculations for the five republics that formerly constituted the Socialist Federal Republic of Yugoslavia (referred to as Yugoslavia in this paper). These calculations take into account the existing quota of Yugoslavia, which was determined under the Eighth General Review, and also that Yugoslavia has consented to its increase in quota under the Ninth General Review of Quotas, but has not paid for the increase in its quota. This paper deals with the particular issues relating to: (i) the need to measure the relative economic size of the individual countries that were integrated with each other to comprise Yugoslavia until very recently and for which individual "country" data are not fully available for making quota calculations; and (ii) the determination of a possible key for use in distributing Yugoslavia's quota and Fund-related assets and liabilities of Yugoslavia among the successor republics.

Section II discusses the availability of data and the estimation procedures used to fill gaps in the data base. The methodology for determining a distribution key based on calculated quotas for the successor republics is discussed in Section III; quota calculations for the successor republics are also presented. Conclusions are presented in Section IV.

In making quota calculations for the former constituent republics of Yugoslavia, it would seem appropriate to use the same type of data required from, and use the quota formulas normally applied to, new members joining the Fund, so that the Fund's standard quota calculation procedures can be followed as closely as possible. In this regard, it will be recalled that quota calculations purport to measure the relative economic size of individual economies, and therefore such calculations would seem to provide a proper basis for the division of Yugoslavia's quota in the Fund and its Fund-related assets and liabilities among the successor republics.

Some practical difficulties arise in making quota calculations for the successor states of Yugoslavia because they were until recently integral parts of a single country. Some of the data necessary to make a consistent set of quota calculations, particularly in the area of external transactions, are not available for all of the constituent parts of Yugoslavia. It

may also be noted that when previously making quota calculations for Yugoslavia as a whole, some data, e.g., GSP, were converted or adjusted to concepts applicable to all members, i.e. GDP, and some of the information needed to carry out similar conversions for the individual successor states is not available. It has, therefore, been necessary, as discussed in Section II, to allocate some of the data for Yugoslavia among its successor states using distributive keys, as was followed, for example, in the recent case of the states that comprised the former Soviet Union. 1/

Quota increases approved under the Ninth Review are now in effect, subject to members having consented to and paid for the increases in their quotas. In this paper, quota calculations have been made for each of the successor republics, using both Eighth and Ninth Review data and quota formulas, for the purpose of calculating a key that could be used to distribute both the present (Eighth Review) quota of Yugoslavia and the quota as proposed under the Ninth Review and to which Yugoslavia has consented but has not paid. The distribution key suggested in this paper is based on the percentage shares of the individual republics in the aggregate of their Eighth Review calculated quotas and in their Ninth Review calculated quotas, and these shares would be applied to the present (Eighth) and Ninth Review quotas of Yugoslavia, respectively, for the purpose of determining the quota of each of the successor republics of Yugoslavia. The distribution of the Ninth Review quota would also be used for the allocation of assets and liabilities among the successor republics.

As regards the payment for the increase in Yugoslavia's quota under the Ninth Review, it will be recalled that Yugoslavia is presently in arrears in its financial obligations to the General Resources Account, and cannot therefore make the payment for its increase in quota under the Ninth Review. In order to determine for each successor republic its share of the payment for the increase in Yugoslavia's quota that was approved under the Ninth Review, a distributive key can be determined on the basis of calculating the increase in quota for each successor republic from the Eighth to the Ninth Review. The difference for each republic between its present (Eighth Review) quota and its Ninth Review quota represents the increase in quota for each republic and the amount of payment with respect to this increase. Twenty-five percent of the payment for the quota increase would need to be made in reserve assets in SDRs or currencies acceptable to the Fund.

1/ See EB/CW/QMethodology/92/1 (2/28/92). For the states which previously comprised the Soviet Union, data on the national income accounts were available in respect of net material product (NMP) and depreciation only. The remaining components of GDP, primarily the output of the nonmaterial sector, were attributed on the basis of shares in the Soviet Union's NMP and depreciation. The foreign reserves of the Soviet Union were attributed to its constituent republics based on the shares negotiated by a majority of the former republics for the former Soviet Union's foreign debt and assets. Current invisible transactions for the Soviet Union were attributed using each former republic's share in merchandise trade.

II. Data for Making Quota Calculations

The following data were used in making quota calculations for each of the successor republics of Yugoslavia:

1. Gross Domestic Product data

As regards GDP, the national income accounts of Yugoslavia were compiled and published in terms of gross social product (GSP) for both the individual republics of Yugoslavia as well as for Yugoslavia as a whole. The GDP data used in making quota calculations for Yugoslavia under the Eighth and Ninth Reviews (Table 1) were estimated by Fund staff based on aggregate economic data for Yugoslavia as a whole, and the Ninth Review data were adjusted to take into account some overvaluation of inventories and undervaluation of intermediate consumption. 1/ The authorities of Yugoslavia also previously provided estimates of GDP for Yugoslavia as a whole, but not for the individual republics. 2/ Official GDP estimates have now been provided to the staff by the authorities of the Republic of Croatia and the Republic of Slovenia for 1980 and 1985, and these estimates have been adjusted to eliminate the overvaluation of inventories and undervaluation of intermediate consumption in the productive sectors. These data provide a basis for making similar adjustments to the GSP data for other successor republics.

The ratios of GDP to GSP for Yugoslavia as a whole in 1980 and 1985, as used in the Eighth and Ninth Quota Reviews, were 1.106 and 1.078, respectively. For Croatia and Slovenia, the corresponding ratios are 1.063 and 1.034 respectively for 1980, and 0.946 and 0.931 respectively for 1985. The lower ratios for Croatia and Slovenia reflect the fact, as noted above, that the GDP data compiled by Croatia and Slovenia have been adjusted to eliminate an overstatement of the value of inventories and an understatement of

1/ Under Yugoslav national accounting methodology, the change in inventory values was measured inclusive of the effect of price increases with the result that, in terms of high inflation (producer prices grew by about 70 percent in 1985), the change in inventory values, and therefore gross social output, in Yugoslavia were significantly overstated. Further, intermediate consumption in many Yugoslav industries was not measured on a last-in-first-out basis so that it was significantly understated, in terms of the United Nations System of National Accounts standards, when inflation was high. Both of these factors led to overstatement of gross social product in Yugoslavia.

2/ The GDP data provided by the Yugoslav authorities were derived by adding to gross social product an estimate of value added in the nonsocial sectors. They are therefore subject to the same upward bias as the underlying GSP data. Estimates of GDP for the individual republics, which are said to have been compiled on the same basis as the official data for Yugoslavia, have now also been provided by the authorities of Serbia. They therefore are also subject to upward bias.

Table 1. Yugoslavia and its Successor Republics: Data for Quota Calculations

(In millions of SDRs)

| | Yugoslavia | Bosnia and Herzegovina | Croatia | Slovenia | Macedonia | Serbia and Montenegro |
|---|------------|---------------------------|---------|----------|-----------|--------------------------|
| 1. Eighth Review | | | | | | |
| GDP, 1980 | 53,535 | 6,699 | 14,311 | 8,487 | 2,950 | 21,088 |
| Reserves, 12-month average in 1980 | 809 | 100 | 242 | 132 | 46 | 288 |
| Current payments, average 1976-80 | 11,504 | 1,429 | 3,449 | 1,885 | 649 | 4,110 |
| Current receipts, average 1976-80 | 10,184 | 1,322 | 3,211 | 1,649 | 518 | 3,506 |
| Variability of current receipts, 1968-80 <u>1/</u> | 300 | 39 | 94 | 49 | 15 | 103 |
| 2. Ninth Review | | | | | | |
| GDP, 1985 | 44,312 | 5,898 | 11,507 | 7,352 | 2,511 | 17,044 |
| Reserves, 12-month average in 1985 | 996 | 131 | 269 | 163 | 59 | 374 |
| Current payments, average 1981-85 | 16,106 | 2,115 | 4,354 | 2,635 | 954 | 6,049 |
| Current receipts, average 1981-85 | 16,074 | 2,122 | 4,754 | 2,631 | 821 | 5,745 |
| Variability of current receipts, 1973-85 <u>1/</u> | 911 | 120 | 269 | 149 | 47 | 326 |

Note: Eighth Review external transactions data for Yugoslavia in 1976-80 are those which were used in that Review. These data for Yugoslavia were subsequently revised marginally at the time of the Ninth Review, and the data for the individual former republics for 1976-80 given above sum to the revised data for Yugoslavia as a whole.

1/ Variability for each republic has been determined by applying to its average current receipts the ratio of Yugoslavia's variability to its average receipts. For Eighth Review variability, current receipts for the period 1976-80 were used while for Ninth Review variability current receipts for the period 1981-85 were used.

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the value of intermediate consumption. When similar adjustments are made to the GSP data for Croatia and Slovenia in 1980 and 1985, the ratios of GDP to the adjusted GSP rise to between 1.09 and 1.13. These differences, which are attributed by the authorities of both republics to their somewhat different economic structures, are small and together they provide a reasonable basis for making adjustments to the GSP data for the other successor republics. 1/

GDP data for Macedonia, Bosnia and Herzegovina, and Serbia and Montenegro have been estimated by the staff by applying to the (official) GSP of each of these republics the ratio of the combined GDP of Croatia and Slovenia to the total of their (official) GSP. 2/ The estimates for these republics, when combined with the data provided by Croatia and Slovenia, sum to slightly less than the GDP estimate for Yugoslavia as a whole that was used for making quota calculations for Yugoslavia under the Ninth Review. For the purpose of making consistent calculations, the GDP figures for individual republics were therefore proportionately adjusted slightly upward so that they would sum to the GDP for Yugoslavia as a whole. Table 1 presents the GDP estimates for the successor republics of Yugoslavia used in this paper. It may be noted that GDP in terms of SDRs for all the successor republics contracted between 1980 and 1985, reflecting both a relatively sharp recession of the Yugoslav economy in the early 1980s, and a large depreciation of the Yugoslav dinar over the period. Furthermore, the relative shares of individual republics in total GDP of Yugoslavia shifted between 1980 and 1985 because of their differing rates of decline in GDP during that recessionary phase. There was a particularly adverse impact in Croatia as its external sector underwent a major restructuring.

2. Official reserves

Data on official holdings of gold and convertible foreign exchange reserves are required for making quota calculations. Data in respect of Yugoslavia as a whole have previously been provided to the Fund by the Yugoslav authorities. Because the individual Yugoslav republics did not hold official reserves in their own right when they were integral parts of Yugoslavia, it is necessary to attribute shares in Yugoslavia's total reserves to each republic. In the context of making quota calculations for

1/ The differences in the GSP/GDP ratios for Croatia and Slovenia can be largely attributed to the following factors: The relative size of the manufacturing sector in each republic, and therefore the probable degree of overstatement of GSP, differed somewhat, as did the relative size of the nonproductive sectors in each economy. In addition, the authorities of Croatia and Slovenia used slightly different methodologies to estimate the contribution of the housing sector to GDP.

2/ The same orders of magnitude can be derived by using the GDP data provided by the Serbian authorities for Macedonia, Bosnia and Herzegovina, and Serbia and Montenegro, and correcting these data for the inflation-related bias in them.

the states of the former Soviet Union, such an attribution was made using the formula which was negotiated by a majority of the former states to allocate shares in the Soviet Union's existing foreign assets and debts. 1/ No such agreed formula exists in the Yugoslav case, and for the purpose of quota calculations, shares in Yugoslavia's foreign reserves have been attributed to the individual Yugoslav republics according to their shares in Yugoslavia's total external payments for goods, services, and private transfers on the grounds that official reserves are in large part held to finance external current payments. 2/

3. External receipts and payments for goods, services, and private transfers

Data on the current external transactions of Yugoslavia as a whole for 1968-85 have previously been provided to the Fund by the Yugoslav authorities. A complete set of such data for all the individual successor republics, consistent with the Yugoslav data, is not available. Data have, however, been provided for each of the republics in respect of particular types of transactions for particular years.

The authorities of Serbia have provided current external transactions data for Serbia and Montenegro for the years 1968-85. The authorities of Croatia have provided the Fund with current external transactions data for 1978-85 and partial data for 1968-77. Slovenia, Macedonia, and Bosnia and Herzegovina have each provided data for some years but these data have not covered all current transactions. Moreover, the authorities of Serbia have provided the Fund with current external transactions data in respect of all the former republics of Yugoslavia for the years 1978-81. These data are generally consistent with the data provided by the individual republics, but they do not sum to the data for Yugoslavia as a whole because some transactions were carried out by Federal agencies whose transactions were not attributed to individual republics.

A set of current external transactions data for the former republics for use in quota calculations has therefore been compiled by the staff as follows:

a. The data provided by Serbia, in respect of Serbia and Montenegro, and by Croatia, in respect of itself, have been used. These data are essentially a complete set of data compiled in accordance with Fund methodology for making quota calculations.

1/ See EB/CW/Qmethodology/92/1.

2/ The same approach was used in the recent case of Namibia where reserves data were nonexistent. Such data on reserves for use in quota calculations for Namibia were imputed by applying the average ratio of reserves to imports of non-oil developing countries to Namibia's merchandise imports.

b. For the years 1978-81 the data provided by Serbia in respect of Slovenia, Macedonia, and Bosnia and Herzegovina have been used.

c. Where complete data for an individual republic are not available, i.e., for 1976-77 and 1982-85 for Slovenia, Macedonia, and Bosnia and Herzegovina and for 1976-77 for Croatia, the current receipts and payments for each year have been estimated by attribution using each republic's average 1978-81 share in Yugoslavia's current receipts and payments.

4. Variability of current receipts

In the absence of a complete and consistent set of current receipts data (goods, services, and private transfers) for 1968-85, as would normally be required to compute the variability of current receipts for making quota calculations under the Eighth and Ninth Reviews, this variable was estimated for each republic by attributing the variability of current receipts for Yugoslavia as a whole in proportions to each individual republic's average current receipts in the latest five-year period, i.e., 1976-80 for the Eighth Review calculation and 1981-85 for the Ninth Review calculation. ^{1/}

5. Interrepublic transactions

Data covering flows of trade and other transactions between the successor republics are available only for intermittent periods and were based on periodic surveys of only material sector enterprises. These data did not cover nonmaterial transactions (tourism, financial services, transportation, etc.). Officials in both Croatia and Slovenia indicated to the staff that the available data on interrepublic transactions did not give an accurate representation of either the level or pattern of such transactions. It was pointed out to the staff that the available data suffered from significant measurement problems, reflecting delays in conducting the surveys and associated misclassification of transactions, and also reflecting problems of transshipment, as items that were shipped from one republic to another by way of an enterprise in a third republic would at times be counted as both an import and export of the third republic. The lack of data on services--especially tourism--seriously distorts the patterns of interrepublic transactions. Furthermore, interrepublic trade data are not available to the staff for each of the successor republics so that a consistent set of data could not be compiled. In these circumstances, the staff are of the view that the available interrepublic trade data cannot be used in a consistent and reliable manner for making quota calculations for the successor republics.

^{1/} Since variability is measured as a standard deviation from a moving average, it would, in principle, exclude the trend element and could be reasonably related to the average level of current receipts in the latest five-year period.

6. Conversion factors

The data for the constituent republics have been converted into SDRs using the same conversion exchange rates that had been applied in the quota calculations that were made for Yugoslavia as a whole under the Eighth and Ninth Reviews. 1/

III. Quota Calculations

As indicated in Section I above, it would seem reasonable to make quota calculations for the successor republics of Yugoslavia by following the same methodology used by the staff for making quota calculations for new members and thereby determine a distribution key that can be applied to Yugoslavia's present (Eighth) and Ninth Review quotas. As noted above, quota calculations using both the Eighth Review and Ninth Review data and quota formulas have been made to determine the distribution of the payment for the increase in Yugoslavia's quota under the Ninth Review. This section presents quota calculations for the Eighth and Ninth Reviews.

The results of quota calculations for the successor republics of Yugoslavia using the quota formulas and time periods developed for the Eighth and Ninth Quota Reviews are presented in Table 2. Following established practice, a calculated quota range has been derived for each republic. The calculated quota is the upper end of the range determined by the calculation using the Bretton Woods formula (reduced) and the average of the lowest two results of the four remaining formulas. 2/

Table 3 shows the share of each successor republic in the total of their calculated quotas under the Eighth and Ninth Reviews; for comparative purposes the table also shows the relative share of each successor republic in the variables that enter into the quota formulas, i.e., GDP and current external transactions. It will be recalled that different weights are given to GDP, external current account transactions, and reserves in the five quota formulas used by the Fund. Thus, the calculated quotas determined by using the standard quota formulas effectively provide a composite or average of each republic's share in the economic variables used by the Fund in the quota formulas, and therefore a measure of the relative economic size of each successor republic not only to each other but also to the Fund's membership as a whole, as the same type of data and the same quota formulas have been used in making quota calculations for the successor republics as for all members. In this connection, the use of various economic indicators that are combined in the quota formulas simplifies the handling of a potentially large number of calculations based on individual indicators that would attempt to measure the relative economic size of each successor

1/ See the country note on Yugoslavia in Appendix I of EB/CQuota/89/1 (1/6/89) and in Appendix 2 of EB/CQuota/87/1, Sup. 1 (6/30/87).

2/ The Appendix reproduces the Eighth and Ninth Review quota formulas.

Table 2. Successor Republics: Individual Quota Calculations

(In millions of SDRs, except as indicated)

| | Republic of Bosnia and Herzegovina | Republic of Croatia | Republic of Slovenia | Former Yugoslav Republic of Macedonia | Federal Republic of Yugoslavia (Serbia/ Montenegro) | Memorandum item: Yugoslavia |
|---|---|---------------------------|----------------------------|--|---|-----------------------------------|
| 1. Eighth Review | | | | | | |
| Bretton Woods formula, reduced | 179.4 | 420.1 | 231.1 | 78.2 | 521.4 | 1,427.2 |
| Bretton Woods formula, reweighted and modified | | | | | | |
| Scheme III | 181.2 | 434.5 | 234.9 | 79.1 | 516.0 | 1,441.9 |
| Scheme IV | 166.0 | 401.7 | 214.7 | 71.7 | 466.6 | 1,317.2 |
| Bretton Woods formula, linear reweighted and modified | | | | | | |
| Scheme M4 | 171.6 | 407.1 | 218.9 | 72.4 | 483.4 | 1,351.8 |
| Scheme M7 | 164.2 | 390.1 | 209.3 | 69.0 | 461.1 | 1,292.3 |
| Average of the lowest two of the reweighted and modified Bretton Woods formulas | 165.1 | 395.9 | 212.0 | 70.4 | 463.9 | 1,304.7 |
| <u>Calculated Quota</u> | <u>179.4</u> | <u>420.1</u> | <u>231.1</u> | <u>78.2</u> | <u>521.4</u> | <u>1,427.2</u> |
| (As a percentage of total calculated quotas for all successor republics) 1/ | 12.54 | 29.38 | 16.16 | 5.47 | 36.46 | |
| 2. Ninth Review | | | | | | |
| Bretton Woods formula, reduced | 265.7 | 566.4 | 330.4 | 112.6 | 743.8 | 2,017.8 |
| Bretton Woods formula reweighted and modified | | | | | | |
| Scheme III | 293.9 | 634.4 | 365.3 | 124.7 | 819.3 | 2,236.1 |
| Scheme IV | 301.4 | 660.8 | 374.3 | 125.5 | 832.9 | 2,292.6 |
| Bretton Woods formula, linear reweighted and modified | | | | | | |
| Scheme M4 | 292.1 | 630.4 | 362.9 | 119.8 | 809.3 | 2,214.4 |
| Scheme M7 | 293.8 | 636.5 | 364.9 | 119.8 | 812.1 | 2,227.0 |
| Average of the lowest two of the reweighted and modified Bretton Woods formulas | 293.0 | 632.4 | 363.9 | 119.8 | 810.7 | 2,220.7 |
| <u>Calculated Quota</u> | <u>293.0</u> | <u>632.4</u> | <u>363.9</u> | <u>119.8</u> | <u>810.7</u> | <u>2,220.7</u> |
| (As a percentage of total calculated quotas for all the successor republics) 1/ | 13.20 | 28.49 | 16.39 | 5.40 | 36.52 | |

1/ The total of Eighth Review calculated quotas for the republics is SDR 1,430.1 million. The total of Ninth Review calculated quotas is SDR 2,219.7 million.

republic. As can be seen in Table 3, each successor republic's share in the total of their calculated quotas is not dissimilar from its share in aggregate GDP and external transactions of goods, services, and private transfers. It would thus seem that a distribution key based on the calculated quota of each successor republic would provide a reasonable measurement of the relative positions of the individual republics in the Fund and could therefore provide the basis for redistributing Yugoslavia's quota in the Fund among its successor republics.

A redistribution of Yugoslavia's present quota on the basis of the shares of the successor republics in the total of their calculated quotas is given in col. (1) of Table 4, and a redistribution of Yugoslavia's Ninth Review quota on the same basis is shown in col. (2). The increase in quota for each of the republics from the Eighth Review to the Ninth Review is shown in col. (3), which would be used as a key to distribute the payment of Yugoslavia's increase in quota under the Ninth Review among the successor republics, of which 25 percent of the payment must be made in SDRs or currency acceptable to the Fund.

It may be noted that these calculations can also be derived by applying to the calculated quota of each individual republic a single ratio to determine an actual quota, where this ratio is effectively equal to the ratio of Yugoslavia (0.43 for the Eighth Review and 0.41 for the Ninth Review). This equivalence arises from the constraint that the actual quotas of the individual republics should sum to the actual quota of Yugoslavia, and from the application of relative shares in calculated quotas as the distribution key.

IV. Conclusions

The following summarizes the preceding discussion:

1. This paper presents quota calculations under the Eighth and Ninth Reviews for the successor republics of Yugoslavia. In making these quota calculations, gaps in the required data were filled by attribution, using methods normally followed by the staff in determining the quotas for new members, e.g., in connection with the quota calculations made for the states of the former U.S.S.R. The staff has taken particular care to compile a data base for the successor republics that is consistent not only with the data for Yugoslavia as a whole, but also with the concepts and definitions applied to data used for making quota calculations for new and existing members.

2. Quota calculations were made for the individual republics using the customary procedures and formulas agreed under the Eighth and Ninth General Reviews. The data used and calculations made in this regard are presented in Tables 1 and 2. The relative shares of individual republics in the aggregate of the calculated quotas for the successor republics, and in the data entering into the quota formulas, are presented in Table 3. The use of

Table 3. Distribution Keys Based on Calculated Quotas for Successor Republics

(In percentage shares of the total for the republics)

| | Calculated Quotas (Eighth Review) (1) | Calculated Quotas (Ninth Review) (2) | Data Entering into the Quota Formulas | | | |
|---|--|---|---------------------------------------|--------------------------------|---|---|
| | | | GDP (1980) <u>1/</u> (3) | GDP (1985) <u>1/</u> (4) | Current Receipts and Payments (1976-80) <u>2/</u> (5) | Current Receipts and Payments (1981-85) <u>2/</u> (6) |
| Republic of Bosnia and Herzegovina | 12.54 | 13.20 | 12.51 | 13.31 | 12.66 | 13.17 |
| Republic of Croatia | 29.38 | 28.49 | 26.73 | 25.97 | 30.65 | 28.30 |
| Republic of Slovenia | 16.16 | 16.39 | 15.85 | 16.59 | 16.27 | 16.36 |
| Former Yugoslav Republic of Macedonia | 5.47 | 5.40 | 5.51 | 5.67 | 5.37 | 5.52 |
| Federal Republic of Yugoslavia (Serbia/Montenegro) | 36.46 | 36.52 | 39.39 | 38.46 | 35.05 | 36.65 |

1/ GDP data have been estimated by applying the average ratio of GDP to gross social product (GSP) of Croatia and Slovenia to the GSP data for the other former republics and then adjusting the data for all the former republics upward so that they sum to the figures for Yugoslavia used in the Eighth and Ninth Reviews.

2/ Data for Serbia and Montenegro for all years and for Slovenia, Bosnia and Herzegovina, and Macedonia for 1978-81 were provided by Serbia. Data for Croatia for 1978-85 were provided by Croatia. Data for Croatia for 1976-77 and for Slovenia, Bosnia and Herzegovina, and Macedonia for 1976-77 and 1982-85 were estimated by applying to Yugoslavia's total external transactions data each individual former republic's average 1978-81 share of Yugoslavia's total external transactions.

Table 4. Distribution of Yugoslavia's Quota

(In millions of SDRs)

| | Eighth Review | Ninth Review | Payment for quota increase under the Ninth Review | |
|---|---|---|---|--|
| | Based on shares in aggregate calculated quotas (1) | Based on shares in aggregate calculated quotas (2) | Col. (2) minus Col. (1) (3) | Of which reserve asset payments: (25 percent of Col. (3)) (4) |
| Republic of Bosnia and Herzegovina | 76.9 | 121.2 | 44.3 | 11.1 |
| Republic of Croatia | 180.1 | 261.6 | 81.5 | 20.4 |
| Republic of Slovenia | 99.0 | 150.5 | 51.5 | 12.9 |
| Former Yugoslav Republic of Macedonia | 33.5 | 49.6 | 16.1 | 4.0 |
| Federal Republic of Yugoslavia (Serbia/Montenegro) | 223.5 | 335.4 | 111.9 | 28.0 |
| Total | 613.0 | 918.3 | 305.3 | 76.3 |
| Memorandum Item: Yugoslavia | 613.0 | 918.3 | 305.3 | 76.3 |

these shares to distribute Yugoslavia's quota among the successor republics under the Eighth and Ninth Reviews is shown in Table 4.

3. It is suggested that the present (Eighth) and Ninth Review quotas of Yugoslavia could be distributed among the successor republics according to each successor republic's share in the aggregate of their calculated quotas under the Eighth and Ninth General Reviews, respectively.

4. As regards the payment for the increase in Yugoslavia's quota approved under the Ninth Review, and to which Yugoslavia has consented, but has not paid for, it is suggested that the payment for the increase in Yugoslavia's quota could be apportioned among the successor republics in proportion to the increases in calculated quotas for each successor republic under the Eighth and Ninth General Reviews. Twenty-five percent of the increase would be payable in SDRs or currency acceptable to the Fund, in accordance with the terms and provisions of the Board of Governors' Resolution No. 45-2 under the Ninth Review.

Quota Formulas Under the Eighth and Ninth General Reviews

The symbols used in the specification of the formulas below are: Y = GDP, R = reserves, P = current payments, C = current receipts, and VC = variability of current receipts. The quota formulas used in the Eighth and Ninth General Reviews are identical except for the adjustment factors. The adjustment factors are applied to each of the four modified formulas (i.e., Schemes III, IV, M4, and M7) so that the totals derived under the formulas at the time of a review equal that derived under the Bretton Woods formula. The adjustment factors for the Eighth General Review have been maintained unchanged with the joining of new members since its implementation.

For each Fund member, the calculated quota is derived as the larger of (i) the Bretton Woods formula and (ii) the average of the lowest two results of the other four formulas. The total of calculated quotas on this basis at the time of the Eighth General Review came to SDR 209,144.5 million. Since the completion of the Eighth General Review, 28 members have joined the Fund (Russian Federation, Switzerland, Angola, Kiribati, Belarus, Kazakhstan, Moldova, Georgia, Mozambique, Lithuania, Latvia, Armenia, Kyrgyzstan, Estonia, Poland, St. Kitts and Nevis, Czechoslovakia, Bulgaria, Namibia, Albania, Mongolia, Marshall Islands, Tonga, Ukraine, Uzbekistan, Azerbaijan, Turkmenistan, and San Marino) whose calculated quotas total SDR 15,212.1 million. The memberships of Tajikistan and Micronesia have also been approved, bringing the total of calculated quotas including these countries to SDR 224,411.7 million under the Eighth General Review (SDR 348,868.1 million under the Ninth General Review).

Formulas and their adjustment factors

Bretton Woods: $(0.01Y + 0.025R + 0.05P + 0.2276VC) \times (1 + C/Y)$

Scheme III:

$(0.0065Y + 0.0205125R + 0.078P + 0.4052VC) \times (1 + C/Y)$
 Adjustment factor: 0.87556413 (Eighth General Review)
 0.84849814 (Ninth General Review)

Scheme IV:

$(0.0045Y + 0.03896768R + 0.07P + 0.76976VC) \times (1 + C/Y)$
 Adjustment factor: 0.84551136 (Eighth General Review)
 0.81397393 (Ninth General Review)

Scheme M4:

$0.005Y + 0.042280464R + 0.044 (P + C) + 0.8352VC$
 Adjustment factor: 0.89705949 (Eighth General Review)
 0.90739479 (Ninth General Review)

Scheme M7:

$0.0045Y + 0.05281008R + 0.039 (P + C) + 1.0432VC$
 Adjustment factor: 0.89571728 (Eighth General Review)
 0.90627363 (Ninth General Review)