FORECAST EVALUATION OF SMALL NESTED MODEL SETS

Kirstin Hubrich
European Central Bank

Kenneth D. West
University of Wisconsin

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Appendix

This not-for-publication Appendix includes some details omitted from the submitted paper to save space. The DGP used in the paper is referenced here as "DGP 1" or "AR(1) DGP." This is to contrast it to another DGP, called "DGP 2" or "white noise DGP."

AA.0 White noise DGP

This DGP is motivated by the literature on forecasting asset returns, and, in particular, the literature on forecasting changes in floating exchange rates. In this DGP, y_t (the asset return, for example the change in the exchange rate) follows an i.i.d. N(0,1) process. The i'th alternative model predicts y using a constant and a lag of a variable x_{it}:

(AA.1) $y_t = e_t \sim$ i.i.d (model 0),

$y_t = \text{const.} + \beta^*_{1i} x_{it-1} + e_{it}$, $i=1,...,m$.

Model 0 always forecasts a value of zero, i.e., the one step ahead prediction error for this model is equal to the realized value of y_{t+1}; since we only present simulations under the null for this DGP, in (AA.1) the "const." and β^*_{1i} are zero for all i. The x_{it} follow zero mean AR(1) processes, $x_{it} = \varphi_i x_{it-1} + \eta_{it}$, $i=1,...m$, with $(e_t, \eta_{1t},...,\eta_{mt})'$ following a vector white noise process with a non-diagonal variance-covariance matrix. Thus the x_{it}'s are contemporaneously correlated with y_t, even though x_{it-1} is not. We set m=10. The AR(1) coefficients φ_i and standard deviations of the x_i's are

(AA.2) AR(1) coefficients: 0.3, 0.3, 0.6, 0.6., 0.9, 0.3, 0.3, 0.6, 0.6, 0.9

standard deviations: 0.2, 0.2, 0.5, 0.5, 3.0, 0.2, 0.2, 0.5, 0.5, 3.0

The parameters for i=6 through 10 are copies of those for i=1 to 5.

These parameters imply processes that are stylized versions of data used in the literature on predicting changes in exchange rates. Processes 1-4 and 6-9 reflect monthly or quarterly data on variables such as relative money growth, relative inflation or interest rate differentials. Processes 5 and 10 reflect cointegrating combinations of nominal exchange rate and an I(1) fundamental that are often used in long horizon prediction of exchange rate changes; typical I(1) fundamentals are relative prices and relative money less relative output. As in much exchange rate data, correlations across the variables were low but positive. Specifically, we set the correlation of each x_i with contemporary y to 0.1; the cross-correlation across pairs of xi's was set to 0.2.

For power simulations in this DGP, we generated data so that there was a small R^2 of approximately 0.05, because the relevant alternative in forecasting in asset returns is one that involves small level of predictability. Specifically, the DGP for the predictand y_t was:

(AA.3) $y_t = \beta_{01}^* x_{1t-1} + \beta_{05}^* x_{5t-1} + e_{0t}$, $e_{0t} \sim$ i.i.d. (0,1),

β_{01}^* and β_{05}^* chosen so that var($\beta_{01}^* x_{1t}$)=var($\beta_{01}^* x_{5t}$)= 0.025.

The null model continued to predict "no change" in y_t. The processes for the x_i's are as given above. In accordance with our reading of the literature on forecasting changes in exchange rates, we continue to have the 10 alternatives introduce the x_{it}'s one at a time. The best population predictions will come when x_{1t-1} or x_{5t-1} is the predictor. But given the nonzero correlation across x's, all the alternatives have lower population MSPEs than does the null forecast of "no change."

AA.1 Details on simulation procedures

AR(1) DGP:

1. We draw a 3×1 vector Y_0 from a N(0, I_3) distribution, and generate 100 presample observations using $Y_t = \Phi Y_{t-1} + U_t$, $U_t \sim$ N(0, I_3). Call the 100'th presample observation Y_1.

2. For $t = 1, ..., R+P$, set $Y_t = \Phi Y_{t-1} + U_t$, $U_t \sim N(0, I_3)$.

3. Estimate the models in (4.2) by both rolling and recursive schemes, predicting one step ahead and computing one step ahead prediction errors.

Procedures were analogous when the aggregate DGP consisted of 4 rather than 3 disaggregates.

White noise DGP: We draw a period 0 value for the vector of variables from the unconditional normal distribution of $(y, x_1, ... , x_{10})'$. We then generate 812 observations for t=1,...,812 recursively as in step 2 above, with i.i.d. normal innovations whose variance-covariance matrix is consistent with the variance-covariance matrix of $(y, x_1, ... , x_{10})'$. For one step ahead forecasts, the first 801 of the 812 observations are used for the 12 combinations of P and R. For example, the first 141 are used for R=40 and P=100 (with the 141st used only to compute a prediction error and not for predicting); the first 201 are used for R=100 and P=200, with the first 141 of the 201 observations identical to those used for R=40 and P=100.

In both DGPs, White's (2000) reality check was implemented with the smoothing parameter that White (2000) calls q set to 0.5.

AA.2 Additional Results

Table AA1: critical values for the case of m=2, ρ in steps of .01

Table AA2: Size results for recursive samples, AR(1) DGP (DGP 1), 1 step ahead predictions.

Table AA3: Size results for rolling samples, AR(1) DGP (DGP 1); critical values for "max t-stat (adj.)" determined by simulations (with 50,000 repetitions) instead of by rounding correlation to nearest .01 and referencing a table, 1 step ahead predictions.

Table AA4: Size results for nominal .05 tests, white noise DGP (DGP 2), 1 step ahead predictions.

Table AA5: Size results for AR (1) DGP (DGP 1), m=4, when the four alternative models include the following regressors in addition to a constant: (1)y_t, y_{1t}; (2) y_t, y_{1t}, y_{2t}; (3) y_t, y_{1t}, y_{2t}, y_{3t}; (4)(2) y_t, y_{1t}, y_{3t}.

Table AA6: Size results for nominal .10 tests, white noise DGP (DGP 2), 1 step ahead predictions.

Table AA7: Power results for white noise DGP (DGP 2), 1 step ahead predictions.

Table AA1

Critical Values for the Case of *m*=1, ρ in Steps of .01

Size	ρ:					-0.95	-0.94	-0.93	-0.92	-0.91	-0.9	-0.89	-0.88	-0.87	-0.86	-0.85	-0.84	-0.83	-0.82	-0.81	-0.8
0.010						2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576
0.025						2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241
0.050						1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
0.075						1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78
0.100						1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645
	ρ:	-0.79	-0.78	-0.77	-0.76	-0.75	-0.74	-0.73	-0.72	-0.71	-0.7	-0.69	-0.68	-0.67	-0.66	-0.65	-0.64	-0.63	-0.62	-0.61	-0.6
0.010		2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576
0.025		2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241
0.050		1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
0.075		1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78
0.100		1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645
	ρ:	-0.59	-0.58	-0.57	-0.56	-0.55	-0.54	-0.53	-0.52	-0.51	-0.5	-0.49	-0.48	-0.47	-0.46	-0.45	-0.44	-0.43	-0.42	-0.41	-0.4
0.010		2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576
0.025		2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241
0.050		1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
0.075		1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78
0.100		1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.644	1.644	1.644	1.644	1.644	1.644	1.644	1.644	1.644
	ρ:	-0.39	-0.38	-0.37	-0.36	-0.35	-0.34	-0.33	-0.32	-0.31	-0.3	-0.29	-0.28	-0.27	-0.26	-0.25	-0.24	-0.23	-0.22	-0.21	-0.2
0.010		2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576
0.025		2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241	2.241
0.050		1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.959	1.959	1.959	1.959	1.959	1.959	1.959	1.959	1.959	1.959	1.959	1.959	1.959
0.075		1.78	1.78	1.78	1.78	1.78	1.78	1.779	1.779	1.779	1.779	1.779	1.779	1.779	1.779	1.779	1.778	1.778	1.778	1.778	1.778
0.100		1.644	1.644	1.644	1.643	1.643	1.643	1.643	1.643	1.643	1.643	1.642	1.642	1.642	1.642	1.642	1.641	1.641	1.641	1.641	1.64
	ρ:	-0.19	-0.18	-0.17	-0.16	-0.15	-0.14	-0.13	-0.12	-0.11	-0.1	-0.09	-0.08	-0.07	-0.06	-0.05	-0.04	-0.03	-0.02	-0.01	0
0.010		2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.575	2.575	2.575	2.575	2.575	2.575	2.575	2.575	2.575	2.575	2.575
0.025		2.241	2.241	2.241	2.241	2.241	2.241	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.239	2.239	2.239	2.239
0.050		1.958	1.958	1.958	1.958	1.958	1.958	1.958	1.957	1.957	1.957	1.957	1.957	1.956	1.956	1.956	1.956	1.955	1.955	1.955	1.955
0.075		1.777	1.777	1.777	1.777	1.777	1.776	1.776	1.776	1.776	1.775	1.775	1.775	1.774	1.774	1.774	1.773	1.773	1.772	1.772	1.772
0.100		1.64	1.64	1.639	1.639	1.639	1.639	1.638	1.638	1.637	1.637	1.637	1.636	1.636	1.635	1.635	1.634	1.634	1.633	1.633	1.632

Table AA1, continued

Size	ρ:	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.2
0.010		2.575	2.575	2.575	2.575	2.575	2.574	2.574	2.574	2.574	2.574	2.574	2.574	2.574	2.573	2.573	2.573	2.573	2.573	2.572	2.572
0.025		2.239	2.239	2.238	2.238	2.238	2.238	2.238	2.237	2.237	2.237	2.237	2.236	2.236	2.236	2.235	2.235	2.235	2.234	2.234	2.234
0.050		1.954	1.954	1.954	1.953	1.953	1.952	1.952	1.952	1.951	1.951	1.95	1.95	1.949	1.949	1.948	1.948	1.947	1.947	1.946	1.946
0.075		1.771	1.771	1.77	1.77	1.769	1.769	1.768	1.768	1.767	1.767	1.766	1.765	1.765	1.764	1.763	1.763	1.762	1.761	1.76	1.76
0.100		1.632	1.631	1.63	1.63	1.629	1.629	1.628	1.627	1.627	1.626	1.625	1.624	1.624	1.623	1.622	1.621	1.62	1.619	1.618	1.617

	ρ:	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.3	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.4
0.010		2.572	2.572	2.571	2.571	2.571	2.571	2.57	2.57	2.57	2.569	2.569	2.568	2.568	2.568	2.567	2.567	2.566	2.566	2.565	2.565
0.025		2.233	2.233	2.232	2.232	2.231	2.231	2.23	2.23	2.229	2.229	2.228	2.228	2.227	2.226	2.226	2.225	2.224	2.223	2.223	2.222
0.050		1.945	1.944	1.944	1.943	1.942	1.942	1.941	1.94	1.939	1.938	1.938	1.937	1.936	1.935	1.934	1.933	1.932	1.931	1.93	1.929
0.075		1.759	1.758	1.757	1.756	1.755	1.755	1.754	1.753	1.752	1.751	1.75	1.749	1.748	1.746	1.745	1.744	1.743	1.742	1.74	1.739
0.100		1.617	1.616	1.615	1.614	1.613	1.611	1.61	1.609	1.608	1.607	1.606	1.604	1.603	1.602	1.601	1.599	1.598	1.597	1.595	1.594

	ρ:	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.5	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.6
0.010		2.564	2.564	2.563	2.562	2.562	2.561	2.56	2.559	2.559	2.558	2.557	2.556	2.555	2.554	2.553	2.552	2.551	2.55	2.549	2.548
0.025		2.221	2.22	2.219	2.218	2.217	2.216	2.215	2.214	2.213	2.212	2.211	2.21	2.209	2.207	2.206	2.205	2.203	2.202	2.2	2.199
0.050		1.928	1.927	1.926	1.924	1.923	1.922	1.92	1.919	1.918	1.916	1.915	1.913	1.912	1.91	1.909	1.907	1.905	1.903	1.902	1.9
0.075		1.738	1.736	1.735	1.734	1.732	1.731	1.729	1.728	1.726	1.724	1.723	1.721	1.719	1.717	1.715	1.714	1.712	1.71	1.707	1.705
0.100		1.592	1.591	1.589	1.587	1.586	1.584	1.582	1.581	1.579	1.577	1.575	1.573	1.571	1.569	1.567	1.565	1.563	1.561	1.558	1.556

	ρ:	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.7	0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.8
0.010		2.546	2.545	2.544	2.542	2.541	2.539	2.538	2.536	2.534	2.532	2.531	2.529	2.527	2.524	2.522	2.52	2.517	2.515	2.512	2.509
0.025		2.197	2.195	2.194	2.192	2.19	2.188	2.186	2.184	2.182	2.18	2.178	2.175	2.173	2.17	2.168	2.165	2.162	2.159	2.156	2.152
0.050		1.898	1.896	1.894	1.892	1.889	1.887	1.885	1.882	1.88	1.877	1.875	1.872	1.869	1.866	1.863	1.86	1.857	1.853	1.85	1.846
0.075		1.703	1.701	1.699	1.696	1.694	1.691	1.689	1.686	1.683	1.68	1.678	1.675	1.671	1.668	1.665	1.662	1.658	1.654	1.65	1.647
0.100		1.554	1.551	1.549	1.546	1.543	1.541	1.538	1.535	1.532	1.529	1.526	1.523	1.52	1.516	1.513	1.509	1.505	1.501	1.497	1.493

	ρ:	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.9	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1
0.010		2.506	2.503	2.5	2.496	2.492	2.488	2.484	2.479	2.475	2.469	2.464	2.457	2.451	2.443	2.435	2.425	2.413	2.399	2.379	2.326
0.025		2.149	2.145	2.142	2.138	2.133	2.129	2.124	2.119	2.114	2.108	2.102	2.095	2.088	2.08	2.071	2.061	2.048	2.034	2.013	1.96
0.050		1.842	1.838	1.834	1.83	1.825	1.82	1.815	1.81	1.804	1.798	1.791	1.784	1.776	1.768	1.758	1.747	1.735	1.719	1.699	1.645
0.075		1.642	1.638	1.634	1.629	1.624	1.619	1.613	1.608	1.602	1.595	1.588	1.581	1.573	1.564	1.554	1.543	1.53	1.515	1.494	1.44
0.100		1.489	1.484	1.48	1.475	1.47	1.464	1.459	1.453	1.446	1.44	1.433	1.425	1.417	1.408	1.398	1.386	1.373	1.357	1.336	1.282

Table AA2

Empirical Size of Nominal .10 Tests, Recursive Samples, AR(1) DGP

		m=2				*m*=4			
		R=40	*R*=100	*R*=200	*R*=400	*R*=40	*R*=100	*R*=200	*R*=400
40	Max t-stat (adj.)	0.075	0.080	0.076	0.082	0.072	0.066	0.086	0.068
	χ^2 (adj.)	0.130	0.137	0.138	0.119	0.174	0.192	0.199	0.217
	χ^2 (unadj.)	0.152	0.129	0.141	0.117	0.206	0.207	0.208	0.225
	Reality check	0.021	0.049	0.075	0.076	0.023	0.042	0.062	0.072
100	Max t-stat (adj.)	0.059	0.057	0.082	0.064	0.052	0.059	0.064	0.068
	χ^2 (adj.)	0.117	0.120	0.131	0.122	0.141	0.165	0.178	0.168
	χ^2 (unadj.)	0.161	0.147	0.138	0.138	0.240	0.194	0.196	0.173
	Reality check	0.013	0.026	0.046	0.048	0.010	0.026	0.039	0.058
200	Max t-stat (adj.)	0.066	0.058	0.062	0.052	0.064	0.052	0.058	0.062
	χ^2 (adj.)	0.115	0.130	0.123	0.119	0.126	0.134	0.142	0.182
	χ^2 (unadj.)	0.178	0.161	0.161	0.144	0.229	0.183	0.182	0.193
	Reality check	0.006	0.020	0.028	0.037	0.007	0.011	0.025	0.046

Table AA3

Empirical Size of Nominal .10 Tests, 1 Step Ahead Predictions, Rolling Samples, AR(1) DGP, Critical Values Determined by Simulation, *m*=2

		Recursive Scheme				Rolling Scheme			
		R=40	*R*=100	*R*=200	*R*=400	*R*=40	*R*=100	*R*=200	*R*=400
40	Max t-stat (adj.)	0.075	0.080	0.076	0.082	0.081	0.082	0.086	0.083
	χ^2 (adj.)	0.130	0.137	0.138	0.119	0.119	0.138	0.134	0.109
	χ^2 (unadj.)	0.152	0.129	0.141	0.117	0.157	0.134	0.137	0.116
	Reality check	0.021	0.049	0.075	0.076	0.019	0.039	0.066	0.072
100	Max t-stat (adj.)	0.059	0.057	0.082	0.064	0.073	0.058	0.081	0.064
	χ^2 (adj.)	0.117	0.120	0.131	0.122	0.112	0.109	0.125	0.129
	χ^2 (unadj.)	0.161	0.147	0.138	0.138	0.241	0.147	0.147	0.137
	Reality check	0.013	0.026	0.046	0.048	0.001	0.011	0.036	0.047
200	Max t-stat (adj.)	0.065	0.058	0.062	0.052	0.100	0.069	0.060	0.043
	χ^2 (adj.)	0.115	0.130	0.123	0.119	0.134	0.114	0.098	0.101
	χ^2 (unadj.)	0.178	0.161	0.161	0.144	0.416	0.200	0.122	0.127
	Reality check	0.006	0.020	0.028	0.037	0.000	0.005	0.018	0.024

Table AA4

Empirical Size of Nominal .05 Tests, 1 Step Ahead Predictions, White Noise DGP

		m=5				*m*=10			
P		*R*=40	*R*=100	*R*=200	*R*=400	*R*=40	*R*=100	*R*=200	*R*=400
100	Max t-stat (adj.)	0.033	0.032	0.035	0.035	0.041	0.033	0.033	0.048
	χ^2 (adj.)	0.038	0.047	0.046	0.067	0.059	0.060	0.071	0.093
	χ^2 (unadj.)	0.112	0.063	0.055	0.074	0.087	0.061	0.074	0.088
	Reality check	0.000	0.002	0.008	0.013	0.000	0.001	0.009	0.019
200	Max t-stat (adj.)	0.042	0.032	0.039	0.036	0.036	0.034	0.036	0.045
	χ^2 (adj.)	0.044	0.041	0.037	0.050	0.051	0.042	0.039	0.051
	χ^2 (unadj.)	0.257	0.085	0.054	0.054	0.156	0.050	0.035	0.043
	Reality check	0.000	0.000	0.003	0.009	0.000	0.000	0.002	0.007
400	Max t-stat (adj.)	0.042	0.035	0.042	0.029	0.042	0.036	0.043	0.043
	χ^2 (adj.)	0.051	0.032	0.036	0.046	0.041	0.029	0.031	0.022
	χ^2 (unadj.)	0.579	0.157	0.076	0.063	0.365	0.074	0.028	0.020
	Reality check	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.004

Table AA5

Empirical Size of Nominal .10 Tests, 1 Step Ahead Predictions, AR(1) DGP
Different Set of Alternative Models

		Recursive Scheme				Rolling Scheme			
P		*R*=40	*R*=100	*R*=200	*R*=400	*R*=40	*R*=100	*R*=200	*R*=400
40	Max t-stat (adj.)	0.079	0.084	0.092	0.086	0.078	0.086	0.100	0.079
	χ^2 (adj.)	0.187	0.212	0.255	0.259	0.165	0.189	0.194	0.188
	χ^2 (unadj.)	0.204	0.232	0.251	0.258	0.199	0.204	0.195	0.191
	Reality check	0.009	0.015	0.028	0.027	0.004	0.008	0.033	0.022
100	Max t-stat (adj.)	0.070	0.082	0.064	0.073	0.083	0.074	0.067	0.064
	χ^2 (adj.)	0.166	0.177	0.224	0.226	0.125	0.124	0.146	0.168
	χ^2 (unadj.)	0.220	0.214	0.220	0.220	0.312	0.166	0.157	0.171
	Reality check	0.002	0.002	0.010	0.018	0.000	0.002	0.006	0.018
200	Max t-stat (adj.)	0.061	0.073	0.072	0.078	0.092	0.069	0.071	0.077
	χ^2 (adj.)	0.136	0.160	0.175	0.204	0.118	0.109	0.127	0.167
	χ^2 (unadj.)	0.226	0.222	0.223	0.206	0.522	0.208	0.165	0.178
	Reality check	0.000	0.000	0.008	0.014	0.000	0.000	0.001	0.009

Note: the four alternative models include the following regressors in addition to a constant: (1)y_t, y_{1t}; (2) y_t, y_{1t}, y_{2t}; (3) y_t, y_{1t}, y_{2t}, y_{3t}; (4) y_t, y_{1t}, y_{3t}.

Table AA6

Empirical Size of Nominal .10 Tests, 1 Step Ahead Predictions, White Noise DGP

		-----	*m*=5		-----	-----	*m*=10		-----
P		*R*=40	*R*=100	*R*=200	*R*=400	*R*=40	*R*=100	*R*=200	*R*=400
100	Max t-stat (adj.)	0.080	0.069	0.079	0.080	0.081	0.073	0.083	0.095
	χ^2 (adj.)	0.095	0.085	0.105	0.130	0.117	0.112	0.130	0.168
	χ^2 (unadj.)	0.198	0.130	0.113	0.143	0.147	0.115	0.127	0.149
	Reality check	0.000	0.005	0.021	0.039	0.000	0.007	0.020	0.042
200	Max t-stat (adj.)	0.090	0.065	0.072	0.089	0.084	0.077	0.076	0.089
	χ^2 (adj.)	0.096	0.081	0.090	0.108	0.103	0.074	0.066	0.103
	χ^2 (unadj.)	0.377	0.136	0.104	0.109	0.236	0.087	0.067	0.076
	Reality check	0.000	0.000	0.006	0.021	0.000	0.000	0.009	0.022
400	Max t-stat (adj.)	0.091	0.083	0.081	0.073	0.085	0.082	0.080	0.072
	χ^2 (adj.)	0.099	0.073	0.074	0.087	0.093	0.077	0.064	0.055
	χ^2 (unadj.)	0.719	0.254	0.132	0.106	0.501	0.128	0.058	0.053
	Reality check	0.000	0.000	0.003	0.007	0.000	0.000	0.000	0.011

Table AA7

Empirical Power, White Noise DGP

		----- *m*=5 -----				----- *m*=10 -----			
P		*R*=40	*R*=100	*R*=200	*R*=400	*R*=40	*R*=100	*R*=200	*R*=400
100	Max t-stat (adj.)	0.255	0.241	0.326	0.335	0.241	0.218	0.294	0.283
	χ^2 (adj.)	0.180	0.191	0.261	0.280	0.173	0.205	0.229	0.267
	χ^2 (unadj.)	0.116	0.104	0.137	0.177	0.101	0.114	0.140	0.203
	Reality check	0.004	0.039	0.089	0.142	0.001	0.033	0.086	0.134
200	Max t-stat (adj.)	0.331	0.369	0.459	0.517	0.316	0.355	0.418	0.459
	χ^2 (adj.)	0.223	0.282	0.344	0.428	0.186	0.241	0.269	0.334
	χ^2 (unadj.)	0.197	0.104	0.115	0.169	0.108	0.063	0.075	0.136
	Reality check	0.002	0.022	0.090	0.198	0.002	0.017	0.073	0.188
400	Max t-stat (adj.)	0.480	0.562	0.670	0.729	0.462	0.519	0.612	0.674
	χ^2 (adj.)	0.311	0.474	0.575	0.633	0.261	0.384	0.443	0.485
	χ^2 (unadj.)	0.363	0.166	0.146	0.161	0.222	0.075	0.062	0.094
	Reality check	0.000	0.015	0.102	0.252	0.000	0.009	0.080	0.231