

Memo

To: Marcus Crudden – Executive Director, Price Monitoring and Regulation, ESC

From: Dinesh Kumareswaran, Dr James Key

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Subject: RBA F2 vs F16 series



Use of the F16 series

In 2019, Frontier Economics developed a discount rate model for the Essential Services Commission (ESC). That model estimated a number of key parameters used by the ESC for the purposes of making regulatory determinations. Specifically, the model produced:

- Estimates of the risk-free rate;
- Estimates of the required return on debt (by adding to the estimated risk-free rate an estimate of the debt risk premium); and
- Forecasts of breakeven inflation.

A key dataset used by the discount rate model was F16 data series published by the Reserve Bank of Australia (RBA), which provided daily mid rates of Australian Government Securities. The model allows the ESC to select a particular sampling date from which to estimate the three parameters above. For each sample date selected by the ESC, the model would identify Government bond with maturity date:

- closest to, but below or equal to, 10 years from the sample date; and
- closest to, but above or equal to, 10 years from the sample date.

The discount rate model would then perform linear interpolation between the historical yields on these two bonds to derive the rate of a bond with a tenor of exactly 10 years.

This process could be performed for nominal treasury bonds to obtain nominal interest rates, and also for indexed bonds to allow calculation of breakeven inflation.¹

¹ A forecast of breakeven inflation forecast can be obtained by comparing the nominal 10-year rate to the indexed 10-year rate using the Fisher equation.



The RBA discontinued the F16 series from 31 March 2023 due to commercial reasons.² This means that the ESC no longer has public access to the bond yields formerly published by the RBA in the F16 series. Consequently, the ESC's discount rate model needed to be revised to make use of alternative data that the RBA continues to publish.

Use of the F2 series

The F2 series published by the RBA provides yields on 10-year nominal Australian government bonds and 10-year Australian inflation-indexed bonds. While formerly the approach was to provide the yield on selected bonds with a maturity closest to 10 years, following the discontinuation of the F16 series the RBA has changed methodology to provide interpolated yields with 10-year tenor. Thus, in principle the rates would equal those obtained by interpolating the individual bond yields, as was formerly performed by the ESC's discount rate model using the F16 series.

Comparison of rates

We can compare the rates obtained using the F16 series and the revised F2 series between January 2021 and February 2023 since this is the period over which both series are simultaneously available.³ **Figure 1** compares the annualised yields produced by interpolating the now-discontinued F16 series and the new F2 series. The two series appear almost identical over the period analysed.

Figure 1: Comparison of annualised 10-year yield derived using the F16 and F2 series



Source: RBA data

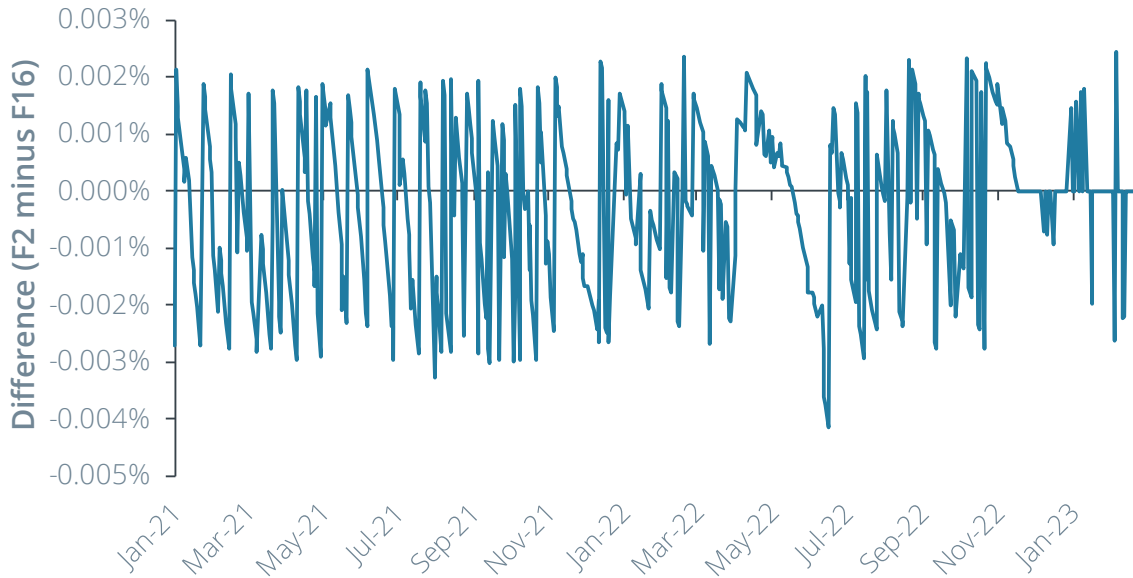
² <https://www.rba.gov.au/statistics/tables/changes-to-tables.html>

³ The revised F2 series backcasts the approach to January 2021. The most recent F16 data Frontier Economics had access to at the time this advice was prepared was to 28 February 2023.



Figure 2 presents the difference between the two series, which is typically less than 0.002% and is therefore likely to represent rounding differences only.

Figure 2: Difference between annualized 10-year yields



Source: RBA data

The difference is primarily due to the rounding of the data contained in the F2 series. If we compare the raw F2 rates to interpolated F16 rates rounded to the nearest 0.005% (noting that the F2 data are presented to the nearest 0.005%), we obtain the differences shown in **Figure 3**. The difference is precisely zero for most days, though for some days the F2 series is higher by 0.005%.

Figure 3: Difference between F2 10-year yields and rounded F16 derived interpolated 10-year yields



Source: RBA data



On the basis of the comparison, it appears that the revised F2 10-year nominal yield is providing results that are almost identical to those formerly obtained by interpolating the F16 rates, the only differences being due to rounding to the nearest 0.005%.

This rounding error is small and becomes even smaller when averaging over a sample period. Therefore, for all intents and purposes, it seems that the new F2 series published by the RBA is a very close substitute for the interpolated rates that could be obtained using the RBA's previous F16 series.

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