MANY HAPPY RETURNS

THE ABILITY TO COMPARE SHORT-TERM
INVESTMENT PRODUCTS IS FUNDAMENTAL
TO TREASURY. DOUG WILLIAMSON EXPLAINS
HOW TO CALCULATE AND APPLY YIELDS

A fundamentally important task for treasurers is to oversee the
organisation's cash flow and shorter-term investments. To do
this successfully, the treasurer must:
- Understand the cash flows from investments; and
- Be able to compare different investment products consistently.

First things first
Essential considerations for short-term investment are safety,
liquidity and yield, in that order (see *The Treasurer*, June 2015,
page 58). Once safety (or 'security') and liquidity are satisfied,
we can move on to compare yields.

This article focuses on calculating and applying yields. These
are essential foundations for making valid comparisons.

Happy returns
Say we invest 3,000,000 units of our local currency for a 90-day
period, expecting to get back 3,030,000 at the end. The gain, surplus
or interest is the difference between the amount at the end and the
amount at the start.

In this case it will be 3,030,000 – 3,000,000 = 30,000.

Yield appeal
To make returns comparable, gains are generally expressed as
a percentage interest rate, also known as 'yield'.

The gain of 30,000 on the starting amount of 3,000,000 represents
a yield (r) of:

(r) = Gain / Starting amount
= 30,000 / 3,000,000 = 0.01 (= 1%)

This is the yield per 90-day period. It is the 'periodic yield' for
90 days.

Yield pick-up
If the periodic yield were greater, for example, 1.02% for the same
90-day period, the interest or gain for the 90-day period would be
correspondingly greater. It would become:

3,000,000 x 0.0102 = 30,600.

For the same length of period, a greater periodic yield indicates
a better deal, all other things being equal.

Where's the catch?
But all other things are hardly ever equal in an efficient market. This is
usefully expressed in the phrase 'There's no such thing as a free lunch'.

'No free lunch' means, if it looks like we're getting an extra 0.02%
for free, we won't be. We will be paying for it in some way. There will
always be some catch or disadvantage.

Keeping that health warning in mind, let's continue calculating
with yields.

Quote unquote
In wholesale markets, yields are normally expressed as nominal,
or quoted, yields (R) per conventional year, rather than periodic
yields (r).

Short-term yields are normally quoted on a 'simple' basis, per
conventional year of 360 or 365 days. To convert between quotes
and periodic yields, we simply multiply or divide the rates by an
appropriate fraction.

Three million dollars
Let's apply this simple multiplication technique to calculate interest
for a short-term period, based on a quoted rate for short-term
US dollars, which uses a 360-day year.

You deposit $3m for 90 days at a quoted interest rate of 4%, based on a 360-day conventional year. Calculate the amount of interest you will enjoy.

Based on a Certificate in Treasury Fundamentals (CertTF) specimen paper question

Do the two-step

We'll work through this problem in two steps:
1. Adjust the quoted interest rate to get the periodic yield.
2. Calculate the interest from the periodic yield.

(1) Periodic yield (r) from quoted rate (R)

r = R x days / year

Where:

R = quoted yield per conventional year = 0.04 (= 4%)

days = number of days in the investment period = 90

year = number of days in a conventional year = 360 for US dollars here

r = 0.04 x 90 / 360

= 0.01 per 90 days

(2) Interest from periodic yield

Interest = start amount x periodic yield

= $3,000,000 x 0.01

= $30,000

More days in a year

Our calculation of $30,000 of interest for short-term US dollars used a 360-day year. Some other currencies and markets, for example, short-term sterling (£), use a 365-day conventional year.

Let's apply a 365-day year for £ now, in a Certificate in Treasury (CertT) question.

Three million pounds

Your organisation has an opportunity to invest £3m in a Certificate of Deposit (CD). Calculate the redemption value for such a CD which matures in 90 days, quoted in the market at a yield of 4%.

Based on a CertT specimen paper question

This question mentions the 'redemption value' for a CD. That means the total cash we will receive back at the final maturity, in 90 days' time.

One, two, three

For this question we need three steps. The first two are the same as before:
1. Calculate the periodic yield.
2. Calculate the interest from periodic yield, as before.
3. Finally, add the interest to the start amount, to calculate the redemption value.

(1) Periodic yield

r = R x days / year

R = quoted yield = 0.04

days = days in investment period = 90

year = days in conventional year = 365 for £ this time

r = 0.04 x 90 / 365

= 0.009863 per 90 days (rounded to the nearest 0.0001%)

(2) Interest

Interest = start amount x periodic yield

= £3,000,000 x 0.009863

= £29,589

(3) Redemption value = end amount

End amount = start amount + interest

= 3,000,000 + 29,589

= **£3,029,589**

Different conventions, less interest

When we invested £3m at 4% for 90 days, we got back £29,589 of interest. Do you remember when we invested $3m at 4% for the same period, we got a bigger number for our interest, of $30,000?

This difference results from short-term £ using a 365-day conventional year to calculate interest, compared with 360 days for US dollars. These quoting conventions are sometimes known as ACT/365 fixed and ACT/360, respectively. 'ACT' refers to the 'actual' number of days in the investment period.

Beyond compare

We've seen that returns from fixed-rate short-term investments depend on several factors, including:
- Headline percentage rates;
- Quoting conventions;
- Currency;
- Amount invested; and
- Maturity.

Only when all of these variables, and others, are properly quantified and factored in, can we make properly informed comparisons and recommendations.

Rewarding returns

In this article we've applied different percentage rates and two different interest-quoting conventions. The next article builds on this foundation by investigating the important differences between yields and discount rates, and determining yields from more complex cash flows.

With many congratulations in advance on your next exam success.

Doug Williamson is a treasury and finance coach who wants you to enjoy handsome returns from your wise investment in learning