

**TABLE I**  
**Determinants of the Budget Surplus**

Dependent Variable: Primary budget surplus divided by GDP ( $s_t$ )

Sample	Constant	GVAR	YVAR	$d_t$	$R^2$		DW
(1) 1916-95	-0.019 (-5.424) [-3.957]	-0.776 (-33.001) [-20.874]	-1.450 (-3.628) [-4.075]	0.054 (6.048) [3.787]	0.936	0.014	1.42
(2) 1920-95 excl. 40-47	-0.009 (-2.030) [-2.155]	-0.551 (-4.034) [-3.721]	-1.906 (-4.666) [-4.296]	0.028 (2.701) [2.491]	0.618	0.011	1.40
(3) 1916-83	-0.018 (-4.903) [-3.958]	-0.782 (-31.667) [-20.943]	-1.414 (-3.360) [-4.004]	0.054 (5.996) [4.076]	0.942	0.014	1.54
(4) 1920-82 excl. 40-47	-0.008 (-1.710) [-1.932]	-0.520 (-3.612) [-3.272]	-1.912 (-4.441) [-3.959]	0.030 (2.815) [2.856]	0.630	0.011	1.56
(5) 1948-95	-0.015 (-3.536) [-3.496]	-0.593 (-4.182) [-3.701]	-2.139 (-4.361) [-3.757]	0.037 (3.589) [2.821]	0.651	0.010	1.54
(6) 1960-84	-0.013 (-2.110) [-2.174]	-0.410 (-2.173) [-2.281]	-2.051 (-4.174) [-3.391]	0.044 (2.028) [2.587]	0.724	0.007	1.43

The variable  $d_t$  is the privately-held debt/GDP at the start of the year. GVAR and YBAR are measures of temporary government spending and of cyclical variations in output, respectively, from Barro [1986a]. All estimates are OLS with annual data; () = ordinary t-statistics, [] = heteroskedasticity- and autocorrelation-consistent t-statistics (computed with Newey-West lag window of size 1), = standard error, DW = Durbin-Watson statistic.

**TABLE II**  
**Determinants of Changes in the Debt-GDP Ratio**

Dependent Variable: The change in the debt-GDP ratio (  $d_{t+1}$ )

Sample	Constant	GVAR	YVAR	$d_t$	$R^2$		DW
(1) 1916-95	0.038 (5.248) [3.205]	0.721 (14.641) [13.822]	1.286 (1.537) [1.856]	-0.126 (-6.750) [-3.285]	0.755	0.029	1.73
(2) 1920-95 excl. 40-47	0.019 (2.132) [2.249]	0.143 (0.492) [0.457]	2.180 (2.510) [2.650]	-0.076 (-3.432) [-3.211]	0.319	0.023	1.35
(3) 1916-82	0.037 (4.767) [3.345]	0.779 (14.863) [14.776]	1.230 (1.352) [1.681]	-0.133 (-6.963) [-3.689]	0.794	0.031	2.12
(4) 1920-82 excl. 40-47	0.017 (1.759) [1.794]	0.085 (0.272) [0.227]	2.349 (2.514) [2.313]	-0.085 (-3.650) [-3.358]	0.371	0.025	1.90
(5) 1948-95	0.020 (2.640) [2.182]	0.540 (2.026) [2.518]	2.366 (2.566) [2.952]	-0.064 (-3.319) [-2.251]	0.456	0.018	1.17
(6) 1960-84	0.017 (2.945) [6.402]	0.580 (3.164) [3.676]	2.849 (5.967) [14.540]	-0.076 (-3.588) [-5.784]	0.853	0.007	2.24

The variable  $d_t$  is the privately-held debt/GDP at the start of the year. GVAR and YBAR are measures of temporary government spending and of cyclical variations in output, respectively, from Barro [1986a]. All estimates are OLS with annual data; () = ordinary t-statistics, [] = heteroskedasticity- and autocorrelation-consistent t-statistics (computed with Newey-West lag window of size 1), = standard error, DW = Durbin-Watson statistic.

**TABLE III**  
**Non-linear Effects of the Debt-GDP Ratio**

Dependent Variable: Primary budget surplus divided by GDP ( $s_t$ )

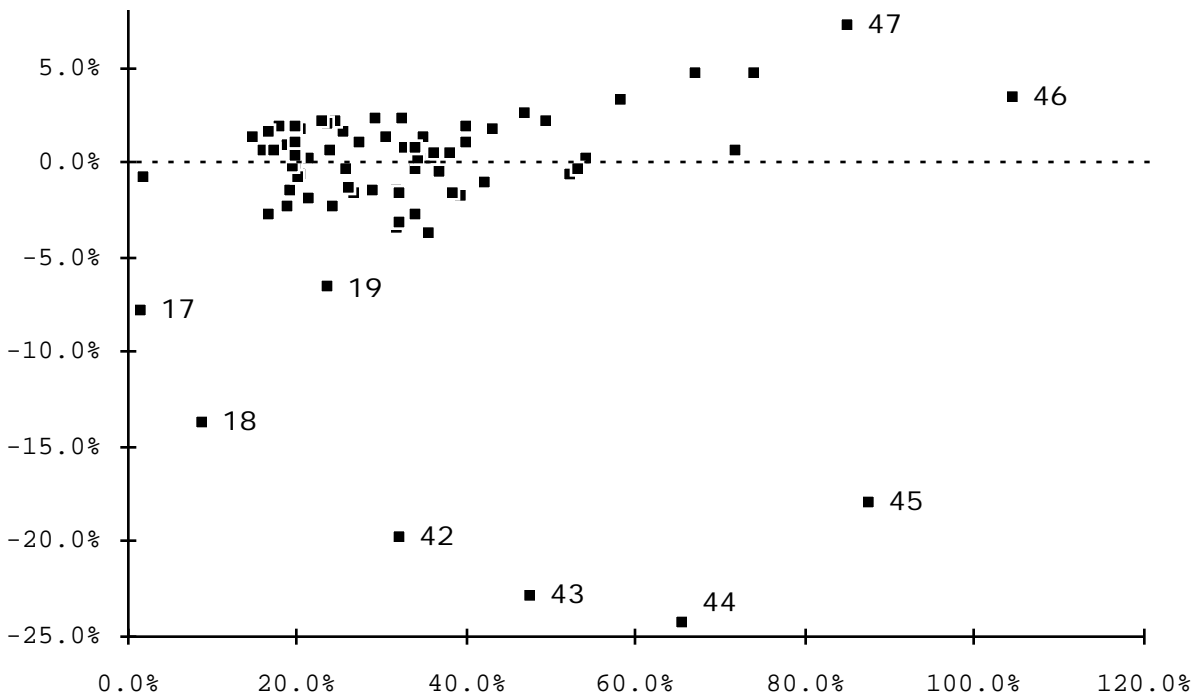
Model	Constant	GVAR	YVAR	$d_t$	$(d_t - \bar{d})^2$	$(d_t - \bar{d})^3$	$R^2$	s/ d at $d_t=0.5$	s/ d at $d_t=1.0$
1. Linear	-0.019 (-5.424) [-3.957]	-0.776 (-33.001) [-20.874]	-1.450 (-3.628) [-4.075]	0.054 (6.048) [3.787]			0.936	0.054 (6.048) [3.787]	
2. Quadratic	-0.014 (-3.971) [-4.293]	-0.787 (-36.362) [-27.265]	-1.313 (-3.585) [-3.874]	0.028 (2.756) [2.804]	0.106 (4.021) [5.083]		0.948	0.062 (7.376) [7.375]	0.167 (5.697) [7.240]
3. Cubic	-0.014 (-3.014) [-2.475]	-0.787 (-35.597) [-25.050]	-1.303 (-3.456) [-3.683]	0.029 (2.345) [1.967]	0.111 (2.123) [1.690]	-0.012 (-0.128) [-0.107]	0.948	0.063 (3.835) [2.692]	0.160 (2.550) [2.932]
4. Linear, break at $\bar{d}$	-0.002 (-0.426) [-0.479]	-0.787 (-36.010) [-26.993]	-1.130 (-2.993) [-3.249]	-0.015 (-0.747) [-0.771]	$\max(0, d_t - \bar{d})$ 0.105 (3.817) [3.373]		0.947	0.090 (7.171) [5.375]	

All models are estimated for the full 1916-95 sample. The linear model is the same as in Table I, line 1, replicated for comparison. The variable  $d_t$  is the privately-held debt/GDP at the start of the year and  $\bar{d}=0.343$  is its sample mean. GVAR and YBAR are measures of temporary government spending and of cyclical variations in output, respectively, from Barro [1986a]. All estimates are OLS with annual data; () = ordinary t-statistics, [] = heteroskedasticity- and autocorrelation-consistent t-statistics (computed with Newey-West lag window of size 1), = standard error, DW = Durbin-Watson statistic.

## FIGURE I Primary Surplus versus Initial Debt

The graph shows the privately-held government debt/GDP at the start of a period on the horizontal axis against the primary budget surplus/GDP on the vertical axis, for 1916-95; (a) shows raw data, (b) shows the adjusted primary surplus, as explained in the text.

(a) The simple correlation



(b) With adjustment for temporary spending and output fluctuations

