

Chapter 1

MULTIPLE CHOICE TEST BANK

Note: The correct answer is denoted by **.

1. Which of the following does not require sophisticated quantitative forecasts?
 - A) Accounting revenue forecasts for tax purposes.
 - B) Money managers use of interest rate forecasts for asset allocation decisions.
 - C) Managers of power plants using weather forecasts in forecasting power demand.
 - D) State highway planners require peak load forecasts for planning purposes.
 - E) All the above require quantitative forecasts. **
2. Under what circumstances may it make sense not to prepare a business forecast?
 - A) No data is readily available.
 - B) The future will be no different from the past. **
 - C) The forecast horizon is 40 years.
 - D) There is no consensus among informed individuals.
 - E) The industry to forecast is undergoing dramatic change.
3. What is most likely to be the major difference between forecasting sales of a private business versus forecasting the demand of a public good supplied by a governmental agency?
 - A) Amount of data available.
 - B) Underlying economic relationships.
 - C) Lack of market-determined price data for public goods. **
 - D) Lack of historical data.
 - E) Lack of quantitative ability by government forecasters.
4. Which of the following points about supply chain management is incorrect?
 - A) Forecasts are required at each step in the supply chain.
 - B) Forecasts of sales are required for partners in the supply chain.
 - C) Collaborative forecasting systems across the supply chain are needed.
 - D) If you get the forecast right, you have the potential to get everything else right in the supply chain.
 - E) None of the above. **
5. Which of the following is not typically part of the traditional forecasting textbook?
 - A) Classical statistics applied to business forecasting.
 - B) Use of computationally intensive forecasting software. **
 - C) Attention to simplifying assumptions about the data.
 - D) Discussion of probability distributions.

- E) Attention to statistical inference.
6. Which subjective forecasting method depends upon the anonymous opinion of a panel of individuals to generate sales forecasts?
- A) Sales Force Composites.
 - B) Customer Surveys.
 - C) Jury of Executive Opinion.
 - D) Delphi Method. **
 - E) None of the above.
7. Which subjective sales forecasting method may have the most information about the spending plans of customers for a specific firm?
- A) Sales Force Composites. **
 - B) Index of consumer sentiment.
 - C) Jury of Executive Opinion.
 - D) Delphi Method.
 - E) None of the above.
8. Which subjective sales forecasting technique may have problems with individuals who have a dominant personality?
- A) Sales Force Composites.
 - B) Customer Surveys.
 - C) Jury of Executive Opinion. **
 - D) Delphi Method.
 - E) None of the above.
9. Which of the following methods is not useful for forecasting sales of a new product?
- A) Time series techniques requiring lots of historical data. **
 - B) Delphi Method.
 - C) Consumer Surveys.
 - D) Test market results.
 - E) All the above are correct.
10. Which of the following is not considered a subjective forecasting method?
- A) Sales force composites.
 - B) Naive methods. **
 - C) Delphi methods.
 - D) Juries of executive opinion.
 - E) Consumer surveys.
11. Which of the following is not an argument for the use of subjective forecasting models?

- A) They are easy for management to understand.
 - B) They are quite useful for long-range forecasts.
 - C) They provide valuable information that may not be present in quantitative models.
 - D) They are useful when data for using quantitative models is extremely limited.
 - E) None of the above. **
12. Forecasts based solely on the most recent observation(s) of the variable of interest
- A) are called “naive” forecasts.
 - B) are the simplest of all quantitative forecasting methods.
 - C) leads to loss of one data point in the forecast series relative to the original series.
 - D) are consistent with the “random walk” hypothesis in finance, which states that the optimal forecast of today's stock rate of return is yesterday's actual rate of return.
 - E) All the above. **
13. You are given a time series of sales data with 10 observations. You construct forecasts according to last period’s actual level of sales plus the most recent observed change in sales. How many data points will be lost in the forecast process relative to the original data series?
- A) One.
 - B) Two. **
 - C) Three.
 - D) Zero.
 - E) None of the above.
14. Suppose you are attempting to forecast a variable that is independent over time such as stock rates of return. A potential candidate-forecasting model is
- A) The Jury of Executive Opinion.
 - B) Last period’s actual rate of return. **
 - C) The Delphi Method.
 - D) Last period’s actual rate of return plus some proportion of the most recently observed rate of change in the series.
 - E) None of the above.
15. Measures of forecast accuracy based upon a quadratic error cost function, notably root mean square error (RMSE), tend to treat
- A) levels of large and small forecast errors equally.
 - B) large and small forecast errors equally on the margin.
 - C) large and small forecast errors unequally on the margin. **
 - D) every forecast error with the same penalty.
 - E) None of the above.
16. Which of the following is incorrect? Evaluation of forecast accuracy

- A) is important since the production of forecasts is costly to the firm.
 - B) requires the use of symmetric error cost functions.
 - C) is important since it may reduce business losses from inaccurate forecasts.
 - D) is done by averaging forecast errors.
 - E) both b) and d) are incorrect. **
 - F) both a) and b) are incorrect.
17. Which of the following measures of forecast accuracy can be used to compare “goodness of fit” across different sized variables?
- A) Mean Absolute Error.
 - B) Mean Absolute Percentage Error. **
 - C) Mean Squared Error.
 - D) Root Mean Squared Error.
 - E) None of the above.
18. Which of the following measures is a poor indicator of forecast accuracy, but useful in determining the direction of bias in a forecasting model?
- A) Mean Absolute Percentage Error.
 - B) Mean Percentage Error. **
 - C) Mean Squared Error.
 - D) Root Mean Squared Error.
 - E) None of the above.
19. Which measure of forecast accuracy is analogous to standard deviation?
- A) Mean Absolute Error.
 - B) Mean Absolute Percentage Error.
 - C) Mean Squared Error.
 - D) Root Mean Squared Error. **.
20. Which of the following measures of forecast performance are used to compare models for a given data series?
- A) Mean Error.
 - B) Mean Absolute Error.
 - C) Mean Squared Error.
 - D) Root Mean Squared Error.
 - E) All of the above. **
21. What values of Theil’s U statistic are indicative of an improvement in forecast accuracy relative to the no-change naive model?
- A) $U < 0$.

- B) $U = 0$.
 - C) $U < 1$. **
 - D) $U > 1$.
 - E) None of the above.
22. RMSE applied to the analysis of model forecast errors, treats
- A) levels of large and small forecast errors equally.
 - B) large and small forecast errors equally on the margin.
 - C) large and small forecast errors unequally on the margin. **
 - D) every forecast error with the same penalty.
23. Because of different units of various data series, which accuracy statistic can be used across different series?
- A) MSE.
 - B) RMSE.
 - C) MAPE. **
 - D) MAE
 - E) None of the above.
24. Some helpful hints on judging forecast accuracy include:
- A) Be wary when the forecast outcome is not independent of the forecaster.
 - B) Do not judge model adequacy based on large one-time errors.
 - C) Do not place unwarranted faith in computer-based forecasts.
 - D) Keep in mind what exactly you are trying to forecast.
 - E) All of the above. **
25. Which of the following is not an appropriate use of forecast errors to assess the accuracy of a particular forecasting model?
- A) Examine a time series plot of the errors and look for a random pattern.
 - B) Examine the average absolute value of the errors.
 - C) Examine the average squared value of the errors.
 - D) Examine the average level of the errors. **
 - E) None of the above.
26. Which of the following forecasting methods requires use of large and extensive data sets?
- A) Naive methods.
 - B) Exponential smoothing methods.
 - C) Multiple regression. **
 - D) Delphi methods.
 - E) None of the above.

27. When using quarterly data to forecast domestic car sales, how can the simple naive forecasting model be amended to model seasonal behavior of new car sales, i.e., patterns of sales that arise at the same time every year?

- A) Forecast next period's sales based on this period's sales.
- B) Forecast next period's sales based on last period's sales.
- C) Forecast next period's sales based on the average sales over the current and last three quarters.
- D) Forecast next period's sales based on sales four quarters ago. **
- E) None of the above.

ESSAY/PROBLEM EXAM QUESTIONS

1. The State of Oregon has a law requiring that all state revenue, raised in excess of what had been forecast, be refunded to taxpayers. Besides making state residents happy when revenue forecasts understate true revenues, what impact would such a law have on the quality of forecasts? Is revenue forecasting in Oregon a political exercise? How would such a provision affect your ability to generate unbiased forecasts? In your opinion, is this a good law?

ANSWER: The intent of the law was to force State planners to accurately forecast state budgets and that any revenue that exceeded forecasts could not simply be spent by politicians.

The problem is that forecasters will have skewed incentives, which is an unforeseen consequence of this statute. For instance, state revenue forecasters may find that it makes politicians happy when revenues are under forecast since taxpayers get a kicker check in the mail from the State of Oregon. On the other hand, forecasters could be forced to subjectively increase revenue estimates so as not to pay out the forecast-error surplus.

Is this a good law? Not from the forecasters prospective, who should be concerned with forecast accuracy and not the political consequences of a forecast error of a given type.

2. Comment on the following quote by a recent graduate from Quant-Tech: "Nobody in their right mind uses subjective forecasting techniques today. They are always biased and contain somebody else's opinion, which is certainly nothing that can be trusted."

ANSWER: Besides not being true, this comment ignores the simple fact that subjective forecasts may contain valuable information that may not be available from quantitative forecasting methods. For example, situations in which little or no data exist may require subjective forecasts. In addition, some forecasters are quite skilled in making subjective forecasts of the business cycle. Finally, in Chapter Eight the composite forecast process is described in which subjective methods play an important role.

3. Contrast and compare forecasting for a private for-profit firm and for a public not-for-profit firm. Are the two necessarily different from the perspective of the forecaster?

ANSWER: Not really. Quantitative methods are equally applicable for profit firms and not-for-profit firms. However, many public goods are not valued in the marketplace, but instead are valued in the political process. This implies that, in some cases, adequate price data for public forecasting may not be available.

4. How do forecast practitioners rank various forecasting models applied to any given problem? Which technique is used most often in practice and why? Explain in-sample and out-of-sample forecast model evaluation.

ANSWER: In most cases, the forecaster will have available several different models to forecast a given variable. To select which model is the best, forecasters commonly employ a measure called root-mean-squared-error (RMSE), which is essentially the standard deviation of forecast errors. It is also very important to distinguish between fit and accuracy. Fit refers to in-sample model performance, whereas accuracy refers to out-of-sample model performance. In many cases models that perform well in sample perform very poorly out-of-sample. Since forecast accuracy is always first priority, emphasis should be placed on out-of-sample RMSE rather than model fit. This is usually accomplished by use of a holdout period in the sample. This is a period at the end of the sample in which forecasts from earlier periods can be made to access the accuracy of a given model.

5. You are the quality control manager in a plant that produces bungee cords. Your responsibility is to oversee the production of the synthetic material in the cord. Specifically, your responsibility is to ensure that bungee cords have the correct elastic qualities to avoid personal injury lawsuits.

Your efforts are compounded in that you use two procedures for testing bungee cord elasticity, procedure A and procedure B. Procedure A is generally subject to error, but few are very large. On the other hand, procedure B is very accurate but subject to large one-time errors. Specifically, forecast errors in evaluating the dynamic cord elasticity per pound of load are presented below for a random sample of four cords.

Procedure A Forecast Errors	Procedure B Forecast Errors
.01	.008
-.01	-.009
-.02	-.008
.02	.03

Using mean-absolute deviation (MAD) and mean-squared error (MSE), evaluate the relative accuracy of each procedure. Which procedure will you use in quality control testing?

ANSWER: To find mean-absolute deviation (MAD) we simply sum the absolute values of each forecast error and divide by sample size of four. Accordingly, MAD for Procedure A is .015, whereas the MAD for Procedure B is .01375. Accordingly, using mean-absolute deviation criterion, Procedure B has the lowest average absolute error and therefore is superior.

On the other hand, the squared forecast errors are:

Procedure A Squared Errors	Procedure B Squared Errors
.0001	.000064
.0001	.000081
.0004	.000064
.0004	.0009
SUM = .001	SUM = .0011
MSE = .00025	MSE = .000275

Accordingly, under mean-squared error (MSE) criterion, Procedure A has the lowest average squared error and there is superior.

The quality control manager thus faces a dilemma: Under MAD Procedure B is superior, under MSE Procedure A is superior. What should the manager do? Ultimately this depends on the relative costs of large versus small forecast errors underlying the accuracy measures. We suspect that large errors are more costly to the firm than small, and accordingly apply the MSE measure and conclude that Procedure A is superior.