

Additional Appendix

West, "Sources of Cycles in Japan, 1975-1987"

This appendix contains results omitted from the body of the paper to save space. These are:

1. Asymptotic standard errors on the unrestricted reduced form.
2. Bootstrap standard errors on the unrestricted reduced form, computed by sampling with replacement from the unrestricted residuals.
3. Impulse response functions
4. Description of asymptotic test of $g_{HS}=0$.

Additional Appendix, pA2

1. Asymptotic Standard Errors, Unrestricted Reduced Form

Independent Variables	Dependent Variables			
	ΔH_t	ΔQ_t	ΔQ_{ft}	Δe_t
ΔH_{t-1}	0.505 (0.086)	-0.127 (0.204)		
ΔQ_{ft-1}	16.51 (20.47)	85.73 (49.68)	0.347 (0.123)	
ΔQ_{ft-2}	-9.420 (20.71)	45.11 (49.41)		
ΔQ_{ft-3}	0.705 (20.44)	-134.3 (48.77)		
ΔQ_{ft-4}	81.07 (18.95)	176.2 (45.20)		
Δe_{t-1}	-2.122 (3.658)	35.31 (8.244)		0.429 (0.126)
Δe_{t-2}	10.89 (3.715)	-45.92 (8.862)		
Δe_{t-3}	-1.391 (3.741)	43.55 (8.923)		
Δe_{t-4}	8.449 (3.322)	-19.32 (7.925)		

2. Bootstrap Standard Errors, Unrestricted Reduced Form

Independent Variables	Dependent Variables			
	ΔH_t	ΔQ_t	ΔQ_{ft}	Δe_t
ΔH_{t-1}	0.505 (0.242, 0.659)	-0.127 (-0.602, 0.346)		
ΔQ_{ft-1}	16.51 (-24.39, 58.64)	85.73 (-19.71, 189.9)	0.347 (0.079, 0.533)	
ΔQ_{ft-2}	-9.420 (-56.51, 34.36)	45.11 (-65.58, 158.1)		
ΔQ_{ft-3}	0.705 (-42.58, 46.69)	-134.3 (-251.7, -25.22)		
ΔQ_{ft-4}	81.07 (37.83, 126.8)	176.2 (61.66, 266.2)		
Δe_{t-1}	-2.122 (-10.37, 5.583)	35.31 (17.85, 53.05)		0.429 (0.121, 0.611)
Δe_{t-2}	10.89 (2.649, 18.36)	-45.92 (-63.57, -27.46)		
Δe_{t-3}	-1.391 (-8.916, 6.187)	43.55 (24.51, 61.06)		
Δe_{t-4}	8.449 (1.091, 15.66)	-19.32 (-36.16, -3.098)		

Additional Appendix, pA3

3. Impulse response functions

Response to one standard deviation positive cost shock:

Quarter	H	Q	Qf	e
1	87.9210	99.6381	.223223	3.41160
2	126.547	66.0678	.300757	4.87636
3	173.624	36.8416	.327688	5.50525
4	201.241	13.1484	.337042	5.77526
5	256.193	-7.43257	.340291	5.89119
6	300.274	-21.2788	.341420	5.94096
7	329.103	-29.6683	.341812	5.96233
8	346.330	-34.4753	.341948	5.97151
9	356.122	-37.1375	.341995	5.97545
10	361.517	-38.5791	.342012	5.97714
11	364.429	-39.3477	.342018	5.97786
12	365.978	-39.7528	.342020	5.97818

Response to one standard deviation positive demand shock:

Quarter	H	Q	Qf	e
1	10.5889	281.794	.890685E-01	-2.15281
2	22.8073	288.924	.120006	-3.07712
3	9.26433	297.789	.130751	-3.47397
4	-1.76412	305.073	.134484	-3.64435
5	-17.0923	311.069	.135780	-3.71750
6	-29.5368	315.192	.136230	-3.74891
7	-38.0196	317.779	.136387	-3.76240
8	-43.3095	319.314	.136441	-3.76819
9	-46.4347	320.192	.136460	-3.77067
10	-48.2153	320.680	.136467	-3.77174
11	-49.2041	320.947	.136469	-3.77220
12	-49.7428	321.091	.136470	-3.77240

4. Description of Asymptotic Test of $g_{HS}=0$.

The likelihood ratio test for $H_0: g_{HS}=0$ against $H_A: g_{HS}=.5$ was 2.46, against $H_A: g_{HS}=1.0$ was 7.72. The asymptotic distribution of this test statistic is unclear. But if $g_{HS}=0$ is interpreted as the maximum of the likelihood subject to $g_{HS} \geq 0$ (an interpretation that requires a leap of faith, not only because I have experimented with only two positive values, but also because of the shortcut that I took in maximizing the likelihood [see section IIIB]), the discussion in Gourieroux, Holly and Monfort ("Likelihood Ratio Test, Wald Test, and Kuhn-Tucker Test in Linear Models with Inequality Constraints on Regression Parameters," Econometrica 1980, 63-80) suggests that for a test of size .05 one should refer to the .10 value for a $\chi^2(1)$ distribution. This is 2.72. Thus $g_{HS}=.5$ appears to be near the upper end of the 95 percent asymptotic confidence interval.