



# Graphing and interpreting errors in Budget Forecasting



## Part 1: Budget forecasting errors over time

Errors in Budget forecasting are often represented as a percentage of the total economic output of a country, or gross domestic product (GDP). This is a more realistic measure of the size of a Budget forecasting error as it is relative to the size of an economy. The errors in Budget forecasting represented as a percentage of GDP are shown in the table below.

### Errors for One-Year Forecasts, as a Percentage of GDP, 2011–2022

| Year ending 30 June | Budget outcome as % of GDP | Error in forecasts as % of GDP |
|---------------------|----------------------------|--------------------------------|
| 2011                | -3.3                       | -0.4                           |
| 2012                | -2.9                       | -1.4                           |
| 2013                | -1.2                       | -1.3                           |
| 2014                | -3.0                       | -1.9                           |
| 2015                | -2.3                       | -0.5                           |
| 2016                | -2.4                       | -0.3                           |
| 2017                | -1.9                       | 0.3                            |
| 2018                | -0.6                       | 1                              |
| 2019                | 0.0                        | -0.8                           |
| 2020                | -4.3                       | -4.7                           |
| 2021                | -6.5                       | 4.5                            |
| 2022                | -1.4                       | 3.6                            |

- 1 Graph the Budget outcomes and errors in percentage forecasts for the period between 2010-2022 on one chart.
- 2 What type of graph did you select to use?
- 3 Why did you choose this type of graph?
- 4 Interpret the graph and write a paragraph describing your interpretation using the following framework.



**Framework for interpreting graphs**

|                                 |  |
|---------------------------------|--|
| <b>Introduction</b>             | <ul style="list-style-type: none"> <li>■ Describe what the graph shows.</li> <li>■ ‘This graph shows ...’</li> <li>■ Identify and list any general patterns, trends or relationships.</li> </ul> |
| <b>Trend 1</b>                  | <ul style="list-style-type: none"> <li>■ Describe the first pattern or trend.</li> <li>■ Provide evidence from the graph to support the pattern, trend or relationship.</li> </ul>               |
| <b>Additional trends</b>        | <ul style="list-style-type: none"> <li>■ Repeat the above for any additional patterns, trends or relationships.</li> </ul>   |
| <b>Anomalies or differences</b> | <ul style="list-style-type: none"> <li>■ Describe any anomalies or different data points.</li> <li>■ Provide evidence from the graph.</li> </ul>   |

**Part 2 – Distribution of Budget forecasting errors**

**1** Open a spreadsheet and put the percentage errors in a table with the following headings.

|                | Percentage error |
|----------------|------------------|
|                | 1.4              |
|                | -0.4<br>etc.     |
|                |                  |
| Average (mean) |                  |
| Median         |                  |

- 2** Use the SORT function to sort the percentage errors from lowest to highest.
- 3** Set up formulas to calculate the average (mean) and another to calculate the median.
- 4** What is the average percentage error? What is the median percentage error?
- 5** Are these figures similar? Which one is higher and why?
- 6** On the same spreadsheet (you should have a bit of space to the right of your first table) set up another table like this:

| Category | Number of errors in this category |
|----------|-----------------------------------|
| -5 to -4 |                                   |
| -4 to -3 |                                   |
| -3 to -2 |                                   |
| -2 to -1 | 3                                 |
| -1 to 0  |                                   |
| 0 to 1   |                                   |
| 1 to 2   |                                   |
| 2 to 3   |                                   |
| 3 to 4   |                                   |
| 4 to 5   |                                   |
| Total    |                                   |

- 7** Count the number of percentage errors in each category and add this information to the table. The -2 to -1 range has been done for you.
- 8** Put in a formula at the bottom of the column to add up the number of percentage errors you have. If the Total is not 12, check the information you’ve entered.
- 9** Insert a chart to display this information. Choose your style and colours. Make sure the chart has labels and a title.  
Refer to *Building charts and tables – How-to-sheet*.
- 10** Describe the overall pattern of the data (shape, center, spread), and any deviations from the pattern (outliers). If necessary, use the framework provided above.

