



## PMT Debt Notes (Chapters 8 and 9)

### Managing Fixed Income Portfolios

Managing fixed income portfolios represents 19% of the PMT exam, so you should expect to see approximately 23 questions related to this subject on the exam.

The purpose of these notes is to provide you with a summary of the chapter topics and to provide you with guidance so you can anticipate what questions will be asked.

#### **Fixed Income Trading Operations**

The fixed income *portfolio manager's role* includes the following duties, creating the investment mandate and strategies, supervising staff, providing performance and outlook information, and representing the firm at external meetings.

The *fixed income trader's role* includes execution of transactions and maintenance of external relationships.

#### **Bottom Line:**

The portfolio manager sets the strategies and the trader executes them.

The text includes a functional organizational chart for the fixed income portfolio management department...this is nice to know, but I doubt you will see any questions on this....just know the portfolio manager is responsible for managing the trader and communication is the key to a successful working relationship.

#### **Bond Financing and Repos**

A repo involves the sale of a bond and the immediate promise to repurchase the bond at a later date. The difference between the sale and repurchase price is the financing cost, known as the "*repo rate*".

Repos are used by portfolio managers who employ leveraging or shorting strategies.

#### **Sell Side vs. Buy Side**

The "*buy side*" refers to fixed income portfolio managers who are generally looking for products and ideas and the "*sell side*" refers to traders at broker/dealers who originate products.

The text has a chart that compares buy side portfolio managers and sell side traders. I don't think you need to memorize it. A couple of key differences that I think could be tested include:

- The primary goal of traders is focused on **absolute performance**, while the primary goal of portfolio managers is **relative performance** (ie. doing better than your peers).
- Traders are bound by regulatory **capital restrictions**, while portfolio manager are not.
- Traders can, and often do, use **leverage** to augment returns, while portfolio managers cannot use leverage.
- Traders can take long or **short positions**, while portfolio managers generally use long only strategies.

### **Bond Management Styles**

There are two general bond management styles, **active management** and **passive management**. Passive managers are simply trying to earn the average rate of return, while active managers are trying to earn above average rates of return by taking advantage of anticipated changes in interest rates and interest rate spreads.

No matter what style the manager follows, they must be aware of "**interest rate risk**" and specifically the following two components:

- 1) **Price risk**, which refers to the change in the bond's value due to changes in market rates.
- 2) **Reinvestment rate risk**, which refers to the change in the total income accumulated over the investment horizon due to changes in market rates.

### **Bottom Line:**

What we are talking about here is **duration**. Bonds with longer duration are more sensitive to changes in interest rates than bonds with shorter durations.

So you need to know, the longer the time to maturity, the longer the duration, the greater the interest rate sensitivity and the lower the coupon the higher the duration and the greater the interest rate sensitivity.

### **Macaulay Duration**

You should think of Macaulay duration as an average time to recover your investment. (The text calls this "**effective average maturity**") You should also know that duration measures the interest rate sensitivity of a bond and you should also know portfolio managers use duration to manage exposure to changing interest rates, this is known as "**immunization**".

The Macaulay duration of a zero coupon bond is equal to the maturity of the bond. For all coupon paying bonds, the Macaulay duration will be less than the maturity.

The text gives us complex formula to calculate the Macaulay duration....I think it is really unlikely to show up on the exam, so do not spend a lot of time memorizing it.

**Macaulay Duration Leaning example:**

Calculate the Macaulay duration of a 5 year 8%, \$1,000 bond that s trading at a yield to maturity of 10%.

**Solution:**

**First calculate the price of the bond:**

$$FV = 1000, N = 5 \times 2 = 10, I = 10\%/2 = 5\%, PMT = 80/2 = 40, CPT PV = \$922.78$$

**Next calculate the time weighted present value of the cash flows:**

Time Period (t)	Cash Flow	PV(Cash flow)	t x PV(Cash Flow)
1	40	38.09	38.56
2	40	36.28	72.56
3	40	34.55	103.65
4	40	32.91	131.64
5	40	31.34	156.7
6	40	29.85	179.1
7	40	28.43	199.01
8	40	27.07	216.56
9	40	25.78	232.02
10	1040	638.47	6384.7
		<b>Total:</b>	<b>7714.03</b>

**Next calculate the duration:**

$$D = \frac{7714.03}{(2 \times 922.78)} = 4.18$$

**Note:** you could have use time periods such as 0.5, 1, 1.5, 2, 2.5....and then calculate duration:

$$D = \frac{3,857.015}{922.78} = 4.18$$

***Exam tip:***

As you can see there is a lot to do to calculate the Macaulay duration and there are lots of places where you can make a mistake in your calculation...this is a time waster! Don't fall for it on the exam...get all the easy marks and then come back to it.