TABLE 2: Cointegration analysis for bivariate VAR(k) models of inflation and unemployment for the U. K., 1950:4–1998:12

(A) *Cointegration Tests*

# lags	# Unit Roots	Eigenvalue	LR_{tr}	p-value
6	2	.0426	27.59	.00
	1	.0041	2.39	.70
8	2	.0372	24.54	.01
	1	.0046	2.68	.64
10	2	.0396	26.10	.01
	1	.0050	2.86	.61
12	2	.0354	23.11	.02
	1	.0042	2.44	.69

(B) *Testing for Stationarity*

	u_t		π_t	
# lags	LR	p-value	LR	p-value
6	22.46	.00	.18	.67
8	18.54	.00	.48	.49
10	19.20	.00	1.09	.30
12	15.67	.00	2.69	.10

(C) *Estimates of* $\pi_t - \beta_u u_t$

# lags	β_u	$\ln L$	AIC	BIC	LIL
6	.11	-1561.86	5.50	6.03	5.58
8	.18	-1538.75	5.46	6.15	5.57
10	.26	-1524.48	5.46	6.30	5.59
12	.45	-1497.78	5.41	6.40	5.57

TABLE 3: Testing for serial correlation and ARCH for the U. K. in a linear VAR(k) model, 1950:4–1998:12

(A) *Serial Correlation Tests*

# lags	# Unit Roots	Ljung-Box Test	*p*-value	*LM* Test	*p*-value
6	0	1341.19	.00	195.03	.00
	1	1337.97	.00	194.06	.00
8	0	1302.43	.00	187.94	.00
	1	1298.95	.00	187.12	.00
10	0	1269.65	.00	187.76	.00
	1	1268.97	.00	187.36	.00
12	0	1236.46	.00	159.57	.00
	1	1234.51	.00	160.20	.00

NOTES: The Ljung-Box test concerns the first 144 autocorrelations, while the *LM* statistic concerns serial correlation at the 12th lag for the residuals.

(B) *Testing for ARCH*

# lags	# Unit Roots	u_t–equation ARCH(k)	*p*-value	π_t–equation ARCH(k)	*p*-value
6	0	19.35	.00	10.65	.10
	1	18.90	.00	10.74	.10
8	0	15.65	.05	12.57	.13
	1	15.46	.05	12.96	.11
10	0	38.93	.00	14.31	.16
	1	37.92	.00	14.35	.16
12	0	77.40	.00	15.67	.21
	1	75.31	.00	15.66	.21

TABLE 4: Specification based on conditional scores in 2-state MS–VAR(k) systems for the U. K., 1950:4–1998:12

(A) *Equation-by-equation Tests*

Hypothesis	System 1 ($k = 2$)		System 2 ($k = 2$)		System 3 ($k = 3$)	
	$\pi_t - .008u_t$	Δu_t	π_t	Δu_t	π_t	u_t
Autocorrelation	1.05	.76	1.05	.76	1.02	.91
p-value	.38	.55	.38	.55	.40	.46
ARCH	1.61	1.20	1.62	1.30	2.35	1.15
p-value	.17	.27	.17	.27	.05	.33
Markov	.58	.60	.60	.61	1.38	1.48
p-value	.68	.66	.66	.66	.24	.21

(B) *System Tests*

Hypothesis	System 1 ($\beta_u = .008$)	System 2 ($\beta_u = 0$)	System 3 (π_t, u_t)
Autocorrelation	.88	.88	.98
p-value	.59	.59	.48
ARCH	1.07	1.08	1.34
p-value	.36	.35	.09
Markov	1.07	1.08	1.34
p-value	.36	.35	.09

(C) *System Properties*

	System 1 ($\beta_u = .008$)	System 2 ($\beta_u = 0$)	System 3 (π_t, u_t)
$\ln L(\hat{\theta})$	-1500.87	-1500.87	-1478.80
AIC	5.25	5.25	5.21
BIC	5.77	5.77	5.87
LIL	5.34	5.34	5.31
e_1	.57	.57	.98
$\hat{\pi}_1$	.62	.62	.73
$\hat{\sigma}_{\pi_1}$	.08	.08	.27

TABLE 5: Estimated unconditional and conditional means and covariances for inflation and unemployment in the U. K., 1950:4–1998:12

(A) *Unconditional Moments*

System	Variable	Mean	Variance	Covariance
	$\pi_t - .008u_t$	6.53	55.19	
1		(.85)	(6.87)	.19
	Δu_t	.01	.03	(.07)
		(.01)	(.01)	
	π_t	6.57	55.18	
2		(.85)	(6.88)	.19
	Δu_t	.01	.03	(.07)
		(.01)	(.01)	

(B) *Conditional Moments*

		Mean	Variance	Covariance
		Regime 1		
	$\pi_t - .008u_t$	7.49	79.35	
1		(1.25)	(7.38)	.29
	Δu_t	−.00	.01	(.08)
		(.01)	(.00)	
	π_t	7.52	79.44	
2		(1.25)	(7.40)	.29
	Δu_t	−.00	.01	(.08)
		(.01)	(.00)	
		Regime 2		
	$\pi_t - .008u_t$	4.99	12.46	
1		(.42)	(1.67)	.06
	Δu_t	.02	.06	(.07)
		(.03)	(.01)	
	π_t	5.06	12.43	
2		(.42)	(1.67)	.06
	Δu_t	.02	.06	(.07)
		(.03)	(.01)	

FIGURE 1: Inflation and unemployment series for the U. K. in levels and first differences, 1950:4–1998:12
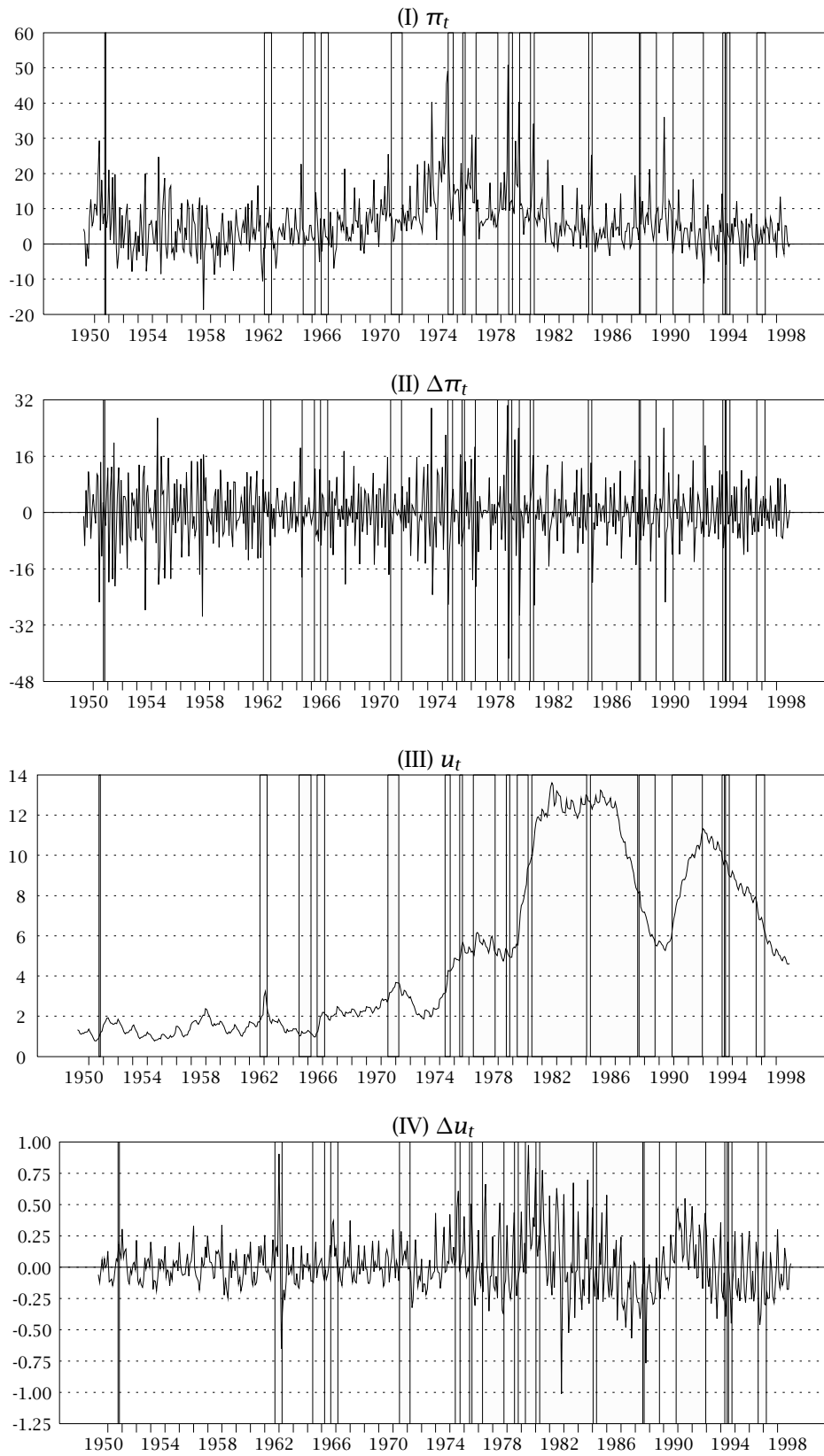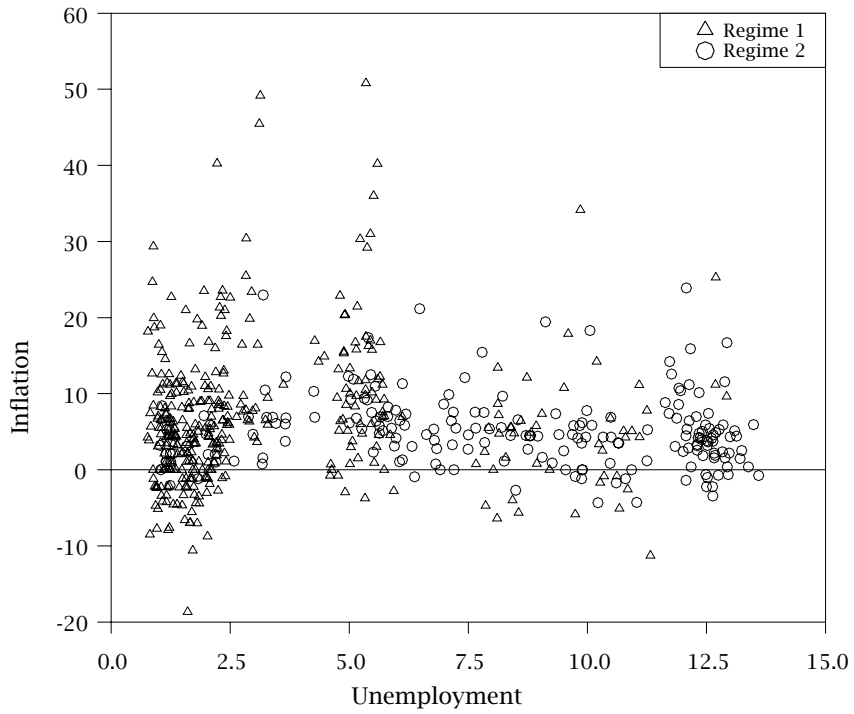
FIGURE 2: Unemployment and inflation in the U. K. for the sample 1950:4–1998:12

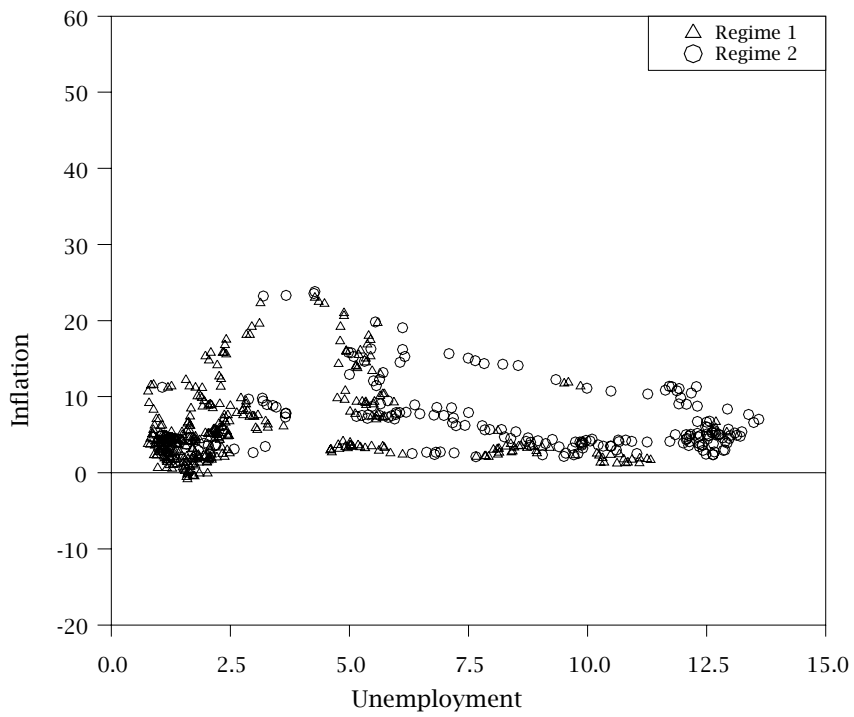(I) *Monthly inflation*

(II) *Yearly inflation*

FIGURE 3: The scaled log-likelihood function (solid line) and the estimated maximum eigen-value (dashed line) for 2–state MS–VAR(2) systems for the U. K., 1950:4–1998:12