



FORECAST PRO'S ACCURACY CONFIRMED

The M3 Forecasting Competition

Designed to evaluate the accuracy of different forecasting methods, the M3 competition is the largest, most comprehensive empirical forecasting study ever performed. The study, sponsored by the prestigious *International Journal of Forecasting (IJF)*, compared the accuracy of 24 different approaches used to prepare 3,003 forecasts based on historic demand data including monthly, quarterly and annual series. Realizing the significance of this landmark competition, some software vendors have made outrageous claims about the accuracy of their products by showing only selected results from the competition or simply misstating the results.

Overall Results

The M3 results published in the *IJF* in 2000 clearly showed the following¹:

Fact #1: Forecast Pro outperformed all of the other software entrants in the competition by attaining the lowest percent error.

Fact # 2: Forecast Pro outperformed all but one of the 17 academic entries.

In 2005, to address the statistical significance of the M3 results, the *IJF* published new research using methodology which compares each method against the best method and against the mean. The conclusion: **"accuracy of the various methods does differ significantly."**²

Forecasting Monthly Data?

Most businesses are forecasting monthly or weekly data. Since the M3 competition did not include weekly data, a closer look at Forecast Pro's performance with monthly data series—which account for half of the data series in the competition—is warranted. Indeed, the 2005 research looked carefully at the monthly results and the analysis **"shows that Theta [an academic entry] and Forecast Pro are the best methods for monthly data."**³ The table below shows that the other software entrants don't even come close to matching Forecast Pro's accuracy.

Comparison of Software Entrants for All Monthly Data Series in M3 Competition⁴

Software	Rank (out of all 22 entrants)	Is Software Significantly Better than the Average Entrant?
Forecast Pro	2	Yes
Autobox 1	8	No
Autobox 2	9	No
ForecastX	10	No
Autobox 3	11	No
Autocast	11	No
Smart Forecasts	16	No

Get The Facts!

See reverse for details on the results reported above and where to get more information on the full M3 results.

M3 Forecasting Competition Results

¹ As shown in following tables adapted from Hibon M. and Makridakis S., “The M3-Competition: results, conclusions and implications,” *International Journal of Forecasting* 16 (2000): 451-476.

**Average Symmetric MAPE (Mean Absolute Percent Error)
For All Data and All Forecasting Horizons (1-18 months)**

SOFTWARE	
Forecast Pro	13.19
Autobox-1	15.23
Autobox-2	14.41
Autobox-3	15.33
Autocast	14.01
ForecastX	13.49
SmartForecasts	14.13

ACADEMIC TEAMS	
AAM1	14.63
AAM2	14.85
ARARMA	14.74
Automat ANN	14.11
B-J automatic	14.01
Comb S-H-D	13.52
Dampen	13.63
Flores/Pearce-1	14.70
Flores/Pearce-2	14.29
Holt	14.60
Naive2	15.47
RBF	13.75
Robust-Trend	16.30
Single	14.32
Theta	13.01
Theta-sm	13.88
Winter	14.65

² Konig A., Franses P.H., Hibon M and Stekler H.O., “The M3-Competition: Statistical tests of the results,” *International Journal of Forecasting* 21 (2005): 397.

³ Ibid., 403.

⁴ Ibid., 400-402.

The “Rank” shown in the table is based on average rank, as reported in Table 1, p. 400. “Significantly better than average?” evaluates the entrants’ performances using multiple comparisons with the average ranked method, as reported in Table 2, p. 402. The corresponding results for the academic entries are shown below (ranks indicated in italics denote a tie for that particular rank):

Comparison of Academic Entrants for All Monthly Data Series in M3 Competition

ACADEMIC TEAMS	Rank	Significantly Better than Average?
AAM1	na	na
AAM2	na	na
ARARMA	7	No
Automat ANN	<i>19</i>	No
B-J automatic	15	No
Comb S-H-D	3	Yes
Dampen	14	No
Flores/Pearce-1	<i>16</i>	No
Flores/Pearce-2	<i>16</i>	No
Holt	5	No
Naive2	22	No
RBF	3	Yes
Robust-Trend	11	No
Single	21	No
Theta	1	Yes
Theta-sm	<i>19</i>	No
Winter	5	No