ANZ RESEARCH

INTEREST RATE STRATEGY
FAIR VALUE FOR THE NEW NZGS 2023 BOND

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Yesterday the DMO confirmed details of the new 2023 bond that was initially announced in *Budget 2011*. It is to be a 15 April 2023 bond, with a 5.50% coupon. What follows is a brief analysis of fair value for the bond.

SATURDAY MATURITY

The maturity date selected fits with the normal NZGS convention of maturing on the 15th day of the month, and means the bond matures the same month as the new Australian Commonwealth Government Bond (ACGB). However, it is worth noting that 15 April 2023 is a Saturday, and the ACGB 2023 matures on 21 April 2023. The Saturday maturity will have a dramatic effect on pricing as the maturity date nears (with the yield in effect needing to triple the day before it matures), but the effect now is small. But it is not zero, and in fact, the effective loss of 2 days interest in around 12 year's time is worth around 0.2 basis points (or about $158 per $1m face value in present value terms).

WHAT'S FAIR VALUE?

The question on everybody's lips is, "where" will the bond go in the upcoming tender? An analysis of inaugural tenders of new issues in the past offers some guide, but this history is patchy. For example, the new 2021 bond had a 52 point tail (no, that's not a typo) when it was first issued in 2009. By contrast, the first tender for 2019s last September only had a 13 point tail. Demand conditions at the time obviously play a role, and of course, successful bidders in NZGS tenders are not allocated at the clearing yield (like a Dutch auction). Rather, they are allocated at their respective bid yields, so not everyone gets allocated at the highest accepted yield. Nonetheless, history does tend to show that new issues do tend to trade at some premium to fair value, based on traditional measures like interpolation or extrapolation. How high this premium is depends on demand conditions at the time, which we will return to later.

BUILDING BLOCKS

That said, what are the basic building blocks of fair value? Broadly speaking, we suggest they are:

> Fair value yield = Interpolated/Extrapolated Yield + Curve Slope Adjustment + Illiquidity Premium + Other Adjustments

So what are these components? The first – the interpolated/extrapolated curve appears obvious, but it is not. For example, do you interpolate or extrapolate by maturity or by modified duration? Because of differing coupons and the extreme slope of the curve, it does make a difference. We prefer the latter (which is an extrapolation in this case), and have calculated both in the analysis that follows.

The second – curve slope adjustment – is a matter of judgement. Linear interpolation does not take the inherent "bow" in the curve into account, yet it exists. As the charts overleaf show, if one simply extrapolates the curve (light blue line), this overestimates the yields – hence the adjustment (dark blue line). There are many ways to factor this in, but we use a simple proportional formula. It is not perfect, but nothing is, and the proportional method is intuitive. Simply put, we assume that if the slope of the curve between 7 years and 9 years is 60% less than the slope between 5 years and 7 years, then the slope of the

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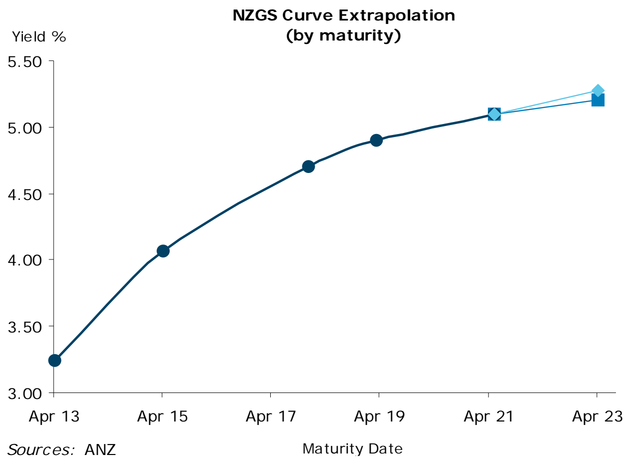
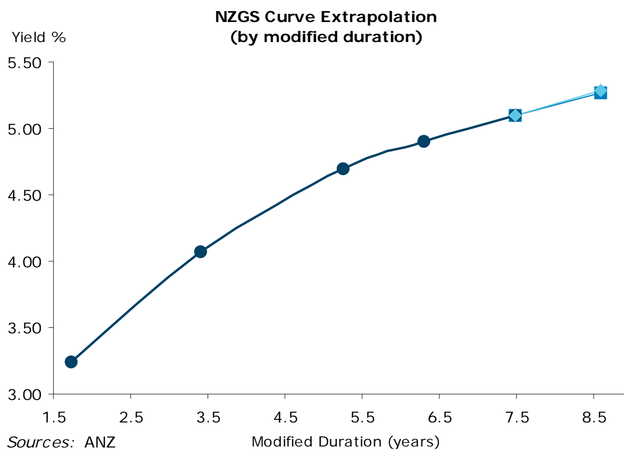
curve between 9 years and 11 years will be 60% less than the slope between 7 years and 9 years. We provide measures for extrapolation based on maturity and modified duration.





The third – illiquidity premium – is a judgement call. Whatever this turns out to be will be easy to justify in hindsight, as it is a function of demand. However, what we do know is that demand for long bonds has been strong recently, and on that basis, we expect this premium to be lower than normal – perhaps in the range of 3-5 basis points. For what follows, we will assume 5 basis points.

The fourth – the other adjustment – is mechanical, and in this case we make an adjustment for the fact that the bond matures on a Saturday, which as noted, is worth 0.2 basis points.

Having defined the building blocks, we will now assemble them:

EXTRAPOLATION METHOD	BY MATURITY	BY MOD DURATION
Linear Extrapolation	5.28%	5.29%
Curve Adjustment	-0.075%	-0.022%
Illiquidity Premium	0.050%	0.050%
Other Adjustment	0.002%	0.002%
Fair Value Estimate	**5.254%**	**5.316%**
Spread to NZGS 2021	***0.154%***	***0.216%***

Pricing assumptions: (yesterday's close)		
	NZGS 12/17	4.700
	NZGS 3/19	4.900
	NZGS 5/21	5.100

ANOTHER WAY

Because the swap curve is quoted past 10 years, we could also arrive at fair value by interpolating the 10 year and the 12 year swap yield, subtracting an assumed swap spread, and adding a liquidity premium and an adjustment for the Saturday maturity. We say assumed swap spread because there is no 12 year swap spread quoted, so we must assume one. Because the swap spread curve is irregular, it makes no sense to extrapolate it and instead, we prefer to simply assume the 12 year spread will be the same as the 10 year spread. Because this estimation is imprecise, and the bond maturity is so close to 12 years, there is little added value in making precise curve slope adjustments. At current levels we get the following:

Interpolated Swap Curve	5.296%
Less Swap Spread	-0.055%
Illiquidity Premium	0.050%
Other Adjustment	0.002%
Fair Value	**5.293%**
Spread to NZGS 2021	***0.193%***

COUPON

Although the level of coupon is not significant for many investors, it is interesting that the DMO set it at 5.5% and not 5% (as we thought they might). The DMO have a practice of setting the coupon "at market" on issue, rounding it to the nearest 0.5%. The fact that it is 5.5% and not 5% is mildly suggestive that the DMO expect the bond to "go" nearer 5.5% than 5%. This sits well with our analysis.

CONCLUSION

We expect the new 2023 bond to trade at a spread of between 15 to 22 basis points to the NZGS 2021 bond when it's tendered on June 10th (this Friday). Based on last night's closing levels for the other bonds, this is a yield of between 5.25% and 5.32%.

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