

**Regression Number:** 25  
**Regression Name:** Nonlinear Bretton Woods Formula with the Then-Existing Quota as an Additive Explanatory Variable for Countries with Calculated Quotas Based on the Variants of the Bretton Woods Formula

**Quota Review:** Eleventh

$$Q = 1.28515 QL + ( 0.00033 Y + 0.00220 R + 0.00290 P + 0.01280 VC ) \times ( 1 + C/Y )$$

(201.05)
(3.39)
(3.44)
(7.65)
(4.08)

where Q is the actual quota; Y is GDP in a recent year (1994); R is average monthly reserves in a recent year (1994); P and C are the annual average current payments and receipts, respectively, over a recent five year period (1991-94); VC is the variability of current receipts, defined as one standard deviation from a five-year moving average over a recent 13-year period (1982-1994); QL is the then-existing quota; t-ratios are given in parentheses.

Sample size:	111	R-squared	1.00
Description of sample:	Members with calculated quotas based on the variants of the BW formula	Adjusted R-squared	1.00
		S.E. of Regression	18.81
Estimation method:	Nonlinear Least Squares	SSR (from estimation)	37,519

**Relative Contributions of Variables in the Estimated Formula**  
(In percent)

QL	89.5
Y	1.6
R	0.7
P	4.4
VC	1.3
C/Y	<u>2.6</u>
Total:	100.0

**Table I.25. Results of Regression Equation No. 25**  
(Countries ranked by actual quota under the Eleventh General Review)

	Actual	Estimated	Adjusted	Actual	Adjusted	'Residuals'		<i>Memo Item:</i>	
	Quota	Quota	Quota	Quota	Quota	Columns		Calculated Quotas Based on Existing 5-Formula System	
	Amount	Amount 1/	Amount 2/	Shares	Shares	(1)-(3)	(4)-(5)	Amount	Shares
	(In millions of SDRs)			(In percent)				(in mill SDRs)	(In percent)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Germany	13,008.2	13,020.7	13,011.5	6.135	6.137	-3.29	0.00	49,132.1	9.007
Saudi Arabia	6,985.5	6,935.1	6,930.2	3.295	3.269	55.32	0.03	7,159.1	1.312
Canada	6,369.2	6,397.9	6,393.3	3.004	3.015	-24.12	-0.01	17,830.8	3.269
Russia	5,945.4	5,949.3	5,945.1	2.804	2.804	0.28	0.00	10,052.3	1.843
Venezuela	2,659.1	2,630.0	2,628.2	1.254	1.240	30.92	0.02	2,853.6	0.523
Indonesia	2,079.3	2,130.8	2,129.3	0.981	1.004	-49.99	-0.02	4,318.0	0.792
Nigeria	1,753.2	1,731.6	1,730.4	0.827	0.816	22.84	0.01	2,246.8	0.412
Norway	1,671.7	1,678.4	1,677.2	0.788	0.791	-5.54	0.00	5,209.6	0.955
Korea	1,633.6	1,480.8	1,479.8	0.770	0.698	153.84	0.07	9,049.7	1.659
Iran	1,497.2	1,518.3	1,517.3	0.706	0.716	-20.06	-0.01	3,095.9	0.568
Kuwait	1,381.1	1,393.8	1,392.8	0.651	0.657	-11.74	-0.01	2,832.9	0.519
Ukraine	1,372.0	1,372.2	1,371.3	0.647	0.647	0.74	0.00	2,172.1	0.398
Poland	1,369.0	1,397.5	1,396.5	0.646	0.659	-27.48	-0.01	2,657.1	0.487
Finland	1,263.8	1,278.8	1,277.9	0.596	0.603	-14.06	-0.01	3,463.0	0.635
Algeria	1,254.7	1,249.7	1,248.8	0.592	0.589	5.90	0.00	1,811.0	0.332
Iraq	1,188.4	1,174.2	1,173.4	0.560	0.553	15.00	0.01	1,810.1	0.332
Libya	1,123.7	1,118.1	1,117.3	0.530	0.527	6.35	0.00	1,720.9	0.315
Hungary	1,038.4	1,051.9	1,051.1	0.490	0.496	-12.71	-0.01	1,644.2	0.301
Romania	1,030.2	1,017.8	1,017.0	0.486	0.480	13.17	0.01	1,243.8	0.228
Turkey	964.0	967.1	966.4	0.455	0.456	-2.40	0.00	2,905.9	0.533
Egypt	943.7	977.1	976.4	0.445	0.460	-32.67	-0.02	2,054.5	0.377
New Zealand	894.6	905.7	905.0	0.422	0.427	-10.42	-0.01	1,429.0	0.262
Philippines	879.9	909.0	908.4	0.415	0.428	-28.45	-0.01	1,852.2	0.340
Portugal	867.4	881.2	880.5	0.409	0.415	-13.15	-0.01	3,046.1	0.558
Chile	856.1	875.5	874.9	0.404	0.413	-18.82	-0.01	1,398.3	0.256
Czech Republic	819.3	837.8	837.2	0.386	0.395	-17.86	-0.01	1,736.0	0.318
Bulgaria	640.2	642.4	641.9	0.302	0.303	-1.71	0.00	1,046.6	0.192
United Arab Emirates	611.7	601.7	601.3	0.288	0.284	10.45	0.01	2,176.5	0.399
Morocco	588.2	598.1	597.7	0.277	0.282	-9.50	0.00	919.4	0.169
Congo, Dem. Republic of	533.0	520.1	519.7	0.251	0.245	13.31	0.01	301.1	0.055
Zambia	489.1	475.4	475.1	0.231	0.224	13.99	0.01	183.3	0.034
FRY (Serbia/Montenegro)	467.7	470.2	469.9	0.221	0.222	-2.17	0.00	1,076.3	0.197
Sri Lanka	413.4	412.1	411.8	0.195	0.194	1.61	0.00	426.6	0.078
Belarus	386.4	392.3	392.1	0.182	0.185	-5.67	0.00	648.9	0.119
Kazakstan	365.7	365.8	365.5	0.172	0.172	0.16	0.00	1,032.1	0.189
Croatia	365.1	373.7	373.4	0.172	0.176	-8.33	0.00	860.9	0.158
Slovak Republic	357.5	364.2	364.0	0.169	0.172	-6.47	0.00	748.1	0.137
Zimbabwe	353.4	347.9	347.7	0.167	0.164	5.74	0.00	234.1	0.043
Trinidad and Tobago	335.6	330.2	330.0	0.158	0.156	5.59	0.00	320.4	0.059
Vietnam	329.1	327.7	327.4	0.155	0.154	1.66	0.00	345.7	0.063

**Table I.25. Results of Regression Equation No. 25**  
(Countries ranked by actual quota under the Eleventh General Review)

	Actual	Estimated	Adjusted	Actual	Adjusted	'Residuals'		Memo Item:		
	Quota	Quota	Estimated	Quota	Estimated	Columns		Calculated Quotas Based on		
	Amount	Amount 1/	Quota	Shares	Quota	(1)-(3)	(4)-(5)	Existing 5-Formula System	Amount	Shares
	(In millions of SDRs)			(In percent)				(in mill SDRs)	(In percent)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Cote d'Ivoire	325.2	326.1	325.9	0.153	0.154	-0.70	0.00	379.0	0.069	
Sudan	315.1	307.4	307.2	0.149	0.145	7.94	0.00	198.5	0.036	
Ecuador	302.3	305.3	305.1	0.143	0.144	-2.76	0.00	517.2	0.095	
Syrian Arab Republic	293.6	303.0	302.8	0.138	0.143	-9.15	0.00	723.7	0.133	
Angola	286.3	293.8	293.6	0.135	0.138	-7.26	0.00	516.1	0.095	
Uzbekistan	275.6	280.1	279.9	0.130	0.132	-4.25	0.00	495.4	0.091	
Kenya	271.4	269.8	269.6	0.128	0.127	1.84	0.00	273.7	0.050	
Qatar	263.8	266.7	266.5	0.124	0.126	-2.72	0.00	509.2	0.093	
Yemen, Republic of	243.5	245.1	245.0	0.115	0.116	-1.47	0.00	421.6	0.077	
Slovenia	231.7	228.8	228.7	0.109	0.108	3.04	0.00	776.9	0.142	
Dominican Republic	218.9	221.1	221.0	0.103	0.104	-2.08	0.00	370.0	0.068	
Brunei Darussalam	215.2	216.5	216.3	0.101	0.102	-1.13	0.00	553.7	0.102	
Panama	206.6	209.5	209.3	0.097	0.099	-2.72	0.00	372.0	0.068	
Lebanon	203.0	211.3	211.2	0.096	0.100	-8.18	0.00	436.0	0.080	
Tanzania	198.9	196.1	195.9	0.094	0.092	2.98	0.00	142.8	0.026	
Oman	194.0	189.8	189.7	0.091	0.089	4.29	0.00	833.6	0.153	
Cameroon	185.7	186.2	186.1	0.088	0.088	-0.39	0.00	285.3	0.052	
Bolivia	171.5	169.4	169.3	0.081	0.080	2.20	0.00	155.4	0.028	
El Salvador	171.3	171.1	170.9	0.081	0.081	0.37	0.00	192.5	0.035	
Costa Rica	164.1	167.8	167.7	0.077	0.079	-3.62	0.00	282.4	0.052	
Afghanistan, Islamic State of	161.9	157.3	157.2	0.076	0.074	4.74	0.00	54.2	0.010	
Azerbaijan	160.9	162.7	162.6	0.076	0.077	-1.66	0.00	251.2	0.046	
Gabon	154.3	158.5	158.4	0.073	0.075	-4.09	0.00	383.3	0.070	
Georgia	150.3	147.9	147.8	0.071	0.070	2.54	0.00	108.4	0.020	
Lithuania	144.2	147.0	146.9	0.068	0.069	-2.65	0.00	326.3	0.060	
Cyprus	139.6	146.2	146.1	0.066	0.069	-6.51	0.00	330.5	0.061	
Ethiopia	133.7	132.6	132.5	0.063	0.063	1.18	0.00	131.9	0.024	
Papua New Guinea	131.6	133.6	133.5	0.062	0.063	-1.87	0.00	232.4	0.043	
Bahamas, The	130.3	131.5	131.4	0.061	0.062	-1.08	0.00	190.5	0.035	
Nicaragua	130.0	128.1	128.0	0.061	0.060	2.04	0.00	85.1	0.016	
Honduras	129.5	129.2	129.1	0.061	0.061	0.38	0.00	138.7	0.025	
Liberia	129.2	125.1	125.1	0.061	0.059	4.14	0.00	33.8	0.006	
Latvia	126.8	128.8	128.7	0.060	0.061	-1.95	0.00	253.1	0.046	
Moldova	123.2	123.4	123.3	0.058	0.058	-0.11	0.00	163.5	0.030	
Guinea	107.1	106.1	106.0	0.051	0.050	1.10	0.00	104.8	0.019	
Sierra Leone	103.7	100.5	100.4	0.049	0.047	3.30	0.00	27.8	0.005	
Paraguay	99.9	102.4	102.3	0.047	0.048	-2.40	0.00	197.0	0.036	
Kyrgyz Republic	88.8	90.4	90.4	0.042	0.043	-1.55	0.00	143.3	0.026	
Congo, Republic of	84.6	85.3	85.2	0.040	0.040	-0.62	0.00	228.0	0.042	
Haiti	81.9	79.9	79.8	0.039	0.038	2.08	0.00	42.8	0.008	

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(Countries ranked by actual quota under the Eleventh General Review)

	Actual	Estimated	Adjusted	Actual	Adjusted	Residuals		Memo Item:	
	Quota	Quota	Estimated	Quota	Estimated	Columns		Calculated Quotas Based o	
	Amount	Amount 1/	Quota	Shares	Quota	(1)-(3)	(4)-(5)	Existing 5-Formula System	Shares
	(In millions of SDRs)			(In percent)				(in mill SDRs)	(In percent)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rwanda	80.1	78.0	78.0	0.038	0.037	2.13	0.00	31.4	0.006
Burundi	77.0	75.1	75.0	0.036	0.035	1.99	0.00	30.5	0.006
Turkmenistan	75.2	73.4	73.3	0.035	0.035	1.88	0.00	272.1	0.050
Togo	73.4	72.3	72.2	0.035	0.034	1.20	0.00	47.4	0.009
Fiji	70.3	71.3	71.2	0.033	0.034	-0.91	0.00	109.7	0.020
Malawi	69.4	69.0	69.0	0.033	0.033	0.40	0.00	74.3	0.014
Macedonia, FYR	68.9	71.0	70.9	0.032	0.033	-2.01	0.00	144.4	0.026
Barbados	67.5	68.3	68.3	0.032	0.032	-0.79	0.00	120.1	0.022
Niger	65.8	65.2	65.2	0.031	0.031	0.65	0.00	67.3	0.012
Estonia	65.2	67.4	67.4	0.031	0.032	-2.15	0.00	167.1	0.031
Botswana	63.0	70.0	69.9	0.030	0.033	-6.91	0.00	358.4	0.066
Benin	61.9	61.6	61.6	0.029	0.029	0.31	0.00	73.3	0.013
Burkina Faso	60.2	60.2	60.2	0.028	0.028	0.04	0.00	64.3	0.012
Chad	56.0	55.2	55.2	0.026	0.026	0.80	0.00	42.2	0.008
Central African Republic	55.7	54.8	54.7	0.026	0.026	0.98	0.00	35.6	0.007
Lao, People's Dem. Republi	52.9	51.9	51.9	0.025	0.024	1.02	0.00	34.8	0.006
Mongolia	51.1	51.5	51.5	0.024	0.024	-0.41	0.00	85.8	0.016
Albania	48.7	48.9	48.9	0.023	0.023	-0.15	0.00	86.4	0.016
Belize	18.8	19.2	19.2	0.009	0.009	-0.37	0.00	39.9	0.007
Vanuatu	17.0	16.9	16.9	0.008	0.008	0.12	0.00	16.2	0.003
Djibouti	15.9	16.3	16.3	0.007	0.008	-0.35	0.00	29.1	0.005
Eritrea	15.9	16.3	16.3	0.007	0.008	-0.39	0.00	30.6	0.006
Guinea-Bissau	14.2	13.9	13.9	0.007	0.007	0.28	0.00	9.9	0.002
Grenada	11.7	11.8	11.8	0.006	0.006	-0.05	0.00	16.6	0.003
Solomon Islands	10.4	10.7	10.7	0.005	0.005	-0.26	0.00	19.9	0.004
Comoros	8.9	8.9	8.9	0.004	0.004	-0.01	0.00	10.4	0.002
St. Vincent and the Grenadin	8.3	8.6	8.6	0.004	0.004	-0.29	0.00	16.2	0.003
Sao Tome and Principe	7.4	7.2	7.2	0.003	0.003	0.16	0.00	3.2	0.001
Tonga	6.9	6.9	6.9	0.003	0.003	-0.03	0.00	10.0	0.002
Bhutan	6.3	6.6	6.6	0.003	0.003	-0.27	0.00	14.4	0.003
Palau, Republic of	3.1	3.2	3.2	0.001	0.001	-0.07	0.00	5.7	0.001
Total	75,641.1	75,694.7	75,641.1	35.7	35.7	0.0	0.0	168,974.1	31.0
Sum of Squared Residuals						37,689.7	0.01		

1/ Based on the "estimate" generated by the regression equation.

2/ Based on the estimated quotas shown in col. (2) but adjusted so that their total equals the total of actual quotas.