

## Warm Up Questions

You have a portfolio of two assets. One is a 10 year 6% coupon bond which currently trades at a yield of 4%. You currently hold 2500 of this bond. The other is a 180 day BAB with a quoted price of \$95.50. You own 20 of these. Complete the following tasks:

1. Calculate the value of each position.
2. Calculate the value of your total portfolio.
3. Calculate the duration of each bond.
4. Calculate the duration of your portfolio.
5. Graph the breakdown of your portfolio.
6. Graph the sensitivity of your portfolio to parallel changes in the yield curve.
7. Graph the yield curve.

## Workshop 1 Questions

Today is the 1st of July 2022. You have been brought in to manage the expansion of a company's debt portfolio. The company, Brisbane Tolls, operates a number of tunnels and bridges in the Brisbane area. They are unhappy with the way the work their previous CFO has done and hope that you will be able to do a better job. Today is the 1st of July 2022. Over the next 6 months the company has the following needs:

1. Work will soon begin on a new tunnel. This will require approximately \$10 million in cash. You will need to issue new debt to finance this operation.
2. The company is currently experiencing a shortfall in cash flow. As such you will need to issue a further \$2.2 million in debt to pay for wages and maintenance.
3. You would like to decrease the sensitivity of your portfolio to changes in the interest rate. Your target range for duration is between 3 and 4.
4. You would like to minimise the cost of funds.
5. You will need to have funds on hand in six months time to pay for any debt repayments that your portfolio will require.
6. You will impose the following restrictions on asset types in your portfolios:
  - a. BABs - between 25 and 35%
  - b. Short Term Bonds (2, 3 and 5 Years) between 45 and 55%
  - c. Medium Term Bonds (8, 10 and 15 Years) between 10 and 20%
  - d. Long Term Bonds (20, 25 and 30 Years) between 0 and 10%

In addition to this you anticipate that over the next 6 months the company will take in tolls of approximately \$1 million (meaning you will have \$1 million in cash in January 2023). After paying expenses and taxes you will have \$233000 left to make debt repayments. Any amount in excess of this will have to be paid by issuing short term debt.

Your tasks are as follows:

1. **Initial Position (10 Marks) (See excel sheet for initial position)**
  - a. Calculate the value of your initial position.
  - b. Calculate the duration of your portfolio.

- c. Draw a graph of the breakdown of your portfolio.
  - d. Draw a graph illustrating the sensitivity of the current portfolio to parallel shifts in the yield curve.
  - e. Draw a graph of the current yield curve.
- 2. Trades (20 Marks)**
- a. In the excel sheet labelled “Trades” write down the details of each trade you have made.
  - b. In the excel sheet labelled “New Position” calculate the value of your position as well as the new duration
- 3. Cash Flows (10 Marks)**
- a. In the excel sheet labelled “January 1st 2023” calculate the value of any debt repayments that have to be made on that date.
  - b. Calculate if you have enough money on hand from toll revenue to pay for the above. If not, how much extra do you require?
- 4. Debrief (10 Marks)**
- a. In 300 words or less describe the trades that you made and why.

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