

Hi and welcome,

This is a brief sample to provide you with an idea of what my AIS Exam study notes look like.

The style is to provide key content coverage followed by working examples.

If you have written the exam before, you can use my materials to get back up to speed very quickly.

If you are a first time writer, you can use my materials to help focus your study efforts and build your knowledge base.

If you have any questions, please do not hesitate to reach out to me by email.

All the best,



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Chapter 7

Analyzing and Selecting Debt Securities

Introduction

Along with stocks, debt securities are one of the most common investment vehicles in a portfolio. Companies, governments, and other institutions use debt securities to raise capital and fund their activities. When an investor buys a debt security, they lend their capital to the debt issuer. This chapter examines debt securities, focusing on how they are analyzed and selected.

How Are Debt Securities Analyzed and Selected?

Table 1 - Issuers of Debt Securities

GOVERNMENT ISSUERS	
The Government of Canada	The federal government is the largest and most creditworthy borrower in the Canadian debt market. Securities issued by the Government of Canada are backed by the general credit and taxation powers of the government itself.
Federal agencies and Crown corporations	The Canadian Parliament creates Crown corporations and federal agencies to be agents of the federal government. Their liabilities are the federal government's obligations. An example of one of the more well-known federal agencies is the Canada Mortgage and Housing Corporation (CMHC).
Provincial governments	The provinces are active borrowers in the Canadian bond market. Like the federal government, the provinces back their securities with general credit and taxation powers.
Municipal governments	Municipalities generally secure their debt with taxation powers over property and are usually required to maintain balanced budgets. Issues tend to be smaller than higher levels of government because borrowing needs are smaller.

At each interest payment date, the real coupon rate is applied to a principal balance that has been adjusted for the cumulative level of inflation since the date the bond was issued.

For an RRB issued by the Government of Canada, the cumulative level of inflation is known as the bond's inflation compensation.

On each interest payment date, investors receive a coupon payment that is equal to the real coupon rate multiplied by the sum of the original principal and the inflation compensation.

At maturity, investors are repaid their original principal plus the inflation compensation. The inflation compensation for Government of Canada RRBs is based on the Consumer Price Index (CPI), published monthly by Statistics Canada.

The calculation for the actual (nominal) semi-annual coupon payment on a Government of Canada RRB is:

$$\text{Payment} = \frac{\text{Real Coupon Rate}}{2} * (\text{Principal} + \text{Inflation Compensation})$$

Inflation compensation is:

$$\text{Inflation Compensation} = \left(\text{Principal} * \frac{\text{Current CPI}}{\text{Base CPI}} \right) - \text{Principal}$$

Example:

A newly issued RRB has a 5% real coupon rate, and the CPI has risen from 100 to 105 over the first six months. For \$100 of principal, the coupon payment is:

$$\text{Inflation Compensation} = \left(100 * \frac{105}{100} \right) - 100 = 5$$

$$\text{Payment} = \frac{0.05}{2} * (100 + 5) = \$2.625$$

At maturity, apart from the final coupon payment, holders receive the original principal plus the inflation compensation accrued from the issue date.

$$\text{Final Payment} = \text{Principal} + \left[\left(\text{Principal} * \frac{\text{Maturity CPI}}{\text{Base CPI}} \right) - \text{Principal} \right]$$

Example:

If inflation averages 3.5% over the life of a 20-year RRB, and the CPI rises from 120 to 231, the final principal payment per \$100 of face value is:

$$\text{Final Payment} = 100 + \left[\left(100 * \frac{231}{120} \right) - 100 \right] = \$192.5$$

One of the main issues is that the CPI is only available each month, while these securities trade daily on the secondary market. As a result, buyers must compensate sellers for the accrued inflation compensation, so inflation should be calculated for any given day, not just once per month.

- For Government of Canada RRBs, the CPI reading is the CPI on the first calendar day of the month
- On any other day of the month, you need to calculate the CPI by linear interpolation between the CPI reading from the current month and the one for the following month. This assumes an even change in the CPI reading from one month to the next.

Another issue is that the CPI is a lagging indicator (i.e., shows the inflation for the last month, not the current one). The reading is released on the third week of the following month. In other words, the “current CPI” is essentially the previously announced CPI reading. The “current” CPI for Government of Canada RRBs is based on the CPI reading from the third preceding calendar month.

If an investor buys a Government of Canada RRB for settlement on April 1, the current CPI used to calculate the inflation compensation payable to the seller is the CPI reading from January (three months before April).

When RRB trades settle on any day other than the first of the month, the “current” CPI reading is calculated by linear interpolation between the CPI reading from the third previous month and the CPI reading from the second preceding month.

$$\text{Current } CPI_{\text{Date}} = CPI_M + \left[\frac{t-1}{D} \times (CPI_{M+1} - CPI_M) \right]$$

Where:

CPI_M = The CPI reading for the third calendar month preceding the month in which the date falls.

t = The calendar day corresponding to the date.

D = The number of days in the calendar month in which the date falls.

Example:

An investor buys an RRB for \$110 per \$100 of face value for settlement on January 20.

The investor must not only pay \$110 for each \$100 of face value but must also compensate the seller for the inflation as of the settlement date.

To calculate the inflation compensation as of January 20, the current CPI is based on the CPI reading for October 20. The exact value of the CPI on this date is based on linear interpolation between the CPI reading for October and November. (Remember, the inflation compensation is calculated using linear interpolation between the CPI readings from the second and third preceding months; in this case, October and November.)

If the CPI for September was 120 and the CPI for October was 121, the current CPI on January 20 is:

$$\text{Current CPI}_{\text{January 20}} = \text{CPI}_{\text{October}} + \left[\frac{20 - 1}{31} \times (\text{CPI}_{\text{November}} - \text{CPI}_{\text{October}}) \right]$$

$$\text{Current CPI}_{\text{January 20}} = 120 + \left[\frac{19}{31} \times (121 - 120) \right] = 120.613$$

So, 120.613 is the value of current CPI. If the value of the base CPI is 105, then the buyer must pay:

$$110 * (120.613/105) = \$126.35 \text{ for every } \$100 \text{ of face value, plus accrued interest.}$$