

**REPORT TO THE IMF EXECUTIVE BOARD OF THE
QUOTA FORMULA REVIEW GROUP**

ANNEX

April 28, 2000

Contents	Page
Note 1. The Nonlinear Element in the Existing Quota Formulas.....	1
Note 2. The Demand for International Reserves—A Review of the Literature	14
Note 3. The Role of Quotas in Determining Voting Power	27
Note 4. Convergence Over Time of Actual Quotas Toward Calculated Quotas.....	40
Note 5. Conversion of GDP into a Common Currency	45
Note 6. Capital Account Variables in the Quota Formulas	72
Note 7. Balance of Payments Data Used in the Quota Formulas	76
Note 8. Measures of Variability in Countries' External Transactions	95
Note 9. The Implications of European Union for Data on External Transactions in the Quota Formulas.....	104
 Tables	
1.1. Relationship Between Calculated Quotas and Variables Entering into the Quota Formulas.....	3
1.2. Relative Contribution of Variables to Calculated Quotas.....	8
3.1. Distribution of Voting Power.....	29
3.2. Relative Importance of Basic Votes in the IMF	30

3.3.	IMF Quotas and Voting Power, April 21, 2000.....	31
3.4.	Shares in Quotas and Votes, and Composition of Voting Power Over Past Quota Reviews	37
4.1.	Deviations of Calculated Quotas from Quotas Agreed Under Past Quota Reviews	43
5.1.	Ratio of Japan's GDP to U.S. GDP	46
5.2.	Coverage of ICP Surveys.....	48
5.3.	Comparison of PPP-Based GDP and Exchange Rate-Based GDP for Individual Countries, 1994.....	52
5.4.	Comparison of PPP-Based GDP and Exchange Rate-Based GDP for Individual Countries, by WEO Classification, 1994	56
5.5.	Ranking of Countries by PPP Valuation of GDP	60
5.6.	IMF-WEO Estimates of PPP Valuation of Country GDP	64
5.7.	World Bank PPP Valuation of GDP—Availability of Benchmark Data 1980–96.....	68
7.1.	Total Number of Countries Without Data in Balance of Payments Statistics	78
7.2.	Average Ratios of Capital and Financial Account Credit (BOP Data) to Current Account Receipts (Quota Data) for Developed, Developing, and Transition Economies, by Analytical Groups, 1982–94	81
7.3.	Availability of Current and Capital and Financial Account Data, 1990–94....	82
7.4.	Variability of Current and Capital Account Receipts, 1982–94	89
9.1.	Actual and Calculated Quotas for the EU-15 Countries and Other Members	108
 Figure		
2.1.	Total Reserves to Imports Ratios	26

Boxes

3.1.	Voting Structure and Basic Votes in Other International Financial Organizations	38
3.2.	Basic Votes as Percentage of Total Voting Power	39
8.1.	Existing and Alternative Measures of Variability of a Time Series	101
9.1.	Adjustments to Current Account Data in Quota Reviews	106
9.2.	Intra-European Balance of Payments Statistics	107

NOTE 1. THE NONLINEAR ELEMENT IN THE EXISTING QUOTA FORMULAS

1. The nonlinear element in the existing quota formulas consists of the multiplicative term of one plus a measure of the openness ratio (current receipts over GDP), applied to the result of a linear equation containing GDP, reserves, current payments, and variability of current receipts as variables. The original motivation underlying the nonlinear form of the Bretton Woods formula was to approximate a preconceived structure of actual quotas by raising the quotas of countries with very open economies. However, for countries with a very high ratio of current receipts to GDP, *increases* in GDP not generated by exports lead to *decreases* in their calculated quotas. As can be seen in the Table 1.1, this negative relationship between changes in calculated quota and changes in GDP is more likely the smaller is a member's economy, and the higher its ratio of exports to GDP.¹ The relationship also holds if the GDP figure is artificially low because of measurement problems. Of the 182 members at the time of the Eleventh Review, 87 are subject to this negative relationship.

2. For a significant number of countries, the nonlinear element in the Bretton Woods formula generates results that appear to be unduly high. If the formula determined actual quotas, a country with very high export-to-GDP ratio that is a creditor in the IMF, such as Botswana, would be expected to support IMF operations up to four times more (as a percentage of GDP) than another creditor member, such as Spain, whose export ratio is close to the average for all members. Moreover, a significant number of countries are similar to Botswana in having calculated quotas that reflect the perverse effect of the nonlinear element. Among them, for example, are Ireland, Luxembourg, Malaysia, San Marino, and Singapore. These countries' calculated quota shares at the time of the Eleventh Review exceeded their then existing quota shares by more than 50 percent.

3. There is no particular rationale for positing a nonlinear relationship between a country's GDP and its quota, at least not of the type exhibited by the Bretton Woods formula.² Statistical work conducted by the IMF staff in past quota reviews (in 1969, 1973,

¹ Using the reduced Bretton Woods formula, an increase in GDP (Y) leads to a decline in

quota, Q , i.e., $\frac{\partial Q}{\partial Y} < 0$, when $\frac{C}{Y} > \left[\frac{0.01Y}{(0.025R + 0.05P + 0.2276VC)} \right]$ where C is current

receipts, R is reserves, P is current payments, and VC is variability of current receipts. The partial elasticity also tends to be more negative the smaller the contribution of GDP to the calculated quota (see Table 1.2).

² The relationship in the existing formula is such that the second partial derivative of quota to GDP is positive, i.e., the higher the GDP, the faster the rise (or smaller the fall) in quota. This is the opposite of a nonlinear, positive, asymptotic relationship, in which the extreme observations of GDP tend to have a *lesser* effect on the calculated quota, which might conceivably have some economic rationale. Such a functional form would be suggested by

(continued...)

1982, 1987, and 1994) has also shown that it is possible to approximate actual quotas about as well, overall, by using formulas that did not contain the openness ratio as a multiplier. As might be expected, the versions of the formula without the ratio tended to give a higher coefficient to external trade variables as a means of reflecting the influence of an economy's openness on the actual quota. Thus, the issue of whether to retain the nonlinear element in the formula is mainly a matter of form, though, as noted above, the nonlinear formula tends to raise the calculated quotas of the relatively small countries with very open economies. Dropping the ratio avoids the more extreme results observed from nonlinear formulas, whereas including the openness ratio as a separate variable in a linear quota formula would not avoid the problems of nonlinearity incorporated in the existing Bretton Woods formula. A further advantage of dropping the ratio is relative simplicity of the formula.

diminishing (but positive) "returns" on a country's ability to contribute resources the higher its national income. The second partial derivative of quota with respect to GDP in this case is negative.

Table 1.1. Relationship Between Calculated Quotas and Variables Entering into the Quota Formulas

	Partial Elasticity of the Calculated Quota with respect to: 1/					<i>Memo:</i>	
	GDP	Reserves	Current	Current	Variability	Equation for Calculated Quota	Ratio of Current Receipts to GDP
			Payments	Receipts			
United States	0.47	0.02	0.34	0.10	0.07	BW	0.11
Japan	0.56	0.04	0.27	0.09	0.04	BW	0.10
Germany	0.02	0.05	0.43	0.25	0.25	Sch. IV and M7	0.28
France	0.18	0.02	0.51	0.21	0.08	BW	0.27
United Kingdom	0.11	0.03	0.55	0.24	0.07	BW	0.31
Italy	0.19	0.03	0.50	0.20	0.08	BW	0.25
Saudi Arabia	0.05	0.03	0.26	0.21	0.45	Sch. M4 and M7	0.48
Canada	0.09	0.02	0.29	0.26	0.34	Sch. M4 and M7	0.33
Russia	0.01	0.01	0.31	0.21	0.46	Sch. III and M4	0.28
Netherlands	-0.12	0.06	0.63	0.37	0.07	BW	0.57
China	0.35	0.08	0.38	0.14	0.05	BW	0.16
Belgium	-0.20	0.03	0.66	0.40	0.10	BW	0.67
India	0.45	0.08	0.33	0.09	0.05	BW	0.10
Switzerland	0.01	0.10	0.53	0.29	0.07	BW	0.41
Australia	0.25	0.04	0.46	0.16	0.09	BW	0.19
Spain	0.18	0.08	0.49	0.19	0.07	BW	0.24
Brazil	0.50	0.10	0.23	0.07	0.11	BW	0.08
Venezuela	-0.03	0.06	0.29	0.21	0.47	Sch. III and M4	0.34
Mexico	0.35	0.05	0.39	0.11	0.11	BW	0.12
Sweden	0.00	0.08	0.57	0.28	0.07	BW	0.39
Argentina	0.54	0.07	0.24	0.06	0.08	BW	0.07
Indonesia	-0.02	0.06	0.52	0.18	0.27	Sch. III and IV	0.22
Austria	-0.01	0.06	0.57	0.29	0.08	BW	0.41
South Africa	0.24	0.01	0.50	0.20	0.05	BW	0.24
Nigeria	-0.03	0.01	0.24	0.19	0.59	Sch. III and M4	0.32
Norway	-0.04	0.08	0.42	0.29	0.25	Sch. III and M4	0.42
Denmark	-0.04	0.04	0.62	0.32	0.06	BW	0.48
Korea	0.03	0.07	0.42	0.24	0.24	Sch. IV and M7	0.26
Iran	-0.04	0.02	0.43	0.17	0.41	Sch. III and IV	0.21
Malaysia	-0.25	0.17	0.56	0.41	0.12	BW	0.69
Kuwait	-0.13	0.03	0.22	0.25	0.64	Sch. III and M4	0.59
Ukraine	-0.07	0.00	0.36	0.25	0.46	Sch. III and M4	0.44
Poland	0.03	0.04	0.46	0.25	0.22	Sch. III and M4	0.29
Finland	0.08	0.08	0.28	0.25	0.31	Sch. M4 and M7	0.34
Algeria	-0.01	0.03	0.30	0.21	0.47	Sch. III and M4	0.32
Iraq	-0.08	0.01	0.22	0.15	0.70	Sch. III and IV	0.18
Libya	-0.05	0.05	0.30	0.13	0.57	Sch. III and IV	0.15
Thailand	0.04	0.13	0.52	0.24	0.06	BW	0.32
Hungary	-0.02	0.09	0.43	0.26	0.25	Sch. III and M4	0.37
Pakistan	0.21	0.04	0.50	0.17	0.08	BW	0.21

Table 1.1. (continued). Relationship Between Calculated Quotas and Variables
Entering into the Quota Formulas

	Partial Elasticity of the Calculated Quota with respect to: 1/					<i>Memo:</i>	
	GDP	Reserves	Current	Current	Variability	Equation for Calculated Quota	Ratio of Current Receipts to GDP
			Payments	Receipts			
Romania	0.02	0.03	0.26	0.14	0.55	Sch. III and M4	0.21
Turkey	0.00	0.04	0.58	0.18	0.20	Sch. III and IV	0.22
Egypt	-0.01	0.14	0.37	0.24	0.27	Sch. III and M4	0.34
Israel	0.10	0.07	0.56	0.22	0.06	BW	0.28
New Zealand	0.04	0.06	0.47	0.24	0.20	Sch. III and M4	0.27
Philippines	0.10	0.10	0.30	0.26	0.24	Sch. M4 and M7	0.29
Portugal	0.09	0.16	0.28	0.26	0.21	Sch. M4 and M7	0.35
Singapore	-0.38	0.23	0.55	0.50	0.10	BW	1.01
Chile	-0.05	0.17	0.54	0.20	0.14	Sch. III and IV	0.25
Ireland	-0.23	0.06	0.68	0.42	0.07	BW	0.73
Greece	0.24	0.10	0.45	0.15	0.06	BW	0.18
Czech Republic	-0.04	0.06	0.37	0.24	0.36	Sch. III and M4	0.37
Colombia	0.28	0.12	0.38	0.15	0.07	BW	0.18
Bulgaria	-0.14	0.02	0.32	0.26	0.54	Sch. III and M4	0.59
Peru	0.36	0.12	0.34	0.10	0.09	BW	0.11
United Arab Emirates	-0.09	0.07	0.29	0.29	0.44	Sch. III and M4	0.54
Morocco	0.10	0.13	0.29	0.27	0.21	Sch. M4 and M7	0.32
Bangladesh	0.29	0.12	0.39	0.13	0.07	BW	0.15
Congo, Dem. Republic of	-0.03	0.01	0.38	0.19	0.45	Sch. III and M4	0.31
Zambia	-0.06	0.03	0.43	0.23	0.38	Sch. III and M4	0.38
FRY (Serbia/Montenegro)	-0.05	0.01	0.22	0.17	0.66	Sch. III and M4	0.32
Sri Lanka	-0.01	0.10	0.46	0.24	0.20	Sch. III and M4	0.32
Belarus	0.02	0.00	0.18	0.19	0.61	Sch. M4 and M7	0.95
Ghana	0.08	0.07	0.58	0.22	0.05	BW	0.28
Kazakistan	0.03	0.02	0.23	0.17	0.55	Sch. M4 and M7	0.56
Croatia	-0.08	0.03	0.36	0.26	0.44	Sch. III and M4	0.45
Slovak Republic	-0.07	0.03	0.39	0.27	0.39	Sch. III and M4	0.45
Zimbabwe	0.07	0.07	0.30	0.25	0.31	Sch. M4 and M7	0.38
Trinidad and Tobago	-0.08	0.01	0.30	0.25	0.52	Sch. III and M4	0.48
Vietnam	0.05	0.07	0.42	0.21	0.26	Sch. IV and M7	0.22
Cote d'Ivoire	0.06	0.00	0.33	0.25	0.36	Sch. M4 and M7	0.48
Sudan	0.07	0.00	0.31	0.07	0.54	Sch. III and IV	0.08
Uruguay	0.29	0.06	0.42	0.15	0.08	BW	0.18
Ecuador	0.04	0.06	0.37	0.19	0.34	Sch. III and M4	0.23
Syrian Arab Republic	0.11	0.03	0.37	0.11	0.38	Sch. III and IV	0.12
Tunisia	-0.05	0.04	0.61	0.30	0.10	BW	0.43
Angola	0.02	0.01	0.22	0.19	0.55	Sch. M4 and M7	0.88
Luxembourg	-0.37	0.00	0.73	0.52	0.12	BW	1.08
Uzbekistan	-0.13	0.07	0.35	0.28	0.43	Sch. III and M4	0.58
Jamaica	-0.22	0.06	0.63	0.40	0.13	BW	0.67

Table 1.1. (continued). Relationship Between Calculated Quotas and Variables
Entering into the Quota Formulas

	Partial Elasticity of the Calculated Quota with respect to: 1/					<i>Memo:</i>	
	GDP	Reserves	Current	Current	Variability	Equation for Calculated Quota	Ratio of Current Receipts to GDP
			Payments	Receipts			
Kenya	0.08	0.07	0.28	0.25	0.33	Sch. M4 and M7	0.36
Qatar	-0.09	0.03	0.32	0.25	0.48	Sch. III and M4	0.48
Myanmar	0.88	0.01	0.08	0.01	0.02	BW	0.01
Yemen, Republic of	0.09	0.01	0.38	0.11	0.42	Sch. III and IV	0.12
Slovenia	-0.09	0.02	0.42	0.30	0.34	Sch. III and M4	0.51
Dominican Republic	-0.01	0.02	0.46	0.26	0.27	Sch. III and M4	0.34
Brunei Darussalam	-0.21	0.02	0.22	0.38	0.60	Sch. III and M4	1.07
Guatemala	0.26	0.07	0.45	0.15	0.07	BW	0.18
Panama	-0.05	0.04	0.42	0.26	0.33	Sch. III and M4	0.40
Lebanon	0.00	0.19	0.44	0.13	0.24	Sch. III and M4	0.19
Tanzania	0.09	0.06	0.36	0.14	0.35	Sch. M4 and M7	0.17
Oman	-0.08	0.03	0.36	0.25	0.45	Sch. III and M4	0.46
Cameroon	-0.04	0.00	0.44	0.25	0.35	Sch. III and M4	0.37
Uganda	0.39	0.05	0.38	0.07	0.11	BW	0.08
Bolivia	0.08	0.05	0.41	0.16	0.30	Sch. III and M4	0.17
El Salvador	-0.01	0.07	0.58	0.18	0.18	Sch. III and IV	0.22
Jordan	-0.22	0.10	0.60	0.38	0.14	BW	0.62
Bosnia-Herzegovina	-0.50	0.01	0.71	0.60	0.19	BW	1.52
Costa Rica	0.09	0.10	0.31	0.27	0.24	Sch. M4 and M7	0.34
Afghanistan, Islamic State of	0.05	0.06	0.49	0.10	0.30	Sch. III and IV	0.11
Senegal	-0.05	0.01	0.64	0.29	0.12	BW	0.40
Azerbaijan	0.02	0.00	0.18	0.19	0.61	Sch. M4 and M7	0.98
Gabon	-0.15	0.01	0.36	0.30	0.48	Sch. III and M4	0.65
Georgia	0.03	0.00	0.26	0.17	0.54	Sch. M4 and M7	0.55
Lithuania	-0.07	0.03	0.33	0.25	0.46	Sch. III and M4	0.44
Cyprus	0.07	0.12	0.28	0.26	0.28	Sch. M4 and M7	0.44
Namibia	-0.23	0.03	0.63	0.42	0.16	BW	0.72
Bahrain	-0.34	0.07	0.60	0.45	0.22	BW	0.83
Ethiopia	0.01	0.08	0.48	0.14	0.30	Sch. III and IV	0.16
Papua New Guinea	0.07	0.01	0.27	0.27	0.37	Sch. M4 and M7	0.45
Bahamas, The	0.05	0.03	0.27	0.25	0.40	Sch. M4 and M7	0.53
Nicaragua	0.07	0.04	0.39	0.14	0.37	Sch. M4 and M7	0.24
Honduras	0.07	0.05	0.31	0.24	0.32	Sch. M4 and M7	0.37
Liberia	-0.05	0.00	0.46	0.26	*0.32	Sch. III and M4	0.39
Latvia	-0.10	0.04	0.34	0.26	0.45	Sch. III and M4	0.50
Moldova	0.03	0.02	0.18	0.18	0.59	Sch. M4 and M7	0.80
Madagascar	0.16	0.02	0.55	0.18	0.09	BW	0.22
Iceland	0.04	0.05	0.57	0.27	0.08	BW	0.36
Mozambique	-0.04	0.06	0.72	0.21	0.06	BW	0.26
Guinea	0.10	0.03	0.30	0.21	0.36	Sch. M4 and M7	0.25

Table 1.1. (continued). Relationship Between Calculated Quotas and Variables Entering into the Quota Formulas

	Partial Elasticity of the Calculated Quota with respect to: 1/					<i>Memo:</i>	
	GDP	Reserves	Current Payments	Current Receipts	Variability	Equation for Calculated Quota	Ratio of Current Receipts to GDP
Sierra Leone	0.04	0.03	0.42	0.20	0.32	Sch. III and M4	0.23
Malta	-0.38	0.18	0.61	0.50	0.08	BW	1.00
Mauritius	-0.17	0.10	0.61	0.37	0.09	BW	0.60
Paraguay	-0.02	0.09	0.50	0.18	0.25	Sch. III and IV	0.22
Mali	-0.01	0.08	0.60	0.24	0.08	BW	0.32
Suriname	-0.53	0.01	0.58	0.61	0.34	BW	1.53
Armenia	-0.40	0.00	0.64	0.49	0.27	BW	0.96
Guyana	-0.35	0.14	0.59	0.47	0.16	BW	0.89
Kyrgyz Republic	0.02	0.01	0.22	0.18	0.57	Sch. M4 and M7	0.86
Cambodia	0.45	0.05	0.30	0.06	0.14	BW	0.06
Tajikistan	-0.61	0.00	0.65	0.66	0.31	BW	1.98
Congo, Republic of	0.02	0.00	0.21	0.15	0.62	Sch. M4 and M7	0.73
Haiti	0.04	0.01	0.45	0.12	0.38	Sch. III and IV	0.13
Somalia	0.11	0.02	0.67	0.11	0.08	BW	0.12
Rwanda	0.07	0.03	0.36	0.13	0.41	Sch. M4 and M7	0.20
Burundi	0.08	0.12	0.44	0.11	0.25	Sch. III and M4	0.12
Turkmenistan	0.01	0.06	0.28	0.20	0.44	Sch. III and M4	0.27
Togo	0.06	0.07	0.30	0.22	0.35	Sch. M4 and M7	0.41
Nepal	0.17	0.14	0.46	0.16	0.06	BW	0.19
Fiji	0.05	0.07	0.25	0.23	0.40	Sch. M4 and M7	0.54
Malawi	0.05	0.02	0.30	0.18	0.45	Sch. M4 and M7	0.40
Macedonia, FYR	0.06	0.03	0.28	0.25	0.38	Sch. M4 and M7	0.49
Barbados	-0.12	0.03	0.38	0.30	0.40	Sch. III and M4	0.57
Niger	-0.01	0.04	0.45	0.20	0.33	Sch. III and M4	0.28
Estonia	-0.10	0.06	0.35	0.26	0.44	Sch. III and M4	0.50
Mauritania	-0.12	0.02	0.65	0.32	0.13	BW	0.48
Botswana	-0.14	0.28	0.35	0.29	0.21	Sch. III and M4	0.62
Benin	-0.05	0.04	0.43	0.24	0.33	Sch. III and M4	0.37
Burkina Faso	0.09	0.12	0.32	0.21	0.27	Sch. M4 and M7	0.27
Chad	0.06	0.07	0.32	0.16	0.39	Sch. M4 and M7	0.31
Central African Republic	0.00	0.11	0.46	0.18	0.26	Sch. III and M4	0.24
Lao, People's Dem. Republic	0.10	0.04	0.46	0.16	0.24	Sch. III and M4	0.16
Mongolia	-0.16	0.02	0.38	0.27	0.50	Sch. III and M4	0.62
Swaziland	-0.34	0.08	0.66	0.47	*0.13	BW	0.89
Albania	0.02	0.04	0.30	0.13	0.51	Sch. III and M4	0.18
Lesotho	-0.34	0.11	0.63	0.44	0.15	BW	0.80
Equatorial Guinea	-0.16	0.00	0.71	0.31	0.14	BW	0.44
Gambia, The	-0.31	0.11	0.57	0.44	0.19	BW	0.80
Belize	-0.12	0.02	0.42	0.29	0.39	Sch. III and M4	0.55
San Marino	-0.45	0.08	0.63	0.56	0.18	BW	1.29

Table 1.1. (concluded). Relationship Between Calculated Quotas and Variables Entering into the Quota Formulas

	Partial Elasticity of the Calculated Quota with respect to: 1/					Memo:	
	GDP	Reserves	Current	Current	Variability	Equation for Calculated Quota	Ratio of Current Receipts to GDP
			Payments	Receipts			
Vanuatu	0.04	0.09	0.24	0.20	0.44	Sch. M4 and M7	0.56
Djibouti	0.05	0.08	0.28	0.18	0.41	Sch. M4 and M7	0.41
Eritrea	-0.07	0.11	0.37	0.25	0.33	Sch. III and M4	0.43
St. Lucia	-0.22	0.05	0.69	0.40	0.08	BW	0.66
Guinea-Bissau	0.01	0.01	0.46	0.14	0.37	Sch. III and M4	0.19
Antigua and Barbuda	-0.36	0.03	0.74	0.50	0.10	BW	1.02
Grenada	0.05	0.05	0.26	0.22	0.42	Sch. M4 and M7	0.54
Samoa	-0.25	0.13	0.60	0.39	0.14	BW	0.64
Solomon Islands	0.04	0.03	0.28	0.21	0.43	Sch. M4 and M7	0.54
Cape Verde	-0.06	0.08	0.61	0.28	0.09	BW	0.39
Comoros	0.05	0.12	0.27	0.22	0.33	Sch. M4 and M7	0.48
St. Kitts and Nevis	-0.17	0.07	0.67	0.36	0.07	BW	0.57
Seychelles	-0.13	0.03	0.65	0.35	0.11	BW	0.53
St. Vincent and the Grenadines	0.04	0.06	0.29	0.23	0.38	Sch. M4 and M7	0.59
Dominica	-0.13	0.04	0.68	0.34	0.08	BW	0.51
Maldives	-0.34	0.04	0.72	0.48	0.10	BW	0.92
Sao Tome and Principe	0.05	0.07	0.40	0.10	0.38	Sch. M4 and M7	0.24
Tonga	0.05	0.10	0.25	0.21	0.40	Sch. M4 and M7	0.49
Bhutan	-0.06	0.16	0.45	0.23	0.22	Sch. III and M4	0.37
Kiribati	-0.42	0.65	0.24	0.46	0.07	BW	0.87
Micronesia, Fed. States of	-0.13	0.09	0.69	0.28	0.06	BW	0.39
Marshall Islands	-0.21	0.04	0.69	0.35	0.14	BW	0.53
Palau, Republic of	-0.31	-0.14	0.20	-0.01	0.09	Sch. III and M4	0.38

1/ Note: The elasticity of the calculated quota CQ with respect to a variable X is defined as:

$$\epsilon = \frac{\partial CQ}{\partial X} \times \frac{X}{CQ}$$

where all other variables entering into the quota formulas are held constant. The figures shown indicate the impact on the calculated quota of a one percent change of a given variable.

Table 1.2. Relative Contribution of Variables to Calculated Quotas 1/
(in percent of calculated quotas)

	GDP	Reserves	Current Payments	Current Receipts	Variability of Current Receipts	Ratio of Current Receipts to GDP
United States	51.5	1.4	31.0	0.0	6.1	10.0
Japan	58.8	3.6	24.1	0.0	4.0	9.4
Germany	11.3	4.9	36.3	14.3	22.4	10.8
France	30.5	1.7	40.3	0.0	6.3	21.2
United Kingdom	26.3	2.6	42.1	0.0	5.3	23.7
Italy	31.1	2.8	39.9	0.0	6.0	20.2
Saudi Arabia	5.0	3.0	25.7	21.0	45.3	0.0
Canada	9.2	2.2	28.9	26.1	33.6	0.0
Russia	9.6	1.1	26.0	10.7	42.0	10.7
Netherlands	15.1	4.0	40.1	0.0	4.3	36.5
China	41.8	7.2	32.2	0.0	4.7	14.1
Belgium	12.1	2.0	39.6	0.0	6.1	40.2
India	49.2	7.3	29.5	0.0	4.8	9.2
Switzerland	21.0	7.2	37.8	0.0	4.8	29.3
Australia	34.6	3.2	39.1	0.0	7.5	15.7
Spain	29.7	6.3	39.1	0.0	5.4	19.4
Brazil	52.7	9.1	20.9	0.0	9.9	7.3
Venezuela	7.0	5.3	23.5	9.6	42.2	12.4
Mexico	40.6	4.4	34.5	0.0	9.7	10.8
Sweden	20.1	5.5	41.0	0.0	5.1	28.2
Argentina	56.5	6.8	22.9	0.0	7.6	6.3
Indonesia	13.2	4.6	42.4	0.0	21.7	18.1
Austria	19.8	4.5	40.7	0.0	5.8	29.1
South Africa	35.0	0.8	40.4	0.0	4.3	19.6
Nigeria	6.4	0.8	19.9	8.1	53.5	11.3
Norway	8.2	7.3	33.0	13.8	22.1	15.6
Denmark	18.7	3.0	41.9	0.0	4.2	32.3
Korea	11.4	6.8	36.4	13.4	21.8	10.2
Iran	11.1	2.0	35.7	0.0	33.8	17.4
Malaysia	9.0	9.8	33.1	0.0	7.1	40.9
Kuwait	3.0	2.6	16.0	7.1	53.2	18.1
Ukraine	5.8	0.1	27.7	10.3	40.5	15.6
Poland	12.0	3.8	38.5	13.8	20.0	12.0
Finland	8.4	8.0	27.8	25.3	30.5	0.0
Algeria	8.0	2.5	24.9	10.1	42.7	11.7

Table 1.2. (continued). Relative Contribution of Variables to Calculated Quotas 1/
(in percent of calculated quotas)

	GDP	Reserves	Current Payments	Current Receipts	Variability of Current Receipts	Ratio of Current Receipts to GDP
Iraq	6.2	0.9	18.5	0.0	58.9	15.4
Libya	7.2	4.1	26.3	0.0	49.4	13.0
Thailand	21.3	10.1	39.7	0.0	4.6	24.3
Hungary	8.7	7.8	34.3	12.8	22.3	14.1
Pakistan	31.8	3.5	41.0	0.0	6.3	17.5
Romania	8.4	2.5	23.0	6.9	50.8	8.4
Turkey	14.5	3.3	47.6	0.0	16.3	18.3
Egypt	8.7	12.5	30.3	11.7	24.0	12.8
Israel	24.6	5.2	43.9	0.0	4.3	22.0
New Zealand	12.3	5.2	39.3	13.5	18.0	11.7
Philippines	10.3	9.9	29.6	26.4	23.8	0.0
Portugal	8.6	16.0	28.4	26.1	20.9	0.0
Singapore	5.9	11.2	27.5	0.0	5.1	50.3
Chile	12.0	13.6	43.2	0.0	11.5	19.8
Ireland	11.0	3.3	39.6	0.0	4.0	42.1
Greece	32.7	8.6	38.5	0.0	5.0	15.1
Czech Republic	7.5	5.7	29.4	11.2	32.4	13.8
Colombia	36.2	10.1	32.4	0.0	6.3	14.9
Bulgaria	3.2	1.5	23.3	7.6	45.1	19.2
Peru	40.9	11.1	30.3	0.0	8.2	9.6
United Arab Emirates	5.8	5.8	21.1	12.7	37.4	17.2
Morocco	9.9	13.1	29.1	27.2	20.8	0.0
Bangladesh	36.9	10.2	33.6	0.0	5.9	13.3
Congo, Dem. Republic of	6.7	0.9	31.2	8.2	40.8	12.1
Zambia	6.0	2.3	34.0	9.1	33.8	14.8
FRY (Serbia/Montenegro)	4.8	0.5	17.8	6.2	59.2	11.4
Sri Lanka	9.5	8.8	38.0	12.2	18.4	13.1
Belarus	2.2	0.4	18.3	18.6	60.5	0.0
Ghana	23.2	5.4	45.3	0.0	4.1	21.9
Kazakstan	3.5	2.0	22.7	16.9	55.0	0.0
Croatia	5.7	2.2	27.8	10.3	38.0	16.0
Slovak Republic	6.4	2.4	30.1	11.4	33.7	16.1
Zimbabwe	7.4	7.3	30.0	24.6	30.6	0.0
Trinidad and Tobago	5.2	0.9	23.0	9.9	44.9	16.0
Vietnam	12.2	6.5	36.6	12.3	23.4	9.1

Table 1.2. (continued). Relative Contribution of Variables to Calculated Quotas 1/
(in percent of calculated quotas)

	GDP	Reserves	Current Payments	Current Receipts	Variability of Current Receipts	Ratio of Current Receipts to GDP
Cote d'Ivoire	5.9	0.2	32.8	24.8	36.4	0.0
Sudan	13.3	0.4	28.8	0.0	50.6	7.0
Uruguay	37.5	5.3	35.2	0.0	6.7	15.3
Ecuador	11.1	5.5	31.8	10.4	31.4	9.8
Syrian Arab Republic	19.9	2.8	32.5	0.0	33.8	11.0
Tunisia	17.6	3.1	42.7	0.0	6.8	29.9
Angola	2.5	1.2	22.4	19.0	54.8	0.0
Luxembourg	7.2	0.1	35.1	0.0	5.7	52.0
Uzbekistan	4.0	6.3	25.3	9.2	36.2	19.1
Jamaica	10.6	3.5	38.0	0.0	8.1	40.0
Kenya	7.8	7.1	27.8	24.6	32.6	0.0
Qatar	5.0	2.7	24.5	9.7	41.7	16.4
Myanmar	87.9	1.0	7.5	0.0	2.2	1.3
Yemen, Republic of	17.2	0.9	33.7	0.0	37.4	10.7
Slovenia	6.4	1.9	31.4	13.0	29.5	17.9
Dominican Republic	9.7	1.9	36.9	13.3	24.6	13.7
Brunei Darussalam	2.7	1.5	12.9	11.7	44.6	26.6
Guatemala	34.9	5.9	38.2	0.0	5.8	15.2
Panama	7.2	3.4	33.4	11.6	29.3	15.2
Lebanon	7.2	17.5	38.8	5.5	22.2	8.8
Tanzania	9.4	6.3	35.8	13.9	34.5	0.0
Oman	5.4	2.3	27.5	9.9	38.7	16.2
Cameroon	7.5	0.0	35.4	11.2	31.4	14.5
Uganda	42.6	4.9	35.1	0.0	10.0	7.4
Bolivia	13.3	4.6	36.8	9.1	28.2	8.0
El Salvador	13.6	5.6	47.8	0.0	14.9	18.1
Jordan	9.7	6.1	37.4	0.0	8.7	38.1
Bosnia-Herzegovina	3.8	0.4	28.2	0.0	7.4	60.3
Costa Rica	8.8	9.7	30.6	26.5	24.3	0.0
Afghanistan, Islamic State of	14.1	5.1	43.6	0.0	27.0	10.3
Senegal	17.0	0.6	45.4	0.0	8.4	28.6
Azerbaijan	2.2	0.0	17.7	18.8	61.2	0.0
Gabon	3.8	0.6	25.5	9.8	39.4	20.9
Georgia	3.4	0.1	25.8	16.6	54.0	0.0
Lithuania	5.9	2.6	25.4	10.3	40.6	15.2

Table 1.2. (continued). Relative Contribution of Variables to Calculated Quotas 1/
(in percent of calculated quotas)

	GDP	Reserves	Current Payments	Current Receipts	Variability of Current Receipts	Ratio of Current Receipts to GDP
Cyprus	6.7	12.2	27.8	25.8	27.5	0.0
Namibia	10.7	1.8	36.6	0.0	9.0	41.9
Bahrain	5.8	3.7	33.1	0.0	12.2	45.3
Ethiopia	12.7	6.8	40.9	0.0	25.8	13.9
Papua New Guinea	6.9	1.3	27.3	27.1	37.3	0.0
Bahamas, The	5.4	3.4	26.7	25.0	39.6	0.0
Nicaragua	6.5	4.0	39.1	13.9	36.5	0.0
Honduras	7.4	5.5	31.0	23.9	32.2	0.0
Liberia	7.7	0.1	36.5	12.2	28.3	15.2
Latvia	5.0	3.8	25.4	9.9	39.1	16.9
Moldova	2.6	2.1	18.3	18.1	58.9	0.0
Madagascar	27.6	1.6	45.5	0.0	7.6	17.7
Iceland	22.0	3.7	42.0	0.0	5.6	26.7
Mozambique	13.0	4.6	56.8	0.0	4.9	20.6
Guinea	9.7	2.7	30.0	21.1	36.5	0.0
Sierra Leone	11.5	2.5	35.8	10.7	29.4	10.1
Malta	6.0	9.2	30.8	0.0	4.1	49.9
Mauritius	12.3	6.6	38.4	0.0	5.4	37.4
Paraguay	12.8	7.4	40.8	0.0	20.8	18.2
Mali	17.4	6.4	45.9	0.0	6.3	24.0
Suriname	2.8	0.5	22.8	0.0	13.4	60.5
Armenia	4.5	0.2	32.5	0.0	13.9	48.9
Guyana	6.2	7.2	31.4	0.0	8.3	47.0
Kyrgyz Republic	2.3	1.0	22.3	17.5	56.9	0.0
Cambodia	48.1	4.4	28.6	0.0	13.2	5.7
Tajikistan	1.6	0.0	21.7	0.0	10.3	66.5
Congo, Republic of	2.3	0.3	21.0	14.7	61.6	0.0
Haiti	13.9	1.2	39.8	0.0	33.4	11.6
Somalia	19.8	2.0	59.7	0.0	7.4	11.1
Rwanda	7.1	3.1	35.9	12.7	41.2	0.0
Burundi	12.1	11.3	40.5	5.8	24.2	6.2
Turkmenistan	9.3	5.8	23.9	10.2	40.3	10.4
Togo	6.1	6.5	30.2	21.9	35.2	0.0
Nepal	28.0	12.0	38.8	0.0	5.2	16.0
Fiji	4.9	6.9	25.4	23.1	39.6	0.0

Table 1.2. (continued). Relative Contribution of Variables to Calculated Quotas 1/
(in percent of calculated quotas)

	GDP	Reserves	Current Payments	Current Receipts	Variability of Current Receipts	Ratio of Current Receipts to GDP
Malawi	5.2	1.6	29.8	18.3	45.1	0.0
Macedonia, FYR	5.9	2.8	28.2	25.2	38.0	0.0
Barbados	5.0	2.9	27.9	11.3	33.9	19.0
Niger	8.0	3.5	38.0	8.9	29.9	11.7
Estonia	4.8	4.8	26.5	9.5	37.4	17.1
Mauritania	13.4	1.4	43.9	0.0	9.0	32.3
Botswana	4.0	23.6	24.8	9.8	17.9	19.9
Benin	7.2	3.9	34.2	10.7	29.7	14.3
Burkina Faso	8.6	11.5	31.8	20.7	27.4	0.0
Chad	5.9	6.8	32.5	15.8	39.1	0.0
Central African Republic	8.3	9.8	39.9	7.9	23.6	10.6
Lao, People's Dem. Republic	15.3	3.6	41.3	9.6	22.4	7.8
Mongolia	2.8	1.8	26.6	6.9	41.3	20.7
Swaziland	6.8	4.4	34.7	0.0	7.0	47.0
Albania	7.9	3.8	26.5	5.8	48.1	7.8
Lesotho	5.8	6.0	35.2	0.0	8.5	44.5
Equatorial Guinea	10.3	0.1	49.6	0.0	9.5	30.6
Gambia, The	7.2	6.2	31.7	0.0	10.5	44.5
Belize	4.8	1.8	31.1	10.4	32.8	19.0
San Marino	4.7	3.3	27.7	0.0	7.9	56.4
Vanuatu	4.0	8.6	24.0	19.5	43.9	0.0
Djibouti	5.0	7.9	28.3	18.1	40.7	0.0
Eritrea	6.2	9.7	29.0	10.6	29.1	15.4
St. Lucia	10.7	2.9	41.5	0.0	5.0	39.9
Guinea-Bissau	8.2	1.3	40.1	6.4	35.0	9.0
Antigua and Barbuda	6.7	1.4	36.8	0.0	4.8	50.4
Grenada	4.7	5.2	25.7	22.2	42.2	0.0
Samoa	8.2	7.6	36.7	0.0	8.5	38.9
Solomon Islands	4.4	3.4	28.4	20.7	43.1	0.0
Cape Verde	15.7	5.8	44.0	0.0	6.7	27.8
Comoros	5.3	11.9	27.3	22.1	33.4	0.0
St. Kitts and Nevis	12.2	4.3	42.6	0.0	4.7	36.3
Seychelles	13.8	2.0	42.4	0.0	6.9	34.8
St. Vincent and the Grenadines	4.4	5.8	28.6	22.9	38.3	0.0
Dominica	13.5	2.5	45.1	0.0	5.1	33.8

Table 1.2. (concluded). Relative Contribution of Variables to Calculated Quotas 1/
(in percent of calculated quotas)

	GDP	Reserves	Current Payments	Current Receipts	Variability of Current Receipts	Ratio of Current Receipts to GDP
Maldives	7.0	2.1	37.4	0.0	5.3	48.0
Sao Tome and Principe	4.7	7.2	40.5	9.9	37.7	0.0
Tonga	4.8	9.9	24.9	20.8	39.6	0.0
Bhutan	6.2	14.2	35.7	9.3	20.0	14.6
Kiribati	2.1	35.0	12.7	0.0	3.7	46.4
Micronesia, Fed. States of	10.9	6.7	50.0	0.0	4.5	27.9
Marshall Islands	8.3	2.9	45.4	0.0	8.9	34.5
Palau, Republic of	5.4	8.1	34.6	8.3	28.6	15.1

1/ The contribution to the calculated quota is the variable times its coefficient, expressed in relation to the member's calculated quota. The contribution of the ratio of current receipts to GDP is the contribution of the nonlinear element to the calculated quotas, i.e., the extent to which the calculated quota is raised by the application of the multiplier (unity plus the ratio of current receipts to GDP).