Chapter 5 reviews the 'central underlying issues' of product differentiation brand loyalty, duration of advertising effects and of economies of scale in advertising. Although the authors draw some conclusions, the overall message is a warning against overgeneralization. Many of the studies cited have, through poor research design, been incapable of drawing firm conclusions except for supporters of one camp or the other. At the heart of poor research design is often a failure to articulate operationally the basic theory being tested. (To give one example quoted by Albion and Ferris, empirical work showing that larger firms have lower advertising-to-sales ratios tells us nothing about the existence of scale economies in advertising.) Unfortunately, Albion and Ferris do not consider this lack of attention to theory. It is, therefore, too easy to draw the conclusion that what is needed is more empirical work, probably using different variables and different samples, rather than more theoretical analysis before empirical work is undertaken.

Chapter 6 is entitled 'Determinants of Advertising Effectiveness' and looks to be of more direct interest to forecasters. However, it concentrates entirely on the determinants of advertising-to-sales ratios across different industries, using this as a measure of effectiveness (other things being equal). A survey of some of the more direct evidence would have been useful.

One of the central issues, dealt with in Chapter 8, is whether advertising increases or reduces prices to the consumer. Proponents of advertising can point to cases where a prohibition on advertising (notably in the quasi-professional service industries) has probably prevented effective competition and raised prices somewhat. At the other extreme, advertising-to-sales ratios of more than, say, 20 per cent can be expected to raise costs and in the presence of entry barriers, perhaps prices also. There is the further observation, given different interpretations by the two sides, that advertised branded goods tend to be more expensive than non-advertised 'generic' goods. Here again the authors draw attention to useful distinctions, for example between manufacturers' advertising (correlated with higher prices) and retailers' advertising (lower prices).

The final chapter is a useful summary of the authors' findings and their conclusions, which emphasize the need to recognize the heterogeneous nature of markets and of advertising, are unexceptionable.

Reading *The Advertising Controversy* could have been a depressing experience, with so few general conclusions to show for so much work by so many different researchers, and the authors will doubtless disappoint some on each side of the controversy holding strong views. But, by striving for objectivity in a field where emotions and value judgements hold sway, Albion and Ferris have done a tremendous service for future research and researchers in this field.

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INDUSTRIAL AND BUSINESS FORECASTING METHODS, Lewis, C.D., Borough Green, Sevenoaks, Kent: Butterworth, 1982. Price: £9.25. Pages: 144.

The intended readership and scope of this book are defined in the preface. The book is aimed at 'those who possess time-series data which they wish to forecast'. It is divided into two sections, short term forecasting—exponential smoothing methods, and medium term forecasting—regression and curve fitting. These sections describe the 20 per cent of forecasting techniques which the author says are applied to 80 per cent of the problems.

The section on short term forecasting proceeds conventionally, developing the exponential smoothing models. Though only addressing exponential smoothing models, the author imposes constraints on the series he can consider, i.e. to those where the models are appropriate.

He follows Brown (1963) in suggesting that for a simple exponentially weighted moving average the value of α should be such that $0.05 \leq \alpha \leq 0.3$, and, if $\alpha > 0.03$ is desirable, 'the assumption that the situations under consideration were stationary is most likely invalid'. Box and Jenkins (1970) neatly demolished a similar argument by Brown, who had used triple exponential smoothing to forecast IBM share prices; Box and Jenkins demonstrated that simple exponential smoothing with $\alpha = 0.9$ was a dramatically better forecasting model.

Non-stationary situations are described as those where the average varies with time, such as linear trends and 'seasonal trends'. I found 'seasonal trend' an odd description of seasonal variation especially since the annual average stays constant if seasonality is the only source of systematic variation. The different exponential smoothing approaches to forecasting a series with linear trend and seasonality are described in detail. Under the heading of the Box–Jenkins method, their 1962 three term predictor for a linear trend model is described. Since no mention of their later work is given, a naïve reader might be misled into believing that this is the totality of the work of Box and Jenkins. A change that might also disorientate a new reader is the use of α as smoothing constant in chapter 1, replaced without explanation by A in Holt's method in chapter 2.

The standard deviation is cited as the usual

measure of the dispersion of forecast errors, and is then derived as 1.25 × (Mean Absolute Deviation) because the calculations for a direct derivation are 'too complicated and tedious to be applied in the forecasting situation'. In view of the widespread use of calculators this contention is ludicrous. In any case the Mean Absolute Deviation is replaced, without changing its name, by an exponentially weighted moving average absolute deviation.

The two chapters on tracking signals and adaptive forecasting are well written, and the author draws on his experience in describing the use of tracking signals for monitoring. In the chapter on autocorrelations the self-imposed constraints make themselves felt again, since the autocorrelation function (*acf*) is only demonstrated on stationary data (with no significant autocorrelations) or data with a trend and seasonality. No guidance is given if the *acf* classifies your data outside these categories. There are flaws in the chronology of the book, for example Brown's adaptive smoothing method is said to reduce autocorrelation on page 28, but autocorrelation is not introduced until page 64.

The section on medium term forecasting is a little shorter than that on short term. The emphasis is on regression models, although the only independent variable used is time. The details of the statistics concerned with bivariate linear regression are discussed thoroughly. Then in the second chapter of this section the fitting of curves that can be transformed to a straight line are described. Once the appropriate transformation has been made, then linear regression can be used to estimate the coefficients. In my opinion this is the least useful chapter in the book; on a statistical level no mention is made of the bias introduced into a forecast through using this estimation method. More importantly, on a practical level, has there ever been a convincing case study of a series being described by a power, hyperbolic, logarithmic or inverse logarithmic trend line? This chapter is eighteen pages long, representing 14 per cent of the book.

The chapter on growth curves considers the modified exponential and then the Gompertz and logistic which can be transformed to it. Again the transformation is used for coefficient estimation for the latter two curves. No mention is made of other useful S curves such as the cumulative lognormal or Bass's model.

The section concludes with a chapter on the use of cusum techniques for monitoring medium term forecasting. The advantages of using cusums are clearly expressed. What is not made clear is why cusums are more appropriate for medium term forecasts than short term. The picture is further obscured by demonstrating the technique's ability only in detecting a change in mean where the variable changes from $X_t = \tilde{\mu}_1 + \varepsilon_t$ to $X_t = \mu_2 + \varepsilon_t$; there is no reference to forecasts at all, let alone medium term ones.

The book communicates a certain uneasiness, possibly defensiveness, which is brought out in a number of ways. Symptomatic of this are the following two references to statisticians; the definition of a moving average is footnoted as being 'known to latter day, purist statisticians as an autoregressive process': apart from confusing a forecasting device with a model of a process this comment does not aid the reader at all. In chapter 8 informed statistical opinion is quoted as 'doubting the validity of fitting curves using a transformation of the time axis'. Surely it is the author's opinion as a forecasting expert that is needed but not given.

In fact the author draws on this experience very little apart from the choice of techniques described. There is little attempt to give realistic scenarios when particular series would arise, or why one would want to forecast them. In particular, the whole section on medium term forecasting uses one data set—annual road expenditure—to demonstrate the fitting of twelve different curves. (The exponential is the best fit as the series seems to simply mirror inflation.) For the three growth curves it is particularly inappropriate since there is no reason why road expenditure should follow an S shape. In my experience there is no shortage of valid examples.

In addition although most of the exponential smoothing work is well established there have been some innovations. An important innovation that gets no mention is the work on Bayesian forecasting by Harrison and Stevens (1971), and a reference to the various works on the comparison of the forecasting performance of various techniques, such as Makridakis and Hibon (1979), would have been illuminating. In summary, I found the book adequate at a mechanical level, but disappointing overall because of the author's uneasy presentation, and his reluctance to draw on his own experience or published experience to demonstrate, and set in context, the methods described.

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THE HANDBOOK OF FORECASTING: A MANAGER'S GUIDE, edited by Makridakis, Spyros and Wheelwright, Steven C., New York: Wiley, 1982. Price: £41.55/$66.45. Pages: 602.

Editor's note
In view of the high relevance and the potential importance of the *Handbook of Forecasting*, we asked two people to review it. George Craig is an academician (as are over 60 per cent of the *Handbook's* authors). Richard Cryer, a manager, represents the book's intended audience. (JSA)

Makridakis and Wheelwright's latest book on forecasting, *The Handbook of Forecasting: A Manager's Guide*, presents itself as 'an invaluable desk-top tool for practical, on-target forecasting' and a 'comprehensive, easy-to-use reference explain(ing) exactly which forecasting methods work, which don't—and why', and as a book which 'covers all the forecasting techniques you will need to plan for the future' and contains 'comprehensive indexes (that) put the expert's knowledge at your fingertips'. Are these claims fair? Read on.

Although *The Handbook of Forecasting* provides a valuable and eclectic range of well-written and generally relevant references on forecasting, it does not have the coverage, format and style of typical professional handbooks such as those published by Wiley's Ronald Press (e.g., *Production Handbook*, *Financial Handbook*, *Handbook of International Business*).

Moreover, the book is disappointing in that Makridakis and Wheelwright (M & W) have not taken full advantage of their impressive experience, knowledge and contacts in the forecasting field to compile and edit a legitimate handbook—one that is a significant evolution from their earlier texts. Such an evolution has been achieved by several authors—for example, the evolution over some 20 years of Ferber's (1963) editions of the text, *Market Research*, into the extraordinarily useful *Handbook of Marketing Research* (Ferber, 1974).

The base for M & W seems narrow. Consider that eight of the twelve chapters contributed by European academics are from INSEAD. Incidentally, many of these INSEAD chapters are too esoteric and theoretical to be relevant to the needs of line forecasting managers. Managers may, therefore, find it expedient to skip many of these readings.

To assess the format and style and coverage of *The Handbook of Forecasting*, the primary benchmarks used in this review are M & W (Makridakis and Wheelwright, 1978, 1979; Wheelwright and Makridakis, 1980) and the various published materials on forecasting that I use as a manager (e.g. see list of references). These publications suggest that forecasting be looked at on a number of dimensions, the most important of which are listed below. For each dimension, a major dichotomy is cited.

(i) Applications area (needs): industrial (private sector) vs. non-industrial (public and other sectors)
(ii) Approach (how-to): theory/general discussion vs. methods/procedures
(iii) Horizon: short-term vs. long-term
(iv) Data: population vs. sample
(v) Model: Non-causal (extrapolative time-series or history repeats itself) vs. causal (explicative or external factors determine events)
(vi) Methodology: quantitative (objective) vs. qualitative (subjective or judgemental)
(vii) Statistical estimation technique: point forecasting vs. interval forecasting

Accordingly, the coverage of *The Handbook* is reviewed on the basis of these criteria. A general assessment of the book precedes these detailed critiques. Such an explicit review is intended to help managers decide if it would be useful for them to purchase or read *The Handbook* and to help readers use the book.

General assessment
The Handbook provides a broad coverage of readings on forecasting methods and management on the following topics:

Part 1 (7 Chapters)—Role and application of forecasting in organizations
Part 2 (8 Chapters)—Approaches to forecasting
Part 3 (13 Chapters)—Forecasting challenges
Part 4 (5 Chapters)—Managing the forecasting function

However, the book is not organized and edited in a way that makes it easy for the reader to find information. This is the book's overriding weakness as a handbook.

The Handbook makes a significant departure from the apparently timetested, imitated and, to me, useful organizational formats of M & W (Makridakis and Wheelwright, 1978, 1979; Wheelwright and Makridakis, 1980). In fact, *The Handbook* exhibits no obvious structure. Almost 75 per cent of the