

## Topic 3: Bond Valuation: Fixed Income Analysis

\*\*\* Bonds are an important part of the global financial system. What's more, understanding bonds is a great way to reinforce concepts related to discounting and present value.

There is a underlying assumption in most of finance that the present value of expected future cash flows represents our best guess of a security's price—provided we use the correct discount rate. Hence, for bonds, you will hear the words “PV” and “Price” used interchangeably.

**Intro:** Good overview. Again, please disregard chapter references.

**3.1** Mover overview. This section is also nicely done!

**3.2** We will use the same cash flow diagrams in FIN 502. Please understand the cash flow signs (positive/up arrow vs. negative/down arrow).

Bond problems typically require the same 4 out of 5 inputs what we saw in Topic 2. Please review the Excel notes from Topic 2 if you are confused. Once you have 4 of 5 inputs, you can solve for the remaining (5<sup>th</sup>) value. As mentioned in the video, with bonds, we will typically be solving for PV or RATE.

Note that “RATE” is called “YTM” or “Yield to Maturity” when dealing with bonds. They mean the same thing in this section.

In the AT&T Bond Example (box to side), the text mentions years early 20X1 and end of 20X3 as years for the beginning and end of the bond. The notation could be confusing. To make your life easier, just assume specific years like 2011 & 2013 or 2021 & 2023.

**3.3** In the TVM Example Refresher (at the top), see the first sentence of the second paragraph. The way they word this sentence may make it sound like \$1,300 is coming in year 3, but \$1,300 is the total of the cash flows for 3 years.

In the first video, the words “Market Price” means “Our best estimate of the bond's market price”. Suppose we were to look at bond prices trading in a market. If the bond were trading for a lower price (lower than \$1,078.73 in this example) then we either:

- a) Made a mistake
- or
- b) Found an underpriced security (a good deal!!!)

In the second video, “Expected Return” and “Rate” and “YTM” are used interchangeably. Here the value is 6.345%.

The cash flows are from the company’s point of view. They get cash at time zero (positive number) and they make coupon payments and repay face value in the future (negative numbers).

We have provided an Excel example to accompany the second video in this section.

**3.4** “YTM” or “Yield to Maturity” is the return an investor earns if s/he holds a bond until maturity.

“Current Yield” is the return an investor earns if s/he holds a bond for one year and then sells it for the same price s/he bought the bond for.

The speaker is a bit imprecise here. Current yield is not necessarily an estimate of YTM. Think about zero coupon bonds if you want an example.

We have provided an Excel example to accompany the second video in this section.

**3.5** In the Semiannual YTM Example (box on the upper right), see paragraph 2. Previously, the presenters have said in videos that it doesn't matter which way the signs go as long as PV is opposite of PMT and FV. The presenters have even done examples both ways. In this example, the text says to *ALWAYS* put PV as a negative term. The statement is true in that the example is from the perspective of the bondholder...so it makes sense for PV to be negative. It could be confusing to first draw the diagrams both ways and then say here to always do it this way.

Zero coupon bonds will be very important for our class in October.

Please disregard jargon for now ... or, send any questions you may have to the class TA. He is available to answer questions via email and as they come up. An example of jargon: To “float” a bond means to “issue” a bond.

**3.6** Price-Yield Relationship: Paragraph 4 starts with “Why did the value of the bond increase?” The 6th sentence says “Decreasing the discount rate always increases the value of any cash flow today.” We think a better way to say the same thing is that it increases the PV of future cash flows.

Bond Pricing and Yields in Excel: The last paragraph talks about duration in the next section, but the next section is the end of topic practice exam. (duration isn't ever defined or covered.) Duration is an advanced concept that we will get to in class if possible. It is related to two

concepts: a) the weighted average life of the bond's payments; and b) the sensitivity of the bond's price to (level) shifts in the yield curve.

**3.7** Disregard Q.2. The bonds in our examples all have fixed coupon rates. The rate is fixed when the bond is issued and does not change in the future.

Disregard Q.5. There is not enough information to answer this question. The answer given has many embedded assumptions.

Disregard Q.9 if you want. This question covers duration. Alternatively, look over the answer and you can learn how finance professionals use duration.

For Q.13 no math is needed. Just think!

For Q.19, we have provided an Excel example. This problem cannot be done using the "4 of 5 input" method since the payments are not level over time.