Forecast Pro Beats the Competition in Largest Forecasting Competition Ever Held

In the recent M-3 forecasting competition **Forecast Pro significantly outperformed all other software entrants** and 18 out of 19 expert forecasting teams. Designed to evaluate the accuracy of different forecasting methods, the Makridakis-3 competition is the largest, most comprehensive empirical forecasting study ever performed.

The study, sponsored by the *International Journal of Forecasting,* compared the accuracy of 26 different approaches used to prepare 3,003 forecasts based on historic demand data. The data covered a wide range of data types (e.g., microeconomic, macroeconomic, industrial, financial and demographic) and included weekly, monthly, quarterly and annual series. Entrants were free to use any method they wished to prepare the forecasts. The submitted forecasts were then compared to the actual future values, which had been withheld from the participants, to evaluate forecast error. **Overall, the fully automated Forecast Pro attained the lowest percent error of any competing software package and outperformed all but one academic entry**.

Additional entrants to the competition included forecasting software packages such as SmartForecasts, ForecastX, Autocast and Autobox (three variations), as well as experts from a number of prestigious universities. Approaches included techniques such as exponential smoothing models, Box-Jenkins models, neural networks and rule-based approaches. Human judgment and statistical expertise played a significant role in many of the approaches. The following table summarizes the results of the competition. For additional information, please call BFS at (617) 484-5050 or visit our Web site at **www.forecastpro.com**.

M-3: AVERAGE SYMMETRIC MAPE (MEAN ABSOLUTE PERCENT ERROR): ALL DATA

	Forecasting Horizons										Average of Forecasting Horizons					
SOFTWARE	1	2	3	4	5	6	8	12	15	18	1-4	1-6	1-8	1-12	1-15	1-18
Forecast Pro	***8.6***	***9.6***	***11.4***	***12.9***	13.3	14.3	***12.6***	***13.2***	***16.4***	***18.3***	***10.64***	***11.69***	***11.86***	***12.14***	***12.60***	***13.19***
Autobox-1	9.8	11.1	13.1	15.1	16.0	16.8	14.2	15.4	19.1	20.4	12.30	13.67	13.78	14.00	14.56	15.23
Autobox-2	9.5	10.4	12.2	13.8	13.8	14.9	13.2	15.2	18.2	19.9	11.48	12.44	12.63	13.10	13.70	14.41
Autobox-3	9.7	11.2	12.9	14.6	15.8	16.5	14.4	16.1	19.2	21.2	12.08	13.43	13.64	14.01	14.57	15.33
Autocast	9.1	10.0	12.1	13.5	13.8	14.7	13.1	14.3	17.7	19.6	11.20	12.21	12.40	12.80	13.34	14.01
* ForecastX	8.7	9.8	11.6	13.1	***13.2***	***13.9***	***12.6***	13.9	17.8	18.7	10.82	11.73	11.89	12.22	12.81	13.49
* SmartForecasts	9.2	10.3	12.0	13.5	14.0	15.1	13.0	14.9	18.0	19.4	11.23	12.34	12.49	12.94	13.48	14.13
ACADEMIC TEAMS																
ADAPTA	15.5	16.2	17.1	18.2	18.1	18.9	15.7	18.6	20.9	22.3	16.74	17.33	16.98	17.21	17.62	18.12
AMM1	9.8	10.6	11.2	12.6	13.0	13.5	14.1	14.9	18.0	20.4	11.04	11.76	12.43	13.04	13.77	14.63
AMM2	10.0	10.7	11.3	12.9	13.2	13.7	14.3	15.1	18.4	20.7	11.21	11.95	12.62	13.21	13.97	14.85
ARARMA	9.7	10.9	12.6	14.2	14.6	15.6	13.9	15.2	18.5	20.3	11.83	12.92	13.12	13.54	14.09	14.74
AutomatANN	9	10.4	11.8	13.8	13.8	15.5	13.4	14.6	17.3	19.6	11.23	12.38	12.58	12.96	13.48	14.11
B-J automatic	9.2	10.4	12.2	13.9	14.0	14.8	13.0	14.1	17.8	19.3	11.42	12.41	12.54	12.80	13.35	14.01
COMB S-H-D	8.9	10.0	12.0	13.5	13.7	14.2	12.4	13.6	17.3	18.3	11.10	12.04	12.13	12.40	12.91	13.52
DAMPEN	8.8	10.0	12.0	13.5	13.7	14.3	12.5	13.9	17.5	18.9	11.05	12.04	12.14	12.44	12.96	13.63
FLORES-PEARCE-1	9.2	10.5	12.6	14.5	14.8	15.3	13.8	14.4	19.1	20.8	11.68	12.79	13.03	13.31	13.92	14.70
FLORES-PEARCE-2	10.0	11.0	12.8	14.1	14.1	14.7	12.9	14.4	18.2	19.9	11.96	12.77	12.81	13.04	13.61	14.29
HOLT	9.0	10.4	12.8	14.5	15.1	15.8	13.9	14.8	18.8	20.2	11.67	12.93	13.11	13.42	13.95	14.60
NAIVE1	11.6	12.5	14.6	16.1	16.5	16.9	15.4	16.0	20.5	22.1	13.69	14.70	14.92	15.24	15.84	16.59
NAIVE2	10.5	11.3	13.6	15.1	15.1	15.9	14.5	16.0	19.3	20.7	12.62	13.57	13.76	14.24	14.81	15.47
RBF	9.9	10.5	12.4	13.4	13.2	14.2	12.8	14.1	17.3	17.8	11.56	12.28	12.42	12.77	13.25	13.75
ROBUST-TREND	10.5	11.2	13.2	14.7	15.0	15.9	15.1	17.5	22.2	24.3	12.38	13.40	13.73	14.57	15.42	16.30
SINGLE	9.5	10.6	12.7	14.1	14.3	15.0	13.3	14.5	18.3	19.4	11.73	12.71	12.84	13.13	13.67	14.32
* THETA	8.4	9.6	11.3	12.5	13.2	14.0	12.0	13.2	16.2	18.2	10.44	11.49	11.62	11.95	12.42	13.01
* THETAsm	9.8	11.3	12.6	13.6	14.3	15.0	12.7	14.0	16.2	18.3	11.81	12.76	12.77	13.04	13.40	13.88
WINTER	9.1	10.5	12.9	14.6	15.1	15.9	14.0	14.6	18.9	20.2	11.77	13.01	13.19	13.48	14.01	14.65

Table adapted from Hibon M. and Makridakis S. [2000]. The M3 Competition: results, conclusions and implications. *International Journal of Forecasting 16*, 451-476.

Figures in bold represent first place finishes.

* Entries submitted following publication of initial results (a considerable advantage).