THE PREDICTIVE BEHAVIOUR OF FINANCIAL ANALYSTS IN AUSTRALIA

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1. Introduction

Recently there has been a number of studies on the forecasting ability of investment analysts. Most of the studies have examined the analysts ability to forecast corporate earnings. However, an article by Brealey and Hodges[1] in the United Kingdom and two articles by Ambachtsheer[2,3] in the United States have examined the ability of the analysts to forecast industry returns. Using monthly data and an industry ranking technique, Ambachtsheer found that there was a significant linear relationship between the actual return and the forecasted return with a correlation ranging from .11 to .26. The study by Brealey and Hodges reported a similar result, and furthermore illustrated, using a simulation technique, that if a portfolio manager efficiently utilised the predictive ability with a correlation of 0.15, then this would result in an average return 2% better than an index fund over the long period.

The objective of this study is to examine the forecasting ability of seven financial analysts forecasting the Sydney All Ordinary Index, and determine if there is a linear relationship between the analysts forecast and the actual movement in the index. The relationship examined is:

$$A = a + bF \qquad (1)$$

where

A is the actual percentage movement in the Sydney All Ordinary Index

F is the predicted percentage movement in the Sydney All Ordinary Index

A significant positive or negative value for a would indicate a consistent bias by the analysts in under or over forecasting the market's movement. A significant positive value for b would indicate a significant correlation between the analysts forecast and the market's actual movement.

2. Data

An Australian financial institution has been recording for the last two years the forecasts of seven financial analysts, including both internal analysts and stockbrokers' analysts. Each Monday morning the analysts forecast the weekly change in the Sydney All Ordinary Share Index (Group 21). In addition, a "random" forecast was produced by throwing a die. The die was thrown first and if evens the market was "predicted" to go up, and if odds to go down. Then the die was thrown again and the number displayed was the forecast of the number of points the market would change in the week. The predictions of the seven analysts and the random process was recorded for the 26 weeks from the 1/7/77 to the 30/12/77. The continuous percentage change movement in the index and in the prediction was calculated using the formula:

$$\text{Percentage change} = \log(I_t/I_{t-1})$$

where

I_t is the index in period t and

I_{t-1} is the index in period t - 1.

3. Results

The initial linear relationship tested was:

$$A_t = a + bF_t$$

where

A_t was the actual percentage movement in the index in period t relative to the actual index in period t-1.

and F_t was the predicted percentage movement in the index in period t relative to the actual index in period t-1.

However, the results of this analysis, using least squares estimation, did not indicate that there was a significant linear relationship and a substantially better relationship was found to be:

$$A_t = a + bF'_t$$

where

A_t was the actual percentage movement in the index in period t relative to the actual index in period t - 1.

F'_t was the predicted percentage movement in the index in period t relative to the predicted index in period t - 1.

The results are summarised in Table 1. Although all analyses have a very small negative average bias as indicated by a, the column Prob (a) displays the probability of the result being observed in a sample set of the data if the true value of a was zero. Since all the Prob (a) are well over 80% the observed results indicate that there is no significant bias in the analysts predictions over this period. For analysts 1 to 7 the results for b, a measure of the correlation of the forecast with the market movement, range from 0.21 to 0.47 with the probability of these results being observed, if the true coefficient was zero, ranging from 17% to 2%. Therefore the results do indicate that the analysts predictions have a significant correlation with the market change. Furthermore, analyst number 8, the "random process", produces results substantially different from the actual analysts with a 54% probability that the coefficient was not different from zero.

At first glance, these results may seem a bit odd in that the significant variable in predicting the actual percentage movement in the All Ordinary Index is not the analysts' predicted change from the actual (F_t) but the predicted change from the previous weeks prediction (F'_t). However, on further reflection one realises that analysts are actually not forecasting week to week, but over a number of weeks with a specific movement of the index in mind. Therefore, it seems reasonable to imagine an analyst adjusting his previous weeks forecast on the basis of any new bits of information that become available. We conjecture that if data were available on longer term predictions, the predicted movement in the index relative to the actual index (F_t) would be a significant variable (or at least more significant than F'_t).

Footnotes

1. Hodges, S. D. and Brealey, R.A., "Portfolio Selection in a Dynamic and Uncertain World", *Financial Analyst Journal* (March-April 1973), pp. 50-65.
2. Ambachtsheer, K. "Portfolio Theory and the Security Analyst", *Financial Analyst Journal*, (November-December 1972) pp. 20-24.
3. Ambachtsheer, K. "Profit potential in an almost efficient market", *The Journal of Portfolio Management* (Fall 1974) pp. 32-37.

Table 1: Sydney All Ordinary Index Forecast -- Weekly 1/7/77 to 30/12/77

Least Squares Regression $A_t = a + bF'_t$

Analyst	a	Prob (a)	b	Prob (b)	R^2	D.W.
1	-0.01	.98	0.24	.17	0.04	1.92
2	-0.17	.86	0.47	.03	0.19	1.94
3	-0.16	.88	0.24	.13	0.05	1.90
4	-0.17	.86	0.35	.03	0.15	2.25
5	-0.13	.90	0.35	.02	0.16	1.84
6	-0.14	.88	0.39	.03	0.14	2.14
7	-0.15	.88	0.21	.05	0.10	1.83
8	-0.17	.86	0.09	.54	0.00	1.88

Notes: Prob (a) and Prob (b) give the probability that the observed a or b would occur in practice if the true a or b is actually equal to zero. R^2 is the adjusted coefficient of determination. D.W. is the Durbin-Watson coefficient used to test for autocorrelation. Values close to 2 (as here) suggest no autocorrelation.

BOOK REVIEW

AUSTRALIA'S MINERAL RESOURCES

Minerals and Energy in Austalia, by Donald W. Barnett, Cassell Australia, 1979. Pp. 333. Paperbacked at $10.95

The searcher seeking to broaden his knowledge and understanding of the Australian mining industry could be excused for concluding that for such an important sector or the Australian economy, the pre-existing sources of information and perspective while appearing to be plentiful are in reality fragmented, often too technical and frequently excessively one-sided.

Publication of this book, written by the senior lecturer in Mineral Economics at Macquarie University, goes a long way in correcting this information shortfall.

In one convenient and well-written book, all the major minerals are covered in depth — oil and gas, coal, uranium, copper, lead, zinc, iron ore, aluminium and mineral sands.

For the mind perplexed and confused by claims and counter-claims, the chapter on uranium makes excellent reading, as it examines in some 50 pages Australia's part in the world scene, the Westinghouse dispute, Aboriginal issues, mine pollution, potential revenues and profits, nuclear power and reactor operating principles, comparative electricity costs, radiation dangers, nuclear accidents (including the Three Mile Island incident in March), waste disposal, enrichment, nuclear weapons and the comparative hazards of coal-fired power stations.

For economists concerned about such important matters as foreign ownership, taxation, further processing of minerals, and longer-term resources policy the chapter written in collaboration with Susan Bambrick is especially thought provoking.

Unlike many academic economists, the author is not a "fence-sitter" and he advances a well-reasoned argument that Australia by the end of the next decade must import massive amounts of expensive oil or face a drop in living standards. To do this, mineral exports must be expanded but only aluminium, uranium, steaming coal and LNG have the reserves and market potential to significantly increase their output.

For the student, investor and those concerned about Australia's economic future, this book is compulsory and absorbing reading.

NORMAN MISKELLY