1 Tables

Table 1: Tests for linearity. Change in US Unemployment rate and the growth rate in US industrial production, 1949.Q3 -1998.Q2. p-values in parentheses. HLM denotes Hamilton's test, NNLM denotes the neural network test, TSAYF equals Tsay's test, WIM is White's information matrix test and RESETF denotes the RESET test. The maximum lag length considered was 8.

	Unemployment Rate		Industrial Production
Test	AIC, CV (lag=4)	BIC (lag=2)	AIC,CV,BIC (lag = 2)
HLM	7.18 (0.01)	5.65 (0.02)	0.75 (0.39)
$NNLM$	10.16 (0.00)	15.61 (0.00)	11.39 (0.00)
$TSAYF$	3.32 (0.00)	4.51 (0.00)	2.77 (0.04)
WIM	32.29 (0.03)	17.11 (0.03)	17.00 (0.03)
$RESETF$	3.54 (0.06)	3.05 (0.08)	2.03 (0.15)

Table 2: One and four periods ahead out of sample forecast performance of the alternative models based on the change in US unemployment rate, 1980.Q1 - 1998.Q2. LR denotes the linear regression model, FNL is Hamilton's flexible regression model, ANN denotes the neural network model, PPR1 is the projection pursuit regression model of Friedman and Stueltze, while PPR2 is the projection pursuit regression model of Aldrin et al. (1993). *) denotes the frequency of a nonlinear component being added. For the PPR2 model a nonlinear component was always included by construction. The t-stat and F-stat measures is based on HAC covariance matrices. The maximum lag length considered was 8.

	$h=1$					$h=4$				
	LR	FNL	ANN	PPR1	PPR2	LR	FNL	ANN	PPR1	PPR2
Selection criterion	CV	CV	CV	CV	CV	AIC	CV	CV	CV	AIC
Frequency *)	·	0.58	0.91	0.08	1.00	·	1.00	1.00	0.45	1.00
	Absolute forecast performance					Absolute forecast performance				
MSE	0.067	0.063	0.067	0.067	0.067	0.113	0.114	0.112	0.113	0.109
MAD	0.193	0.190	0.195	0.194	0.194	0.266	0.261	0.265	0.268	0.262
$MAPE$	2.061	1.974	2.054	2.085	2.140	3.222	1.833	2.454	2.798	2.312
Theil's U	0.955	0.928	0.952	0.952	0.956	0.838	0.741	0.736	0.738	0.823
t-stat.(intc=0) [p-val.]	0.572	0.567	0.463	0.624	0.634	0.742	0.757	0.615	0.826	0.652
t-stat.(slope=1) [p-val.]	0.591	0.649	0.504	0.595	0.212	0.025	0.001	0.006	0.001	0.237
F-statistics [p-val.]	0.767	0.796	0.650	0.799	0.452	0.036	0.001	0.007	0.000	0.315
R^2	0.368	0.403	0.375	0.371	0.372	0.000	0.000	0.010	0.053	0.010
	Directional forecast performance					Directional forecast performance				
HM [p-val.]	0.169	0.067	0.169	0.257	0.026	0.000	0.000	0.000	0.096	0.000
χ^2 [p-val.]	0.166	0.065	0.166	0.254	0.020	0.000	0.000	0.000	0.093	0.000
CR	0.419	0.392	0.419	0.432	0.365	0.257	0.243	0.243	0.405	0.202
ϕ	0.161	0.215	0.161	0.133	0.271	0.477	0.531	0.531	0.195	0.606

Table 3: One and four periods ahead out-of-sample forecast performance of the alternative models based on the growth rate of US industrial production, 1980.Q1 - 1998.Q2. For a description of the various entries, see Table 2.

	$h=1$					$h=4$				
	LR	FNL	ANN	PPR1	PPR2	LR	FNL	ANN	PPR1	PPR2
Selection Criterion	CV	CV	CV	CV	CV	BIC	BIC	BIC	BIC	AIC
Frequency *)	·	0.00	1.00	0.05	1.00	·	1.00	0.00	0.09	1.00
	Absolute forecast performance					Absolute forecast performance				
MSE	1.362	1.362	1.335	1.361	1.299	1.963	1.730	1.963	1.942	1.868
MAD	0.796	0.796	0.797	0.796	0.779	0.979	0.953	0.979	0.969	0.967
$MAPE$	1.124	1.124	1.137	1.124	1.079	0.662	0.589	0.662	1.638	1.506
Theil's U	0.885	0.885	0.876	0.885	0.864	1.021	0.677	1.021	0.950	0.808
t-stat.(intc=0)[p-val.]	0.440	0.440	0.320	0.433	0.536	0.522	0.511	0.522	0.447	0.614
t-stat.(slope=1)[p-val.]	0.912	0.912	0.990	0.902	0.915	0.085	0.044	0.085	0.092	0.170
F-statistics [p-val.]	0.430	0.430	0.247	0.411	0.632	0.102	0.075	0.102	0.142	0.215
R^2	0.234	0.234	0.260	0.235	0.260	0.018	0.114	0.018	0.017	0.025
	Directional forecast performance					Directional forecast performance				
HM [p-val.]	0.007	0.007	0.004	0.007	0.022	0.000	0.002	0.000	0.000	0.000
χ^2 [p-val.]	0.007	0.007	0.004	0.007	0.021	0.000	0.002	0.000	0.000	0.000
CR	0.339	0.338	0.324	0.338	0.365	0.288	0.323	0.288	0.291	0.270
ϕ	0.314	0.314	0.338	0.314	0.270	0.428	0.367	0.428	0.402	0.459