YIELD ESTIMATION OF PRIVATE DEBT FOR A GIVEN CAPITAL

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Abstract

Before the financial crisis in the year 2008-09, the valuation of fixed income securities was considered insignificant. However, with a high uncertainty introduced in the market post financial crisis, a lot of significance has been given to the calculation of the fair value of the fixed income securities. Under the discounted cash flow method, the fair value is calculated by discounting the cash flows pertaining to the fixed income (i.e. interest and principal payment in general) is discounted with the applicable interest/coupon rate prevalent in the market. Another term used for this is the applicable yield for the fixed income security. To estimate the yield for a security, one method is to estimate the synthetic credit rating of the company with the help of its most recent financials. Once we obtain the synthetic credit rating, we notch up and notch down the debt rating based on the seniority or level of subordination in the entire capital structure. The process is followed by estimating the yield applicable for the notched-up rating. However, this notching process is pretty qualitative is nature and the authenticity of it has always been debatable. The paper proposes a formula to estimate the yield for a security without performing the step of notching.

Introduction:

To estimate the fair market value of a fixed income security, the first step is to check if the company has sufficient residual value to cover the principal outstanding of the loan. Once the coverage of the loan is confirmed, the generally accepted methodology is to utilize the discounted cash flow ("DCF") method to arrive at the fair value. Also, as per the Accounting Standard Codification (ASC) 820 – Fair Value Measurements and Disclosures, the DCF method is the commonly used valuation method used by a market participant to estimate the fair value of an asset or a liability. Also, according to "*The Handbook of Fixed Income Securities*[i], "The price of any financial instrument is equal to the present value of the expected cash flow. The interest rate or discount rate used to compute the present value depends on the yield offered on comparable securities in the market."

The second step in determining the price of a fixed income instrument is to determine its cash flows. The cash flows of a fixed income security consist of

1. periodic coupon interest and principal payments, and
2. the principal outstanding value till expected redemption date.

For callable fixed income securities, the cash flow depends on whether the issuer elects to call the issue.

The third step is to estimate the yield which reflects the rate at which the cash flows for the fixed income security should be discounted. To estimate the yield applicable for the fixed income security, a synthetic rating analysis is performed using the most recent financials and key financial ratios of the company as of a date. Once, a credit rating is concluded for the company, an adjustment is made to account for the seniority or subordination for the specific fixed income security. As per our proposal, we propose to exclude the seniority adjustment and come up with a formula to calculate the yield directly, which gives us a more quantitative result. The following sections gives the details regarding the proposed formula.

Yield Estimation:

As a part of our proposal, to estimate the applicable yield for a fixed income security, the first step is to perform a synthetic rating analysis to come up with the credit rating of the company. As per an article on "Updated Summary Guidance for Notching Bonds, Preferred Stocks and Hybrid Securities of Corporate Issuers" published by Moody's Investor Service (Global Credit Research), the credit corporate credit rating obtained would be equivalent to the credit rating of senior unsecured security issued by the entity. Considering this assumption, once we obtain the credit rating of the company (equivalent to senior unsecured debt), we can estimate the yield for each level of fixed income security using the formula below:

$$Y_i = Y_C \left\{ 1 \pm p_i \left(\frac{Debt}{Total\ Capital} \right) \right\} + \alpha$$

Where:
Y_i=Yield of the security
Y_c=Corporate yield obtained from the Synthetic rating analysis (Equivalent to the yield for Senior Unsecured debt)
p_i=Midpoint of the security in terms of the capital structure (in percentage)
a=Company specific factors

Please note that the debt value entered should be cumulative in nature (i.e., while calculating the yield for a junior debt, we should consider all the debt values prior to it.

To understand the above formula in detail, let us assume a company XYZ,Inc. having a capital structure as follows:

Security Type	Balance (in $ millions)	Cumulative Balance	Mid-Point
First Lien	30.0	30	15 (=30/2)
Second Lien	10.0	40	35 (=30+10/2)
Senior Unsecured	20	60	50 (=40+20/2)
Junior Unsecured Debt	30.0	90	75 (=60+30/2)
Equity	10.0	100	95 (=90+10/2)

If the yield obtained from the synthetic rating is 10.0 percent, then the yield for each class of security is as follows:

First Lien:

$$Y_{First\ Lien} = 10\left\{1 + (0.15 - 0.50)\left(\frac{80}{100}\right)\right\} + \alpha$$

Assuming a company specific factor of 0.0 percent, we obtain a first lien yield of 7.2 percent. Using the similar approach, the yield for second lien and junior unsecured debt will be as follows leading to a value of 8.8 percent and 12.0 percent respectively.

$$Y_{Second\ Lien} = 10\left\{1 + (0.35 - 0.50)\left(\frac{80}{100}\right)\right\} + \alpha$$

$$Y_{Jr\ Unsecured} = 10\left\{1 + (0.75 - 0.50)\left(\frac{80}{100}\right)\right\} + \alpha$$

Note that α - company specific factors would include factors like collateral quality of secured debt, seniority of the loans, securitization, company specific qualitative factors, etc. The above proposed formula presents the linear formula to estimate the yield of each debt security in the capital structure. However, a further study is required to accurately justify the qualitative factors quantitatively.

Conclusion

There are different studies from different people and organization who proposed the qualitative nature of debt valuation. One of the most followed method is notching of synthetic credit rating. The above proposed formula presents a quantitative aspect to the estimation of yield for each debt class based on its capital structure by taking the initial corporate yield and capital structure along with the financials required for determining the synthetic credit rating. Given that it determines the yield by capturing all the major factors and the observed result directionally looks appropriate, it is assumed that the formula can be used in determination of yield for different types of debt in the capital structure.

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[i]   *Handbook of Fixed Income Securities* Fourth Edition, Edited by Frank J. Fabozzi and T. Dessa Fabozzi,,Chapter 4