

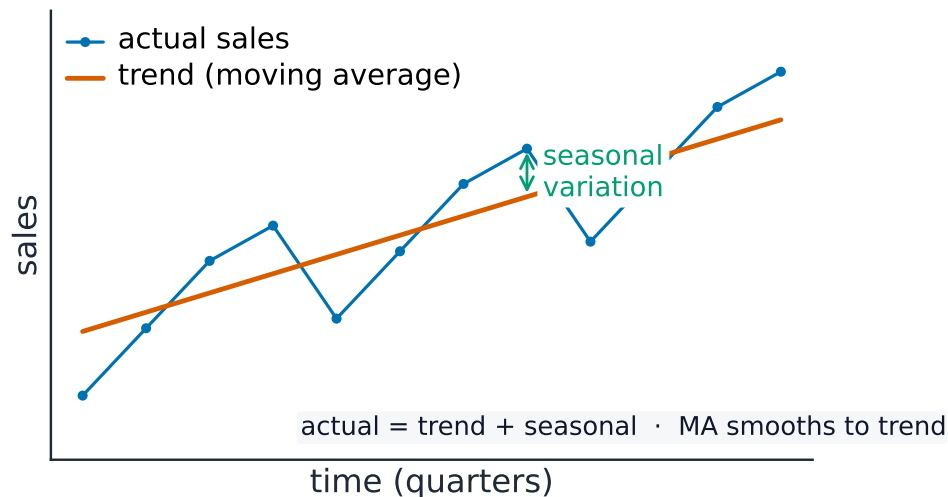
Exercise walk-through

8.1

Marketing analysis

A-Level Business

Sales forecasting and time-series



Time-series analysis

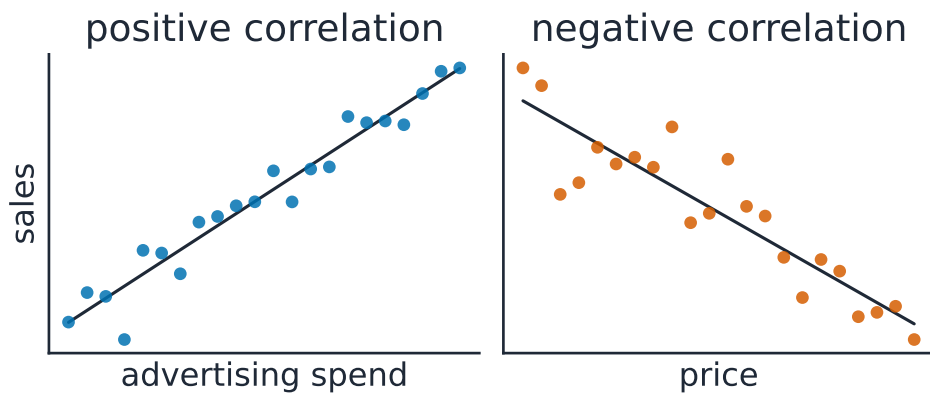
splits past sales into:

- the **trend** – long-run direction (a **moving average** smooths it)

- **seasonal variation** =
actual – trend

Forecasts **extrapolate** the trend – never certain.

Correlation



correlation $\neq$ causation · line of best fit shows direction

Correlation measures how two things move together:

- **positive** – both rise together
- **negative** – one rises as the other falls

Correlation is not causation
– another factor may be at work.

Reading a scatter, reading an elasticity

Positive correlation **Positive correlation** : when one rises, the other rises too.

Negative correlation **Negative correlation** : when one rises, the other falls.

Correlation is not cause A strong line can still be a coincidence, or both variables can follow a third. Say what the causal mechanism would be.

Globalisation – the world becoming more connected – has made both the data and the rival's response arrive faster.

Reading a time series, and forecasting from it

the trend

the underlying direction over several years, found by a moving average

seasonal variation

the **regular rise and fall within a year** – ice cream sells more in summer

cyclical variation

the swing with the business cycle, over several years

random variation

what is left, and what cannot be forecast

extrapolation

a forecast **extends the trend into the future** and then **adds the usual seasonal variation** back

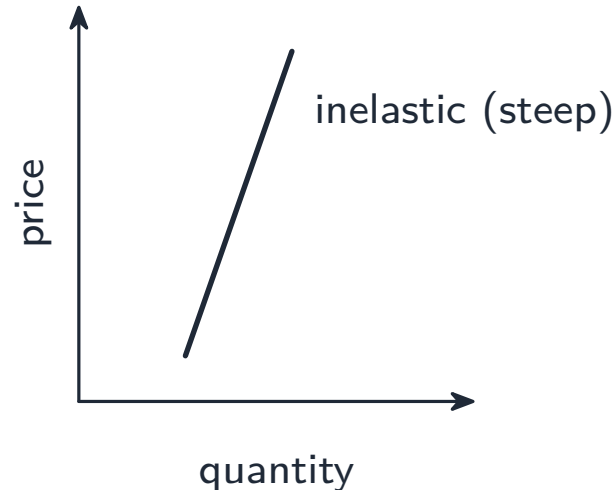
the caution

extrapolation assumes the past pattern continues – which a shock breaks

With quarters 100, 140, 180, 120 the four-quarter average is 135, so Q1's seasonal variation is -35. Add that back to the projected trend to forecast next Q1.

Elasticity in marketing decisions

- **PED**
 - elastic: cut price for more revenue; inelastic: raise it
- **YED**
 - how sales move with incomes (booms vs slumps)
- **XED**
 - effect of a rival's or partner's price



Exercises 2.1·2.3

2.1 Define the term *sales forecasting*.

[2]

2.2 A quarter has a trend value of 500 units and actual sales of 560 units. Calculate the seasonal variation.

[2]

2.3 State the difference between *positive* and *negative* correlation.

[2]

Exercises 2.1·2.3

2.1 Define the term *sales forecasting*. [2]

2.1

- predicting future sales from past data and market knowledge (2 for a clear definition; 1 for a partial idea)

2.2 A quarter has a trend value of 500 units and actual sales of 560 units. Calculate the seasonal variation. [2]

2.2

- $560 - 500 = +60$ units (2; award 1 for a correct method with the wrong figure)

2.3 State the difference between *positive* and *negative* correlation. [2]

2.3

- positive correlation: as one variable rises, the other rises too; negative correlation: as one rises, the other falls (2 for a clear difference; 1 for a partial idea)

Exercise 3.1

3.1 Explain one benefit to a business of accurate sales forecasting.

[3]

Exercise 3.1

3.1 Explain one benefit to a business of accurate sales forecasting. [3]

3.1

- [3] **AO1** 1 – name a benefit (better planning of production, staff, stock or cash). **AO2** up to 2 – develop it, e.g. a good forecast lets the firm order the right amount of stock
- no shortage or waste
- lower costs (2 developed / 1 limited)

Exercise 3.2 (a)

3.2 A firm forecasts a **trend** of 800 units for next quarter. The average **seasonal variation** for that quarter is -120 units.

(a) Calculate the forecast sales for the quarter.

[2]

Exercise 3.2 (a)

3.2 A firm forecasts a **trend** of 800 units for next quarter. The average **seasonal variation** for that quarter is -120 units.

(a) Calculate the forecast sales for the quarter.

[2]

(a)

- forecast = $800 + (-120) = 680$ units (2; award 1 for a correct method with the wrong figure)

Exercise 3.2 (b)

3.2 A firm forecasts a **trend** of 800 units for next quarter. The average **seasonal variation** for that quarter is -120 units.

(b) Analyse one limitation of relying on this forecast.

[4]

Exercise 3.2 (b)

3.2 A firm forecasts a **trend** of 800 units for next quarter. The average **seasonal variation** for that quarter is -120 units.

(b) Analyse one limitation of relying on this forecast.

[4]

(b)

- [4] AO1/AO2 1–2 + AO3 up to 2 – e.g. the forecast assumes past patterns continue
- a new competitor or changed tastes could break the trend
- the actual figure may differ a lot
- production based on it could be too high or too low

Exercise 3.3

3.3 Evaluate the usefulness of time-series analysis to a business that is planning production. [12]

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3.3 Evaluate the usefulness of time-series analysis to a business that is planning production. [12]

3.3

- [12] **AO1** 2 / **AO2** 2 / **AO3** 2 / **AO4** up to 6. **Useful:** smooths out noise to show the trend, reveals seasonality, and supports planning of output, stock and staff. **Limited:** it assumes past patterns continue (extrapolation), ignores sudden change, and the forecast is only as good as the data. **Judgement:** time-series analysis is a helpful planning guide, especially for a seasonal product, but it should be combined with market knowledge – its value depends on how stable the market is