

Coupon-paying notes and bonds

The US Treasury borrows for terms of 2 to 30 years using notes and bonds. Traditionally, the word note refers to a coupon-paying obligation with a term between one and ten years, and bond refers to coupon-paying obligations with longer terms. In modern corporate parlance note is now almost universally used for all coupon-paying obligations.

By tradition and convention coupons are paid every six months. For this reason a bond-equivalent yield uses semi-annual compounding. The US Treasury now has a set calendar for issuing its notes and bonds. For example, new ten-year notes are auctioned on the February, May, August, November quarterly cycle. Furthermore, maturity and interest payments on these notes is always the fifteenth day of the month. So the latest ten-year note is the August 15, 2027 note. We can look up this note on TreasuryDirect or Bloomberg to see that it has a coupon rate of 2.25

So if you were to buy \$10,000 par units of this bond today, and hold it until it matures you will receive the following cash flows:

Date	Cash Flow
February 15, 2018	112.50
August 15, 2018	112.50
February 15, 2019	112.50
August 15, 2019	112.50
February 15, 2020	112.50
August 15, 2020	112.50
February 15, 2021	112.50
August 15, 2021	112.50
February 15, 2022	112.50
August 15, 2022	112.50
February 15, 2023	112.50
August 15, 2023	112.50
February 15, 2024	112.50
August 15, 2024	112.50
February 15, 2025	112.50
August 15, 2025	112.50
February 15, 2026	112.50
August 15, 2026	112.50
February 15, 2027	112.50
August 15, 2027	10,112.50

There is a spot rate that corresponds to each of these dates, and the value of the note is obtained by discounting each cash flow at the appropriate spot rate.

In fact, you can envision this note as a portfolio of 20 zero-coupon bonds, and that is the way we compute its value.

In addition to its price (expressed as a percentage of par), we can characterize the value of a note using the concept of yield-to-maturity. The note's yield-to-maturity is that rate, which when used to discount the future cash flows, produces the note's price as the present value. Although this measure is widely used—especially as a means of characterizing the note's value—it does not contain much useful information, and should be used with caution. Two of the reasons for this are that: it only applies to the exact time frame of the note, and it assumes that all intermediate cash flows will be reinvested at the note's yield-to-maturity.