

Regression Number: 5
Regression Name: Re-estimated Bretton Woods (BW) Formula for Members with Calculated Quotas Based on the Variants of the BW Formula

Quota Review: Eleventh

$$Q = (-0.0084 Y + 0.00809 R + 0.03680 P + 0.52921 VC) \times (1 + C/Y)$$

(-4.92)
(0.65)
(5.56)
(15.14)

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 annual average current payments and receipts, respectively, over a recent five-year period (1990-94); and VC is the variability of current receipt, defined as one standard deviation from a five-year moving average over a recent 13-year period (1982-1994); t-ratios are given in parentheses.

Sample size:	111	R-squared	0.95
Description of sample:	Members with calculated quotas based on the variants of the BW formula	Adjusted R-squared	0.95
		S.E. of Regression	366.15
Estimation method:	Non-linear Least Squares	SSR (from estimation)	14,344,996

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

Y	-41.9
R	2.4
P	56.5
VC	56.9
C/Y	<u>26.0</u>
Total:	100.0

Table I.5. Results of Regression Equation No. 5
(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)
Germany	13,008.2	12,811.4	13,079.9	6.135	6.169	-71.68	-0.03	49,132.1	9.007
Saudi Arabia	6,985.5	4,694.4	4,792.8	3.295	2.260	2,192.72	1.03	7,159.1	1.312
Canada	6,369.2	7,547.4	7,705.5	3.004	3.634	-1,336.29	-0.63	17,830.8	3.269
Russia	5,945.4	5,557.9	5,674.4	2.804	2.676	271.01	0.13	10,052.3	1.843
Venezuela	2,659.1	1,808.9	1,846.8	1.254	0.871	812.33	0.38	2,853.6	0.523
Indonesia	2,079.3	1,380.3	1,409.3	0.981	0.665	670.04	0.32	4,318.0	0.792
Nigeria	1,753.2	1,640.4	1,674.8	0.827	0.790	78.40	0.04	2,246.8	0.412
Norway	1,671.7	2,457.3	2,508.8	0.788	1.183	-837.07	-0.39	5,209.6	0.955
Korea	1,633.6	2,304.3	2,352.6	0.770	1.110	-718.95	-0.34	9,049.7	1.659
Iran	1,497.2	1,436.8	1,466.9	0.706	0.692	30.30	0.01	3,095.9	0.568
Kuwait	1,381.1	2,639.9	2,695.2	0.651	1.271	-1,314.12	-0.62	2,832.9	0.519
Ukraine	1,372.0	1,532.8	1,564.9	0.647	0.738	-192.93	-0.09	2,172.1	0.398
Poland	1,369.0	932.3	951.9	0.646	0.449	417.14	0.20	2,657.1	0.487
Finland	1,263.8	1,460.8	1,491.4	0.596	0.703	-227.61	-0.11	3,463.0	0.635
Algeria	1,254.7	1,103.5	1,126.6	0.592	0.531	128.07	0.06	1,811.0	0.332
Iraq	1,188.4	1,365.1	1,393.7	0.560	0.657	-205.31	-0.10	1,810.1	0.332
Libya	1,123.7	1,134.2	1,158.0	0.530	0.546	-34.30	-0.02	1,720.9	0.315
Hungary	1,038.4	750.5	766.2	0.490	0.361	272.16	0.13	1,644.2	0.301
Romania	1,030.2	785.3	801.7	0.486	0.378	228.49	0.11	1,243.8	0.228
Turkey	964.0	730.1	745.4	0.455	0.352	218.58	0.10	2,905.9	0.533
Egypt	943.7	923.8	943.2	0.445	0.445	0.52	0.00	2,054.5	0.377
New Zealand	894.6	471.5	481.4	0.422	0.227	413.21	0.19	1,429.0	0.262
Philippines	879.9	613.2	626.0	0.415	0.295	253.89	0.12	1,852.2	0.340
Portugal	867.4	1,117.9	1,141.3	0.409	0.538	-273.94	-0.13	3,046.1	0.558
Chile	856.1	359.1	366.7	0.404	0.173	489.44	0.23	1,398.3	0.256
Czech Republic	819.3	981.7	1,002.3	0.386	0.473	-182.96	-0.09	1,736.1	0.318
Bulgaria	640.2	921.4	940.7	0.302	0.444	-300.53	-0.14	1,046.6	0.192
United Arab Emirates	611.7	1,448.6	1,478.9	0.288	0.698	-867.23	-0.41	2,176.5	0.399
Morocco	588.2	298.8	305.1	0.277	0.144	283.15	0.13	919.4	0.169
Congo, Dem. Republic of	533.0	199.3	203.5	0.251	0.096	329.50	0.16	301.1	0.055
Zambia	489.1	120.3	122.8	0.231	0.058	366.32	0.17	183.3	0.034
FRY (Serbia/Montenegro)	467.7	885.6	904.2	0.221	0.426	-436.46	-0.21	1,076.3	0.197
Sri Lanka	413.4	176.0	179.6	0.195	0.085	233.76	0.11	426.6	0.078
Belarus	386.4	652.0	665.7	0.182	0.314	-279.30	-0.13	648.9	0.119
Kazakistan	365.7	810.3	827.3	0.172	0.390	-461.60	-0.22	1,032.1	0.189

Table I.5. Results of Regression Equation No. 5
(Countries ranked by actual quota under the Eleventh General Review)

	Actual	Estimated	Adjusted	Actual	Adjusted	'Residuals'		<i>Memo Item:</i>	
	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)
Croatia	365.1	594.7	607.2	0.172	0.286	-242.08	-0.11	861.0	0.158
Slovak Republic	357.5	475.8	485.7	0.169	0.229	-128.24	-0.06	748.1	0.137
Zimbabwe	353.4	114.6	117.0	0.167	0.055	236.43	0.11	234.1	0.043
Trinidad and Tobago	335.6	243.1	248.2	0.158	0.117	87.40	0.04	320.4	0.059
Vietnam	329.1	83.3	85.0	0.155	0.040	244.08	0.12	345.7	0.063
Cote d'Ivoire	325.2	244.4	249.5	0.153	0.118	75.68	0.04	379.0	0.069
Sudan	315.1	102.0	104.2	0.149	0.049	210.92	0.10	198.5	0.036
Ecuador	302.3	228.7	233.5	0.143	0.110	68.78	0.03	517.2	0.095
Syrian Arab Republic	293.6	166.9	170.4	0.138	0.080	123.19	0.06	723.7	0.133
Angola	286.3	500.5	511.0	0.135	0.241	-224.71	-0.11	516.1	0.095
Uzbekistan	275.6	376.8	384.7	0.130	0.181	-109.14	-0.05	495.4	0.091
Kenya	271.4	125.9	128.6	0.128	0.061	142.85	0.07	273.7	0.050
Qatar	263.8	378.8	386.7	0.124	0.182	-122.88	-0.06	509.2	0.093
Yemen, Republic of	243.5	138.9	141.8	0.115	0.067	101.67	0.05	421.6	0.077
Slovenia	231.7	476.5	486.4	0.109	0.229	-254.74	-0.12	776.9	0.142
Dominican Republic	218.9	169.7	173.3	0.103	0.082	45.63	0.02	370.0	0.068
Brunei Darussalam	215.2	554.1	565.7	0.101	0.267	-350.48	-0.17	553.7	0.102
Panama	206.6	213.5	218.0	0.097	0.103	-11.38	-0.01	372.0	0.068
Lebanon	203.0	217.2	221.7	0.096	0.105	-18.70	-0.01	436.0	0.080
Tanzania	198.9	65.9	67.3	0.094	0.032	131.65	0.06	142.8	0.026
Oman	194.0	592.9	605.3	0.091	0.285	-411.32	-0.19	833.6	0.153
Cameroon	185.7	168.1	171.6	0.088	0.081	14.12	0.01	285.3	0.052
Bolivia	171.5	58.6	59.9	0.081	0.028	111.64	0.05	155.4	0.028
El Salvador	171.3	51.0	52.0	0.081	0.025	119.27	0.06	192.5	0.035
Costa Rica	164.1	113.7	116.0	0.077	0.055	48.06	0.02	282.4	0.052
Afghanistan, Islamic State of	161.9	18.8	19.2	0.076	0.009	142.67	0.07	54.2	0.010
Azerbaijan	160.9	256.0	261.4	0.076	0.123	-100.49	-0.05	251.2	0.046
Gabon	154.3	317.0	323.7	0.073	0.153	-169.35	-0.08	383.3	0.070
Georgia	150.3	88.3	90.2	0.071	0.043	60.11	0.03	108.4	0.020
Lithuania	144.2	226.0	230.7	0.068	0.109	-86.54	-0.04	326.3	0.060
Cyprus	139.6	160.4	163.7	0.066	0.077	-24.11	-0.01	330.5	0.061
Ethiopia	133.7	48.0	49.0	0.063	0.023	84.75	0.04	131.9	0.024
Papua New Guinea	131.6	124.8	127.4	0.062	0.060	4.20	0.00	232.5	0.043
Bahamas, The	130.3	119.9	122.4	0.061	0.058	7.90	0.00	190.5	0.035
Nicaragua	130.0	52.2	53.3	0.061	0.025	76.70	0.04	85.1	0.016

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	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)
Honduras	129.5	70.7	72.1	0.061	0.034	57.37	0.03	138.7	0.025
Liberia	129.2	18.9	19.3	0.061	0.009	109.88	0.05	33.8	0.006
Latvia	126.8	184.0	187.9	0.060	0.089	-61.07	-0.03	253.1	0.046
Moldova	123.2	147.9	151.0	0.058	0.071	-27.76	-0.01	163.5	0.030
Guinea	107.1	44.3	45.2	0.051	0.021	61.86	0.03	104.8	0.019
Sierra Leone	103.7	12.0	12.3	0.049	0.006	91.41	0.04	27.8	0.005
Paraguay	99.9	62.3	63.6	0.047	0.030	36.27	0.02	197.0	0.036
Kyrgyz Republic	88.8	141.8	144.7	0.042	0.068	-55.92	-0.03	143.3	0.026
Congo, Republic of	84.6	215.6	220.2	0.040	0.104	-135.56	-0.06	228.0	0.042
Haiti	81.9	17.0	17.3	0.039	0.008	64.57	0.03	42.8	0.008
Rwanda	80.1	18.0	18.4	0.038	0.009	61.73	0.03	31.4	0.006
Burundi	77.0	11.9	12.2	0.036	0.006	64.84	0.03	30.5	0.006
Turkmenistan	75.2	145.6	148.6	0.035	0.070	-73.40	-0.03	272.1	0.050
Togo	73.4	27.5	28.1	0.035	0.013	45.28	0.02	47.4	0.009
Fiji	70.3	69.8	71.3	0.033	0.034	-0.97	0.00	109.8	0.020
Malawi	69.4	49.8	50.9	0.033	0.024	18.51	0.01	74.3	0.014
Macedonia, FYR	68.9	86.7	88.5	0.032	0.042	-19.57	-0.01	144.4	0.026
Barbados	67.5	84.9	86.7	0.032	0.041	-19.21	-0.01	120.2	0.022
Niger	65.8	37.2	38.0	0.031	0.018	27.79	0.01	67.4	0.012
Estonia	65.2	121.0	123.6	0.031	0.058	-58.36	-0.03	167.1	0.031
Botswana	63.0	202.9	207.2	0.030	0.098	-144.17	-0.07	358.4	0.066
Benin	61.9	42.2	43.1	0.029	0.020	18.82	0.01	73.3	0.013
Burkina Faso	60.2	27.6	28.2	0.028	0.013	31.98	0.02	64.3	0.012
Chad	56.0	25.4	26.0	0.026	0.012	30.03	0.01	42.2	0.008
Central African Republic	55.7	17.6	17.9	0.026	0.008	37.78	0.02	35.6	0.007
Lao, People's Dem. Republi	52.9	10.5	10.7	0.025	0.005	42.19	0.02	34.8	0.006
Mongolia	51.1	76.2	77.8	0.024	0.037	-26.67	-0.01	85.8	0.016
Albania	48.7	54.5	55.7	0.023	0.026	-6.97	0.00	86.4	0.016
Belize	18.8	28.6	29.2	0.009	0.014	-10.42	0.00	39.9	0.007
Vanuatu	17.0	11.3	11.6	0.008	0.005	5.43	0.00	16.2	0.003
Djibouti	15.9	18.5	18.9	0.007	0.009	-3.03	0.00	29.1	0.005
Eritrea	15.9	17.9	18.3	0.007	0.009	-2.42	0.00	30.6	0.006
Guinea-Bissau	14.2	5.8	5.9	0.007	0.003	8.30	0.00	9.9	0.002
Grenada	11.7	11.1	11.4	0.006	0.005	0.33	0.00	16.6	0.003
Solomon Islands	10.4	14.3	14.6	0.005	0.007	-4.21	0.00	19.9	0.004

Table I.5. Results of Regression Equation No. 5
(Countries ranked by actual quota under the Eleventh General Review)

	Actual	Estimated	Adjusted	Actual	Adjusted	Residuals'		Memo Item:	
	Quota	Quota	Estimated	Quota	Quota	Columns		Calculated Quotas Based o	
	Amount	Amount 1/	Quota	Shares	Shares	(1)-(3)	(4)-(5)	Existing 5-Formula System	Shares
	(In millions of SDRs)			(In percent)				Amount	(In percent)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Comoros	8.9	6.1	6.2	0.004	0.003	2.67	0.00	10.5	0.002
St. Vincent and the Grenadin	8.3	11.5	11.7	0.004	0.006	-3.40	0.00	16.2	0.003
Sao Tome and Principe	7.4	2.2	2.2	0.003	0.001	5.18	0.00	3.2	0.001
Tonga	6.9	6.2	6.4	0.003	0.003	0.55	0.00	10.0	0.002
Bhutan	6.3	7.5	7.7	0.003	0.004	-1.40	0.00	14.4	0.003
Palau, Republic of	3.1	3.6	3.7	0.001	0.002	-0.57	0.00	5.7	0.001
Total	75,641.1	74,088.7	75,641.1	35.7	35.7	0.0	0.0	168,974.1	31.0
Memo: Sum of squared residuals						14,487,895.9	3.22		

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.