0411 EB/CW/QMethodology/92/5

CONFIDENTIAL

March 26, 1992

To: Members of the Committee of the Whole on Membership for the Republics of the Former U.S.S.R.

From: The Secretary

Subject: Statement by the Staff Representative

The attached paper is in response to questions raised at Meeting 92/4 of the Committee of the Whole on Friday, March 20, 1992.

Mr. Tavlas (ext. 7493), Mr. O'Brien (ext. 7812), or Mr. Richards (ext. 7809) is available to answer technical or factual questions relating to this paper prior to the Committee's discussion.

Att: (1)

Other Distribution:
Department Heads

Statement by the Staff Representative in Response to
Questions Raised by Executive Directors,
Committee of the Whole on Membership for the Republics
of the Former U.S.S.R.
Committee of the Whole Meeting 92/5
March 26, 1992

At the meeting of the Committee of the Whole on Friday, March 20, 1992, Directors requested the staff (i) to provide further calculations showing the effects of the use of exchange rates that were depreciated from the exchange rate used by the staff in EB/CW/QMethodology/92/1; (ii) to provide further information on the depreciation component in the data for GDP used for making quota calculations for the former U.S.S.R. and for the individual republics; (iii) to take direct account of interrepublican trade in the quota calculations; and (iv) to examine the methodology in developing statistical relationships with regard to other variables in the Bretton Woods formula.

1. Effects of Using Depreciated Exchange Rates - The staff were requested to make two illustrative quota calculations using (i) an exchange rate that was 20 percent lower in value than that used by the staff, and (ii) also to make quota calculations on an exchange rate that was equal to the average of the cross-commercial rates for four other CMEA countries (Bulgaria, Czechoslovakia, Hungary, and Poland). The use of an exchange rate that is equal to the average of the former CMEA countries results in a rate that is 12.4 percent depreciated from that used by the staff.

Illustrative quota calculations based on the two exchange rate assumptions indicated by those Directors mentioned above are presented in the attached Tables 1 and 2 using Method II. These calculations show that if the exchange rate used by the staff was depreciated by 20 percent or by 12.4 percent, then the calculated quota for the former U.S.S.R., under Method II would fall by 12.4 percent or by 7.7 percent, respectively. When the calculated quotas are converted into hypothetical quotas for the individual republics, the 20 percent depreciated rate reduces the aggregate share of the 15 republics in the total of Fund quotas by about 0.5 percentage point; a rate that was depreciated by 12.4 percent would reduce this aggregate quota share by about 0.3 percentage point. The illustrative quota ranges expressed in absolute amounts of SDRs for each of the republics would also fall by 12.4 percent and 7.7 percent, respectively, from the ranges shown in the table attached to Buff 92/46 (March 19, 1992).

2. Depreciation Component in GDP - Two Executive Directors requested further information on the depreciation component of GDP that was used in making quota calculations for the former U.S.S.R. and, in particular, to explain more fully the reasons why the ratio of depreciation to GDP in the former U.S.S.R. was considerably higher than comparable ratios of other centrally planned economies in Europe.

The issue of estimating and interpreting the underlying data regarding depreciation in the national income accounts of the former U.S.S.R. was extensively discussed in the Joint Study of the Soviet Economy. 1/ The issues discussed in the Joint Study related to the inclusion of capital repair in the depreciation figures as well as issues relating to valuation and measurement. The main conclusion of the Joint Study in this regard was that there did not seem to be a basis to make any adjustments to the officially reported data for the former U.S.S.R. 2/

The issue of depreciation was extensively discussed between the Fund staff and U.S.S.R. Goskomstat officials in late 1991 and early 1992. In the former U.S.S.R., depreciation data included two components--a straight-line depreciation figure, which was very low by international standards at an estimated depreciation rate of 5 percent or less, implying a useful life for equipment of 20 years or more, and thus underestimated depreciation in the national accounts. The second component was the amount of capital repair that was needed to extend the expected useful life of capital equipment. In practice, capital repair was correctly treated as part of investment in the expenditure side of the national income accounts and depreciation was included as an intermediate cost of production. Consequently, to the extent that capital repair was included as part of depreciation and excluded from the net material product, the NMP might have been underestimated, but in the conversion to GDP, in which depreciation is added, the overall total for GDP would not thereby have been affected. However, given the fairly general practice in the former Soviet Union of adding equipment to the capital stock in order to ensure production capacity, reported depreciation could be expected to be relatively high in terms of GDP.

In the light of the above, it is likely that a considerable proportion of capital repair was essentially new investment rather than depreciation in the normal sense of the word. The staff understands that expenditures for capital repair were not recorded as a major item in the national accounts of the other former CMEA countries (except perhaps Mongolia, which also showed high ratios of depreciation to GDP) and would have been treated correctly as net new investment. The difference in treatment of capital repair also explains the difference between data used by the staff in making quota calculations (and the results of the Joint Study), and those calculated by

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1/ See in particular Volume I, p. 138-142.

2/ The Joint Study concluded that "It is possible that the upward bias (in GDP statistics) imposed by valuation problems and inclusion of capital repairs is roughly compensated by the downward bias introduced through the use of relatively low depreciation rates. This would yield reported depreciation figures that are close to their true values, though further study would be necessary to draw firm conclusions." The Study also noted that undocumented value-added could imply that official GDP statistics were understated by 4-8 percent (p. 138-139).

Mr. Marer who simply excluded capital repair from depreciation altogether, thus imparting a downward bias in the GDP estimates. 1/

3. Interrepublican Trade - As regards an Executive Director's request to include interrepublican trade in the quota calculations, the staff has noted that, conceptual issues apart, the extreme paucity and irregularity of data on interrepublican trade for most of the republics make it difficult to incorporate systematically the available figures in the data needed to make quota calculations. At the request of an Executive Director, the staff has again examined these data, but has not been able to recalculate the illustrative quotas presented in EB/CW/QMethodology/92/1, Sup. 1. However, given the large size of interrepublican trade of each republic in relation to its net material product, the inclusion of any significant part of interrepublican trade in the quota calculations would increase to a considerable extent the illustrative calculated quotas for the individual republics. It is difficult at this stage to quantify the effects of including interrepublican trade, but some estimates of its relative significance can be gauged by using the data for interrepublican trade for 1987, which is the only set of data which is complete for each republic. If these data were used to adjust the openness ratio upward and on the basis of the statistical relationship described in EB/CW/QMethodology/92/2 for the entire membership, then illustrative quotas are increased on average by 36 percent--i.e., the aggregate illustrative quotas for the republics would increase by 1.3 percentage points of total Eighth Review quotas. It must be stressed that such calculations have been based on interrepublican trade data valued at domestic prices for 1987 only.

4. Statistical Methodology - Two Executive Directors raised issues regarding the methodology followed by the staff in developing the statistical relationships in EB/CW/QMethodology/92/2. In particular, these Directors requested the staff to test whether the ratio of actual to calculated quotas was also sensitive to other variables in the Bretton Woods formula in addition to the openness ratio. The staff has made the calculations requested with the following results: the coefficient for GDP is significantly positive, the coefficient for reserves is significantly negative, and the coefficient for variability is not significantly different from zero. In addition, when these other variables are included together with the openness ratio, the estimated coefficient for the openness variable is essentially unchanged from that used in EB/CW/QMethodology/92/2. The

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1/ Mr. Marer estimated a GDP figure for 1980 of rub 589.5 billion compared with rub 619.4 billion used by the staff in making quota calculations. The main reason for this difference is the exclusion by Mr. Marer of the data for capital repair. It may also be noted that while the methodology of computing NMP applies generally to the CMEA countries, the practice in individual countries also frequently departed from the general methodology. Differences in treatment are known to have also existed for passenger transport, communications, margins or "earnings" from foreign trade, and housing services. See Paul Marer, Dollar GNPs of the U.S.S.R. and Eastern Europe, World Bank, 1985, pp. 17-24.

results suggest that there is no bias in the estimation procedures arising from the omission of other variables.

Attachments

Table 1. Republics of the Former U.S.S.R. - Illustrative Quota Calculations
Based on a 20 Percent Depreciated Exchange Rate 1/
(Eighth Review, Method II)

	Calculated quotas				Illustrative quota ranges	
	Debt Sharing Formula (1)	Bretton Woods Variant (2)	Simple Average (3)	Range Determined by Cols. (1)-(3) (4)	Using the Ratio of Comparator Countries 2/ (5)	Using Range of Highest and Lowest of Other Ratios for Comparator Groups 3/ (6)
				(In millions of SDRs)		
Russia	4,418	4,783	4,664	4,418-4,783	1,885-2,009	1,767-2,487
Ukraine	1,179	1,080	1,112	1,080-1,179	475-519	464-684
Belarus	298	268	277	268-298	134-149	115-173
Uzbekistan	236	186	203	186-236	95-120	80-120
Kazakhstan	278	236	250	236-278	118-139	101-139
Georgia	117	95	102	95-117	52-64	41-64
Azerbaijan	118	100	106	100-118	56-66	43-66
Lithuania	102	87	92	87-102	50-58	38-58
Moldova	93	72	79	72-93	43-56	31-56
Latvia	82	74	77	74-82	44-48	32-48
Kyrghyzstan	68	48	55	48-68	31-43	21-43
Tajikistan	59	46	50	46-59	29-37	20-37
Armenia	62	51	55	51-62	32-39	22-39
Turkmenistan	50	38	42	38-50	23-30	16-30
Estonia	45	39	41	39-45	23-26	17-26
Total	7,204	7,204	7,204		3,060-3,404	2,808-4,071
				(Percentage shares in the total of calculated or actual quotas) 4/		
Russia	2.01	2.17	2.12	2.01-2.17	1.97-2.13	1.88-2.64
Ukraine	0.54	0.49	0.51	0.49-0.54	0.50-0.55	0.49-0.73
Belarus	0.14	0.12	0.13	0.12-0.14	0.14-0.16	0.12-0.18
Uzbekistan	0.11	0.08	0.09	0.08-0.11	0.10-0.13	0.09-0.13
Kazakhstan	0.13	0.11	0.11	0.11-0.13	0.13-0.15	0.11-0.15
Georgia	0.05	0.04	0.05	0.04-0.05	0.06-0.07	0.04-0.07
Azerbaijan	0.05	0.05	0.05	0.05-0.05	0.06-0.07	0.05-0.07
Lithuania	0.05	0.04	0.04	0.04-0.05	0.05-0.06	0.04-0.06
Moldova	0.04	0.03	0.04	0.03-0.04	0.05-0.06	0.03-0.06
Latvia	0.04	0.03	0.03	0.03-0.04	0.05-0.05	0.03-0.05
Kyrghyzstan	0.03	0.02	0.02	0.02-0.03	0.03-0.05	0.02-0.05
Tajikistan	0.03	0.02	0.02	0.02-0.03	0.03-0.04	0.02-0.04
Armenia	0.03	0.02	0.02	0.02-0.03	0.03-0.04	0.02-0.04
Turkmenistan	0.02	0.02	0.02	0.02-0.02	0.02-0.03	0.02-0.03
Estonia	0.02	0.02	0.02	0.02-0.02	0.02-0.03	0.02-0.03
Total	3.27	3.27	3.27		3.25-3.61	2.98-4.32
Total (including Switzerland)	3.23	3.23	3.23		3.19-3.55	2.93-4.24

1/ See Table 4, EB/CW/QMethodology/92/1. The staff used a "blended" rate of rub 0.89 per U.S. dollar, which, when depreciated by 20 percent, becomes rub 1.11 per U.S. dollar. The use of the 20 percent depreciated exchange rate results in a GDP for 1990 for the former U.S.S.R. of SDR 426,200 million, compared with SDR 532,800 million used in EB/CW/Qmethodology/92/1.

2/ See Table 10, EB/CW/Qmethodology/92/1.

3/ These calculations are based on ratios other than that used in Col. (5), and which were shown in Tables H.2A-H.2G in EB/CW/QMethodology/92/1, Sup. 1, pp. 22-28.

4/ Including the calculated or illustrative actual quotas for the former U.S.S.R. republics as shown in this table, but excluding Switzerland.

Table 2. Republics of the Former U.S.S.R. - Illustrative Quota Calculations Based on the Average Exchange Rate of the Other CPEs 1/
(Eighth Review, Method II)

	Calculated quotas				Illustrative quota ranges	
	Debt Sharing Formula (1)	Bretton Woods Variant (2)	Simple Average (3)	Range Determined by Cols. (1)-(3) (4)	Using the Ratio of Comparator Countries 2/ (5)	Using Range of Highest and Lowest of Other Ratios for Comparator Groups 3/ (6)
				(In millions of SDRs)		
Russia	4,655	5,040	4,914	4,655-5,040	1,955-2,117	1,862-2,621
Ukraine	1,243	1,138	1,172	1,138-1,243	501-547	489-721
Belarus	313	282	291	282-313	141-157	121-182
Uzbekistan	248	196	214	196-248	100-127	84-127
Kazakhstan	293	248	264	248-293	124-146	107-146
Georgia	123	100	108	100-123	55-68	43-68
Azerbaijan	124	105	112	105-124	59-70	45-70
Lithuania	107	92	97	92-107	53-61	40-61
Moldova	98	76	83	76-98	46-59	33-59
Latvia	87	78	81	78-87	46-51	34-51
Kyrghyzstan	72	51	57	51-72	32-45	22-45
Tajikistan	62	48	53	48-62	30-39	21-39
Armenia	65	54	58	54-65	34-41	23-41
Turkmenistan	53	40	45	40-53	24-32	17-32
Estonia	47	41	43	41-47	24-27	18-27
Total	7,591	7,591	7,591		3,224-3,586	2,959-4,289
				(Percentage shares in the total of calculated or actual quotas) 4/		
Russia	2.11	2.29	2.23	2.11-2.29	2.07-2.24	1.97-2.78
Ukraine	0.56	0.52	0.53	0.52-0.56	0.53-0.58	0.52-0.76
Belarus	0.14	0.13	0.13	0.13-0.14	0.15-0.17	0.13-0.19
Uzbekistan	0.11	0.09	0.10	0.09-0.11	0.11-0.13	0.09-0.13
Kazakhstan	0.13	0.11	0.12	0.11-0.13	0.13-0.16	0.11-0.16
Georgia	0.06	0.05	0.05	0.05-0.06	0.06-0.07	0.05-0.07
Azerbaijan	0.06	0.05	0.05	0.05-0.06	0.06-0.07	0.05-0.07
Lithuania	0.05	0.04	0.04	0.04-0.05	0.06-0.06	0.04-0.06
Moldova	0.04	0.03	0.04	0.03-0.04	0.05-0.06	0.03-0.06
Latvia	0.04	0.04	0.04	0.04-0.04	0.05-0.05	0.04-0.05
Kyrghyzstan	0.03	0.02	0.03	0.02-0.03	0.03-0.05	0.02-0.05
Tajikistan	0.03	0.02	0.02	0.02-0.03	0.03-0.04	0.02-0.04
Armenia	0.03	0.02	0.03	0.02-0.03	0.04-0.04	0.02-0.04
Turkmenistan	0.02	0.02	0.02	0.02-0.02	0.03-0.03	0.02-0.03
Estonia	0.02	0.02	0.02	0.02-0.02	0.03-0.03	0.02-0.03
Total	3.44	3.44	3.44		3.42-3.80	3.14-4.54
Total (including Switzerland)	3.39	3.39	3.39		3.36-3.73	3.08-4.46

1/ See Table 4, EB/CW/QMethodology/92/1. The staff used a "blended" rate of rub 0.89 per U.S. dollar which comprised the average of the cross commercial rates for four CMEA countries of rub 1.02 per U.S. dollar. The use of this average only for converting the GDP results in a GDP for 1980 for the former U.S.S.R. of SDR 466,900 million compared with SDR 532,800 million used in EB/CW/QMethodology/92/1.

2/ See Table 10, EB/CW/QMethodology/92/1.

3/ These calculations are based on ratios other than that used in Col. (5), and which were shown in Tables H.2A-H.2G in EB/CW/QMethodology/92/1, Sup. 1, pp. 22-28.

4/ Including the calculated or illustrative actual quotas for the former U.S.S.R. republics as shown in this table, but excluding Switzerland.