ECON 134: Midterm

May 12, 2006
Time for the exam: 55 minutes

Name
Section

1. (40 points) You are about to finish college and are thinking about whether to continue studying an MBA or work. You are going to take two years to think about it, meanwhile you are going to be travelling around Europe working and spending what you earn. You are not going to touch your savings in the USA while travelling. Fortunately, your parents have been very forward looking and you now have $30,000 saved. You are deciding what to do with this money in the next two years. It is a lot of money, so you want to make the best decision on where to allocate your savings. You are planning to pay tuition out of your savings and borrow only your living expenses. The total cost for tuition $25,000 per year.

If you put all your money in a savings account, you will get the current short term (one-year) interest rate of 4%. Alternatively, you can invest all your money in two-year zero coupon bonds. Two year bonds with a face value of $1,000 sell currently at $907.03.

Below, let’s consider time 0 now, time 1 one year from now, and time 2 two years from now.

a. What is the current annualized two-year interest rate?

\[
\begin{align*}
\frac{\$0.03}{\$0.02} &= \frac{\$A_{t+2}}{(1+r_{t+1}^C)^2} \\
\left[\frac{r_{t+2}^C}{2}\right] &= \left(\frac{\$A_{t+2}}{\$907.03}\right)^{1/2} - A = 4.98\% = 52
\end{align*}
\]

b. What is the forward rate from date \( t = 1 \) to \( t = 2 \)?

\[
\left(\frac{A + r_{t+1}^C}{A}ight) = \left(1 + r_{t+2}^C\right)^2
\]

\[
\begin{align*}
\left[\frac{r_{t+2}^C}{2}\right] &= \left(\frac{A + r_{t+1}^C}{A}ight)^{1/2} - A = \frac{(A_{t+2})^2}{A_{t+1} - A} = 6.8
\end{align*}
\]
\[ E(\text{Money}) = \$32,488. \]

\[ \text{value of the result} \]

\[ \text{if the result is not certain, give the probability of each outcome and the expected} \]

\[ \text{account. Assume that each year the savings account pays the one-year prevailing interest} \]

\[ \text{rate. How much money will you have in two years if you put all your money in the savings} \]

\[ \text{account?} \]

\[ \text{The ( turned into (new) cash}) \]

\[ \sum^{\infty}_{n=0} \frac{2}{2.7} = \frac{2}{2.7} \cdot \frac{1}{1 - \frac{2}{2.7}} \approx 3.33 \times 10^3 \text{,000} \]

\[ \begin{align*}
\text{Since } t \text { is less than } E(\text{t}) = \frac{1}{2} \text{, the hypotheses hold. Explain.}
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\text{Since } t \text{ is less than } E(\text{t}) = \frac{1}{2}, \text{ the hypotheses hold. Explain.}
\end{align*} \]

\[ \begin{align*}
\text{With probability 30\% with probability 30\% with probability 50\% with probability 7\%}
\end{align*} \]

\[ \text{year from } t = 1 \text{ to } t = 7 \text{ in the newspaper, you expect interest rates next} \]

\[ \text{you are aware of the importance of the} \]

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The expected value of the result is not certain. If the result is not certain, give the probability of each outcome and the interest rate. If the result is not certain, give the probabilities of each outcome and the interest rate. Assume that each year the savings account pays the one-year prevailing interest rate. Suppose you want to diversify your portfolio and decide to put 50% of your money on the savings account and the rest on government bonds. How much money would you put into each? If you put all your money into government bonds, how much money would you have in two years? If you put all your money into stock, how much money would you have in two years?
Suppose your friend is staying in the USA while you will be traveling in Europe and you do not know how long you could be without him/her so just in case you decide to come back after one year and want to recover your money, which investment would give you more money?

I. Suppose however that your friend is staying in the USA while you will be traveling in Europe

\[ E \quad (\text{Money}) = 36,000 \text{ CHF} \]

\[ \frac{15,000 \text{ CHF}}{16,12} \approx 930.91 \text{ CHF} \]

\[ \text{Compounded: } 930.91 \text{ CHF} \times 1.05^2 = 1082.74 \text{ CHF} \]

\[ \text{Simple Interest: } 930.91 \text{ CHF} + 930.91 \text{ CHF} = 1861.82 \text{ CHF} \]

II. Suppose however that your friend is staying in the USA while you will be traveling in Europe

\[ E \quad (\text{Money}) = 36,000 \text{ CHF} \]

\[ \frac{30,000 \text{ CHF}}{30,000 \text{ CHF}} \]

\[ \text{Compounded: } 30,000 \text{ CHF} \times 1.05^2 = 32,959.89 \text{ CHF} \]

\[ \text{Simple Interest: } 30,000 \text{ CHF} + 30,000 \text{ CHF} = 63,000 \text{ CHF} \]

at the end of time \( t = 1 \) year.

[End of text]
Share of Spanishtoilet.com today:

Assume that SID maintains the dividend payout ratio of 40% for the next 5 years (that is, from time 1 to time 5). Then, the rate of return on retained earnings is going to be the same as the rate of return on the price of the stock (in other words, in time 1 = 0, since other constant numbers in the formula remain the same as before).

The dividend payout ratio for the next 5 years is 40%.

\[
g = \frac{\text{ROE} \times \text{Payout}}{\text{1} - \text{ROE} \times \text{Payout}}
\]

\[
g = \frac{0.05 \times 0.4}{0.15} = \frac{0.02}{0.15} = 0.1333
\]

\[
g = 13.33\%
\]

The rate of return on the price of the stock (in other words, the rate of return on the price of the stock) is 13.33%. This is the rate of return on the current price of the stock.

What is the rate of return on the investment that SID undertakes with its retained earnings? Shareholders require a return of 10%.

See excellent growth potential of 15% per year; in the near future in the current industry. The analysts' consensus is that these same figures will continue next year. Suppose also that analysts just paid dividends of $2.08 per share which represents a dividend payout ratio of 40%. The current price of the stock is $50.00 per share.

\[
g = \frac{\text{ROE} \times \text{Payout}}{\text{1} - \text{ROE} \times \text{Payout}}
\]

\[
g = \frac{0.15 \times 0.4}{0.1} = \frac{0.06}{0.1} = 0.6
\]

\[
g = 60\%
\]

Preliminary de Blas
\[
\begin{align*}
\frac{c}{c - 0.08c} &= \frac{c}{0.92c} \\
0.08c + c' &= \frac{338',000}{0.92c} \\
0.08c + c' &= \frac{\$1,000'}{0.92c} \\
0.08c + c' &= \frac{316',000}{0.92c} \\
0.08c + c' &= \frac{420',000}{0.92c} \\
0.08c + c' &= \frac{935',000'}{0.92c} \\
\text{NPV} &= \frac{-385',858'}{0.8} \\
\end{align*}
\]

and without investing in the land

a. When is the NPV of this investment opportunity? For Miguel's budget constraint with

b. Miguel can borrow and lend at an 8% interest rate per period.

Miguel's budget constraint is $200,000 when young and $100,000 when old. The income when young is $200,000 and $100,000 when old. The income is $50,000 a period. Let's assume for simplicity that he lives for

3. (30 points) Miguel has the opportunity to buy a lot at $850,000 which he expects to be able to sell at $8150,000 next period. Let's say that he lives for

10 years.

If the market price today of a share of SJD is $61.02, what does it say about the market

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b. If Miguel buys the land, what is the effect on his present consumption if he keeps all future consumption unchanged?

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5. What financial transactions are necessary to achieve this?

5. What is the maximum price Miguel is willing to pay for the land?

\[ p = \frac{130,000}{1.08} \]

5. Should Miguel buy the land?

If depend on his preferences.

NPV > 0