# A re-examination of analysts' superiority over time-series forecasts of annual earnings

Published: 14 February 2012

Volume 17, pages 944–968, (2012) Cite this article

Review of Accounting Studies

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## Abstract

We re-examine the widely held belief that analysts' earnings per share (EPS) forecasts are superior to random walk (RW) time-series forecasts. We investigate whether analysts' annual EPS forecasts are superior, and if so, under what conditions. Simple RW EPS forecasts are more accurate than analysts' forecasts over longer horizons, for smaller or younger firms, and when analysts forecast negative or large changes in EPS. We also compare the accuracy of a third forecast of longer-term earnings based on a naïve extrapolation of analysts' 1-year-ahead forecasts. Surprisingly, this naïve extrapolation provides the most accurate estimate of long-term (2- and 3-year-ahead) earnings. These findings recharacterize prior generalizations about the superiority of analysts' forecasts

and suggest that they are incomplete, misleading, or both. Moreover, in certain settings, researchers can rely on forecasts other than these explicit forecasts.



# Notes

1. Kothari (2001, p. 153) further states that "*conflicting evidence notwithstanding*, in recent years it is common practice to (implicitly) assume that analysts' forecasts are a better surrogate for market's expectations than time-series forecasts" [emphasis added].

2. As noted in Bradshaw (2010), the accounting literature is unique in its conclusion that expert forecasts are superior to time-series forecasts. Findings from research in economics, genetics, and physics are largely consistent with time-series models outperforming experts (see e.g., Belongia 1987; Fintzen and Stekler 1999; Loungani 2000).

3. One notable exception is Allee (2010), who uses 2-year-ahead annual forecasts combined with the Easton (2004) implementation of the Ohlson and Jeuttner-Nauroth (2005) earnings growth valuation model to reverse engineer the implied cost of equity capital. He finds that cost of equity capital estimates using time-series forecasts are reliably associated with risk proxies (e.g., market volatility, beta, leverage, size, book-to-price, etc.) and concludes that researchers and investors may use time-series forecasts of earnings to estimate the implied cost of equity capital for firms not covered by analysts.

4. While we do not examine this conjecture, our near-term forecasts of annual earnings are analogous to quarterly forecasts for the fourth quarter and, for these very short forecast horizons, analysts indeed dominate time-series models.

5. In untabulated analyses, we also find that RW forecasts are superior to forecasts from more complicated time-series models (e.g., RW with a drift) for two reasons. First, analysts are better at estimating earnings for firms with sufficient data to calculate the time-series parameters in complicated time-series models because longer time-series availability is characteristic of more mature firms. Second, adding time-series parameters to a RW forecast does not help much because the negative serial correlation in EPS changes is very small.

6. The RW model is also advantageous because it does not require a long time series of data, which restricts the sample size and induces survivor bias.

7. Since the 1980s, the forecasting literature has focused on refinements to better understand various features of analysts' forecasts, such as the determinants of analysts' forecast accuracy (Clement 1999), bias in analysts' forecasts (Lim 2001), and the efficiency of analysts' forecasts with respect to public information (Abarbanell 1991).

8. We identify this sample by starting with all firms in Compustat with positive total assets. We retain all firms with monthly stock price data as of the fiscal-end month available from CRSP. Finally, we use I/B/E/S data to identify whether consensus forecast data as of the fiscal-end month are available for the remaining firms.

9. Untabulated statistics reveal that a hypothetical data requirement of 10 years of prior earnings data (e.g., Fried and Givoly 1982) would eliminate more than 60 percent of the observations, so estimating more complex time-series forecasts would result in a considerable loss of sample observations, and hence generalizability.

10. When analysts forecast no change in EPS, the RW forecast and the analysts' forecasts are equal; thus, analysts' forecasts differ most from RW forecasts when analysts forecast large changes in EPS.

11. For analyses that can be done without Compustat data (i.e., the main results and analyses related to firm age and the number of analysts following), the Compustat restriction makes no substantive difference in the results. However, we impose this restriction across all analyses to facilitate sample consistency across tables.

12. The base year is the year from which we obtain data for RW forecasts. For example, when forecasting 1-year-ahead earnings ($EPS_{T+1}$), the base year is year T; when forecasting two-year-ahead earnings ($EPS_{T+2}$), the base year is still year T, etc.

13. In unreported analyses, we find that including loss firms does not change the results over horizons of 1 year or less, the RW results improve somewhat relative to analysts' forecasts for forecast horizons of 2 and 3 years when loss firms are included.

14. Note that when the earnings announcement is made early in the calendar month, there will not be an earnings forecast in that calendar month. For these observations, there are only forecasts of FY1. Thus, there are approximately half as many month 0 observations as there are month 1 observations.

15. Using explicit FY3 forecasts when available in I/B/E/S, we find that our general conclusions are unchanged.

16. Additionally, some researchers use cross-sectional models to derive earnings forecasts for individual firms (e.g., Fama and French 2006; Hou et al. 2010). These approaches are beyond the scope of our current analysis, but they could be combined with those discussed above to provide evidence on the extent to which researchers (or investors) could construct superior forecasts based on historical financial statements.

17. The measurement of analysts' forecast superiority requires matched pairs of RW and analysts' forecasts, so each observation requires a RW forecast, a consensus analysts' forecast, and the reported actual earnings.

18. In an additional test, we regress stock returns measured from the month of the forecast through the month of the earnings announcement separately on

forecast errors from RW and analysts' FY1, FY2, and FY3 forecasts (as appropriate) using a seemingly unrelated regression system. We estimate this system for each of the 36 forecast horizons from 0 to 35 months prior to the earnings announcement and find that the relative weights that the market seems to assign to RW and analyst forecasts track fairly closely to the results of the accuracy tests in Table 3. Thus, we find that security prices generally reflect the more accurate forecast at each forecasting horizon.

19. For example, in an examination of differential forecast optimism by affiliated analysts, Lin and McNichols (1998) find no differences for near-term earnings (i.e., forecasts with horizons of up to 2 years) but find both general and differential optimism for long-term growth forecasts.

20. We thank Richard Sloan for suggesting that we investigate this alternative forecast.

21. We do not tabulate the results for target year T + 1 because, for that horizon, there is no difference between the SH forecast error and the 1-year-ahead analyst forecast error (FY1), and those results on already tabulated in the first set of columns in Table 3.

22. In untabulated analyses, we also investigate thinly followed firms, defined as firms with four or fewer analysts forecasting 1-year-ahead earnings in I/B/E/S. We find that results are very similar to those for small firms.

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## Acknowledgments

We thank Richard Sloan (editor) and two anonymous reviewers for comments and suggestions that significantly improved the manuscript. We thank participants at the 2010 CARE Conference and the 2010 Annual Conference of the American Accounting Association—Southwest Region for helpful suggestions and comments. We also thank workshop participants at the University of Akron, University of Arkansas, Florida State University, and The Ohio State University. James Myers gratefully acknowledges financial support from the Ralph L. McQueen Chair, and Linda Myers gratefully acknowledges financial support from the Garrison/Wilson Chair, both at the University of Arkansas.

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## Cite this article

Bradshaw, M.T., Drake, M.S., Myers, J.N. *et al.* A re-examination of analysts' superiority over time-series forecasts of annual earnings. *Rev Account Stud* **17**, 944–968 (2012). https://doi.org/10.1007/s11142-012-9185-8

Published
14 February 2012

Issue Date
December 2012

DOI
https://doi.org/10.1007/s11142-012-9185-8

## Keywords

Analyst forecasts | Time-series forecasts | Random walk | Analysts' superiority

## JEL Classification

G17 | M40 | M41

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