

**Table II.1. Summary Statistics of Equations Fitted to Actual Quotas**  
(T-ratios in parentheses)

		Adjusted R-squared	S.E. of Reg.	Memo item: Reg. No. 1/
<b>I. Non-linear Equations</b>				
<i>Benchmark Equation:</i>				
Equation using only the traditional variables	$Q = (0.003 Y - 0.034 R + 0.009 P + 0.529 VC) \times (1 + C/Y)$ (14.29) (-5.60) (3.82) (10.17)	0.96	670.5	1
With PPP-based GDP	$Q = (0.002 YPPP - 0.035 R + 0.012 P + 0.555 VC) \times (1 + C/YPPP)$ (12.18) (-5.10) (4.15) (7.93)	0.95	757.8	2
Multiplicative term with a dummy variable distinguishing between industrial and developing countries	$Q = (0.003 Y - 0.042 R + 0.020 P + 0.200 VC) \times (1 + C/Y + DDEV)$ (18.59) (-9.26) (11.78) (6.90)	0.97	605.1	4
With an openness index	$Q = (0.000 Y - 0.004 R + 0.000 P + 0.227 VC) \times (1 + OPEN)$ (4.60) (-1.56) (0.23) (9.48)	0.95	776.4	12
Without the reserves variable	$Q = (0.003 Y + 0.003 P + 0.551 VC) \times (1 + C/Y)$ (13.13) (1.45) (9.48)	0.96	724.6	13
With gold reserves valued at market prices	$Q = (0.003 Y - 0.022 RM + 0.008 P + 0.540 VC) \times (1 + C/Y)$ (13.77) (-3.26) (3.10) (9.86)	0.96	706.0	14
With five year average GDP replacing the existing one-year GDP	$Q = (0.004 YAVG - 0.028 R + 0.009 P + 0.462 VC) \times (1 + C/YAVG)$ (14.86) (-4.73) (3.71) (8.89)	0.96	656.2	15
With population	$Q = (0.003 Y - 0.044 R + 0.012 P + 0.488 VC + 2.632 POP) \times (1 + C/Y)$ (15.94) (-8.05) (5.42) (10.69) (7.63)	0.97	583.5	16
With short term debt	$Q = (0.003 Y - 0.047 R + 0.011 P + 0.499 VC + 0.009 STDEBT) \times (1 + C/Y)$ (14.62) (-5.90) (4.42) (9.47) (2.44)	0.96	661.2	17
With the variability of external receipts replacing the variability of current receipts	$Q = (0.003 Y - 0.039 R + 0.027 P + 0.004 VCK) \times (1 + C/Y)$ (13.25) (-5.10) (10.41) (0.23)	0.94	841.9	18
With the then-existing quota as a multiplicative explanatory variable	$Q = (0.002 Y - 0.003 R - 0.001 P + 0.028 VC + 0.976 QL) \times (1 + C/Y)$ (31.94) (-2.15) (-2.21) (2.15) (65.16)	1.0	134.8	19
With the then-existing quota as an additive explanatory variable	$Q = (0.000 Y + 0.004 R + 0.003 P + 0.036 VC) \times (1 + C/Y) + 1.210 QL$ (20.38) (7.32) (14.19) (7.59) (177.03)	1.0	50.5	20
With a five-year average of GDP, where the conversion factors are centered five-year moving averages of the annual exchange rates, replacing the existing one-year GDP	$Q = (0.003 YM5X - 0.032 R + 0.007 P + 0.518 VC) \times (1 + C/YM5X)$ (15.42) (-5.36) (3.14) (10.36)	0.97	642.7	22

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With GNP converted with the World Bank Atlas method	$Q = (0.003 \text{ YATL} - 0.032 \text{ R} + 0.008 \text{ P} + 0.519 \text{ VC}) \times (1 + \text{C/YATL})$ (14.74) (-5.38) (3.34) (10.13)	0.96	659.0	23
With net private capital flows as an additional variable	$Q = (0.003 \text{ Y} - 0.020 \text{ R} + 0.005 \text{ P} + 0.462 \text{ VC} + 0.024 \text{ NCF}) \times (1 + \text{C/Y})$ (15.82) (-2.99) (2.21) (9.03) (4.7)	0.97	633.9	29
With real effective exchange rate variability times current receipts as an additional variable	$Q = (0.004 \text{ Y} - 0.003 \text{ R} + 0.064 \text{ P} + 0.432 \text{ VC} - 0.057 \text{ VREC}) \times (1 + \text{C/Y})$ (19.32) (-0.42) (10.09) (9.73) (-9.1)	0.97	555.3	30
With debt as an additional variable	$Q = (0.003 \text{ Y} - 0.045 \text{ R} + 0.014 \text{ P} + 0.417 \text{ VC} + 0.011 \text{ DEBT}) \times (1 + \text{C/Y})$ (15.45) (-7.07) (5.46) (7.44) (4.33)	0.97	639.3	31
With financial market accessibility times current payments as an additional variable	$Q = (0.00380 \text{ Y} - 0.06305 \text{ R} - 0.00033 \text{ P} + 0.36828 \text{ VC} + 0.01303 \text{ FMP}) \times (1 + \text{C/Y})$ (18.47) (-9.94) (-0.14) (7.54) (8.09)	0.97	574.8	36
Bretton Woods Formula for Schedule A Members Using 1934-43 Data	$Q = (0.030941 \text{ Y} - 0.003025 \text{ R} + 0.046770 \text{ M} + 0.174646 \text{ V}) \times (1 + \text{X/Y})$ (20.11) (-0.51) (4.11) (4.34)	1.00	22.4	37
<b>II. Linear Equations</b>				
With PPP-based GDP	$Q = 0.002 \text{ YPPP} - 0.034 \text{ R} + 0.023 \text{ P} + 0.610 \text{ VC}$ (8.64) (-4.13) (7.48) (8.43)	0.96	656.3	3
Without a multiplicative factor	$Q = 0.002 \text{ Y} - 0.036 \text{ R} + 0.017 \text{ P} + 0.684 \text{ VC}$ (8.76) (-4.46) (5.37) (10.33)	0.97	644.6	9
With current receipts	$Q = 0.003 \text{ Y} + 0.003 \text{ R} + 0.072 \text{ P} + 0.564 \text{ VC} - 0.059 \text{ C}$ (11.52) (0.3) (9.04) (9.36) (7.41)	0.97	565.2	10
With an openness index	$Q = 0.002 \text{ Y} - 0.045 \text{ R} + 0.017 \text{ P} + 0.628 \text{ VC} + 85.571 \text{ OPEN}$ (9.32) (-5.42) (5.65) (9.22) (2.75)	0.97	633.1	11
With variables indicative of ability to contribute financial resources to the fund (including gold reserves valued at market prices and normal net capital flows as an additional variable).	$Q = 0.003 \text{ Y} + 0.007 \text{ RM} + 0.022 \text{ C} + 0.064 \text{ NCF}$ (11.33) (0.54) (6.82) (11.16)	0.95	778.8	21
With the then-existing quota, short-term debt, population, and trade added, and reserves and current payments dropped	$Q = 0.000 \text{ Y} + 0.045 \text{ VC} + 1.192 \text{ QL} + 0.001 \text{ STDEBT} + 0.178 \text{ POP} + 0.006 \text{ TRADE}$ (11.42) (6.03) (152.32) (2.55) (4.43) (24.20)	1.00	56.5	24

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Nested model where a regression of vulnerability variables (represented by the variability of current receipts and population) is estimated first	$Q = (1 - 0.54491) \times (0.00557 Y - 0.01145 RM + 0.01276 C + 0.07334 NCF) + (0.544491) \times (1.25141 VC + 2.33175 POP)$ (11.55) (8.59) (-0.57) (2.23) (7.53) (11.55) (53.90) (4.36)	0.97	590.3	26
Nested model where a regression of strength variables (represented by GDP, reserves -- with gold reserves valued at market prices, current receipts, and net private capital flows).	$Q = (1 - 0.42833) \times (0.00337 Y + 0.00650 RM + 0.02226 C + 0.06419 NCF) + (0.42833) \times (1.27204 VC + 5.18170 POP)$ (9.30) (11.33) (0.54) (6.82) (11.16) (9.30) (31.73) (4.87)	0.97	598.9	27
With both strength and vulnerability variables	$Q = 0.00259 Y - 0.01378 RM + 0.00907 C + 0.03483 NCF + 0.61967 VC + 2.40788 POP$ (11.14) (-1.47) (3.01) (6.92) (10.06) (5.97)	0.97	578.2	28
<b>III. Subsample Versions</b>				
For members with calculated quotas based on the variants of the BW formula	$Q = (-0.008 Y + 0.008 R + 0.037 P + 0.529 VC) \times (1 + C/Y)$ (-4.92) (0.65) (5.56) (15.14)	0.95	366.2	5
For members representing developing countries	$Q = (0.006 Y - 0.066 R + 0.047 P + 0.314 VC) \times (1 + C/Y)$ (6.41) (-5.67) (7.33) (5.65)	0.849	380.4	6
For members with actual quota shares less than 1 percent	$Q = (0.007 Y - 0.010 R - 0.003 P + 0.388 VC) \times (1 + C/Y)$ (8.36) (-2.31) (-0.83) (12.7)	0.82	226.0	7
For members who joined in the past twenty years	$Q = (0.009 Y - 0.008 R + 0.005 P + 0.335 VC) \times (1 + C/Y)$ (5.59) (-0.53) (0.72) (8.85)	0.99	87.5	8
With the then-existing quota as an additive explanatory variable for countries with calculated quotas based on the variants of the Bretton Woods formula	$Q = 1.28515 QL + (0.00033 Y + 0.00220 R + 0.00290 P + 0.01280 VC) \times (1 + C/Y)$ (201.05) (3.39) (3.44) (7.65) (4.08)	1.0	18.8	25
Members with quota shares of equal to or less than 1.0 percent -- with normal net capital flows as an additional variable	$Q = (0.006 Y - 0.015 R + 0.000 P + 0.363 VC + 0.038 NCF) \times (1 + C/Y)$ (6.36) (-3.19) (0.03) (11.74) (3.01)	0.8	220.5	32
Members with quota shares of equal to or less than 1.0 percent -- with real effective exchange rate variability times current receipts as additional variable	$Q = (0.007 Y - 0.008 R + 0.033 P + 0.408 VC - 0.035 VREC) \times (1 + C/Y)$ (7.56) (-1.91) (2.68) (13.4) (-3.03)	0.82	220.4	33
Members with quota shares of equal to or less than 1.0 percent -- with financial market accessibility times current payments as an additional variable	$Q = (0.006 Y - 0.014 R - 0.031 P + 0.304 VC + 0.016 FMP) \times (1 + C/Y)$ (8.01) (-3.61) (-6.48) (10.7) (7.63)	0.86	193.8	34

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		Adjusted R-squared of	S.E. Reg.	Memo Item: Reg. No. 1/
Members with quota shares of equal to or less than 1.0 percent -- with debt as an additional variable	$Q = (0.005 Y - 0.013 R + 0.002 P + 0.374 VC + 0.006 DEBT) \times (1 + C/Y)$ <p>(4.25)    (-3.00)    (0.52)    (12.57)    (3.55)</p>	0.83	218.2	35

Note: The variables in the equations are defined as follows:

Q = estimated quota, in millions of SDRs

Y = GDP at market exchange rates in 1994

R = average monthly reserves in 1994

P = annual average current payments over the 1991–1994 (five years) period

C = annual average current receipts over the 1991–1994 (five years) period

VC = variability of current receipts, defined as one standard deviation from a five-year moving average over the 1982–1994 (13 years) period

VREC = real effective exchange rate variability times current receipts

POP = population in 1994

DDEV = dummy variable distinguishing between industrial and developing countries. It is equal to 1 if a country is a developing or a transitional economy

NCF = normal capital flow proxied by a four-year moving average of actual net private capital flows (inclusive of errors and omissions)

DEBT = total external debt owed to non-residents repayable in foreign currency, goods and services. It is the sum of the public, publicly guaranteed and private non-guaranteed debt, use of IMF credit, and short-term debt

YM5X = is the five-year average of GDP from 1990 to 1994 where the conversion factor is a centered five-year moving average of the annual exchange rate

STDEBT = short term debt at the end of 1994

OPEN = openness index defined as  $1 + (5 - KMACC)$ ; KMACC = capital market accessibility, which is based on the WEO classification

RM = average monthly reserves with gold valued at market rates in 1994

NNKFL = four-year moving average of net private capital flows

YPPP = PPP-based GDP in 1994

YAVG = five year averages of GDP from 1990-94

VCK = variability of external receipts (the sum of current receipts and capital and financial account credits), defined as one standard deviation from a five-year moving average over the 1982–1994 (13 years) period

YATL = 1994 GNP converted using the World Bank Atlas Method

QL = the then-existing quota

FMP = financial market accessibility times current payments; financial market accessibility is proxied by a variable which takes values of 4 for developing countries with limited access to private financial markets, 3 for the rest of developing countries, 2 for industrial countries with easy access to borrowing, and 1 for France, Germany, Japan, the United Kingdom, and the United States

TRADE = average of current payments and receipts over a recent five year period (1991-94)

1/ As numbered in the List of Regression Equations of this section.