FINANCE I
MINI 2 – 2013

Recitation 2
11-08-2013
10am Cooper (Optional)

NOTES

Question 1

A happy question to get us rolling: Congratulation! You just one the lottery!! Wooooohooooo. Now you have a choice:

A: $1,100,000 per year in perpetuity (the first payment is received in one year).

B: $2,460,000 every two years in perpetuity (the first payment received is in two years).

The current risk free rate is a constant 5% per year (effective annual rate compounded once per year).

Calculate the value of each payment stream. Which one is larger?

Question 2

In the table below is the rate of return on zero-coupon or pure discount bonds. (These are bonds that have one payment of $1 at maturity). The discount bonds below are at horizons of one year, two years, and three years. The rates of return are stated as percent per year compounded once per year.

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Rate (per year, compounded annually)</th>
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</thead>
<tbody>
<tr>
<td>1 year</td>
<td>6.38%</td>
</tr>
<tr>
<td>2 years</td>
<td>2.60%</td>
</tr>
<tr>
<td>3 years</td>
<td>5.57%</td>
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</tbody>
</table>

a. Calculate the price of each of the discount bonds.
b. Using these three bonds, find an arbitrage trading strategy 
[Hint: “find an arbitrage” also means, “describe it and explain how it is an arbitrage.” Remember, you can always store money in your pocket (or mattress or a safe)]

**Question 3 [FCF]**

Sales last year were $100,000. Inventory of 10% of sales must be in place at the start of the year to support sales in the coming year. If sales are expected to grow by 12% a year for the next three years, what are the incremental cash flows associated with the growth in inventory? (How big is the “investment” in inventory each year?)

**Question 4 [FCF]**

M Inc. purchases a new asset for $500,000. For odd and peculiar reasons in the tax code it can depreciate the asset over 5 years or 2 years (straight line). The company can choose. Does it matter? Tax rate is 35%. Any assumptions you need to make? Remember: Focus on incremental cash flows.

**Question 5 [FCF]**

UPMC performs a Tachyon Beam Exam bills at $15 [thousand] per test. Demand is about 1 per month. The cost is $12 per test (that is about a 20% margin). Insurance usually pays 12 months after the test. How much could we reduce the price per exam for payment 3 months after the test? [UPMC is non-taxes, so the tax rate is zero; Cost of capital is 10%; Assume sales at this level will continue at this level indefinitely into the future (a simplifying assumption)]

**Question 6 [FCF]**

Wigle Whisky (our local micro-distillery) brews whiskey. They typically “age” the whisky in a barrel for one day (the law says it must be in a barrel if you want to call it whisky). It is better if you age it longer.

The cost to brew is $5. You can sell the instantly aged whisky for $10. Let’s say you sell 100 bottles per month (zero growth; off into the indefinite future). So at what price would 5-year-old whisky have to sell for in order to make it worthwhile to age your product for 5 years?
(Assume the discount rate is 10%; ignore taxes; ignore the cost of the barrels and the rent/space).