Høgskolen i Østfold

EXAMINATION

Course code:	**Course:**
SFB13114	Global Markets and Institutions
Date:	**Duration:**
13/12/2017	4 Hours
Allowed aids:	**Academic responsible:**
Pen, ruler, simple calculator, formula sheet	Imtiaz Badshah

The Examination:

The examination paper consists of 4 pages (including this page) and a Formula sheet (two pages hand written). Please check that the examination papers are complete before you start answering the questions.

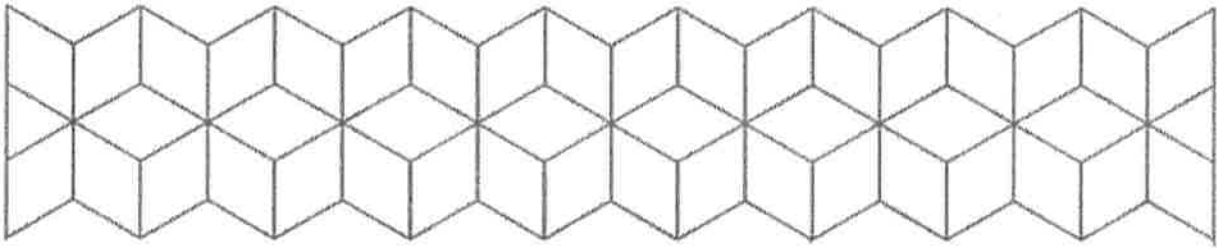
The school exam entails 5 (five) problems, all of which should be answered/solved.

Please start answering each problem on a NEW page.

Read the text relating to each problem carefully. If something is unclear, you have to make realistic assumptions about how you understand the problem and how you decide to solve the problem. Any such assumptions must be clearly outlined.

Grading Deadline: 11/1/2018

The examination results are available on the Studentweb www.hiof.no/studentweb



Problem 1 (20 %)

A. The president of the United States announces in a press conference that he will fight the higher inflation rate with a new anti-inflation program. Predict what will happen to interest rates if the public believes him.

B. The chairman of the Fed announces that interest rates will rise sharply next year, and the market believes him. What will happen to today's interest rate on AT&T bonds, such as the $8\frac{1}{8}$s of 2022?

C. You own a $1,000-par zero-coupon bond that has 5 years of remaining maturity. You plan on selling the bond in one year, and believe that the required yield next year will have the following probability distribution:

Probability	Required Yield
0.1	6.60%
0.2	6.75%
0.4	7.00%
0.2	7.20%
0.1	7.45%

a. What is your expected price when you sell the bond?
b. What is the standard deviation?

Problem 2 (20 %)

A. Little Monsters Inc. borrowed $1,000,000 for two years from NorthernBank Inc. at an 11.5% interest rate. The current risk-free rate is 2% and Little Monsters's financial condition warrants a default risk premium of 3% and a liquidity risk premium of 2%. The maturity risk premium for two-year loan is 1% and inflation is expected to be 3% next year. What does this information imply about the rate of inflation in the second year?

B. "Interest rates can be measured more accurately and more quickly than the money supply. Hence an interest rate is preferred over the money supply as an intermediate target." Do you agree or disagree? Explain your answer.

C. Consider a bank policy to maintain 12% of deposits as reserves. The bank currently has $10 million in deposits and holds $400,000 excess reserves. What is the required reserve on a new deposit of $50,000?

Problem 3 (20 %)

A. Why do banks not eliminate the need for money markets?

B. Distinguish between the primary market and the secondary market for securities.

C. The shares of Misheak, Inc. are expected to generate the following possible returns over the next 12 months:

Return	Probability
-5%	0.10
5%	0.25
10%	0.30
15%	0.25
25%	0.10

If the stock is currently trading at $25/share, what is the expected price in one year. Assume that the stock pays no dividends.

D. Two mortgage options are available: a 15-year fixed-rate loan at 6% with no discount points, and a 15-year fixed-rate loan at 5.75% with 1 discount point. Assuming you will not pay off the loan early, which alternative is best for you? Assume a $100,000 mortgage.

Problem 4 (20 %)

A. A country is always worse off when its currency is weak (falls in value)." Is this statement true, false, or uncertain? Explain your answer.

B. In mid-1978, Wiggley S&L issued a standard 30-year fixed rate mortgage at 7.8% for $150,000.
36 months later, mortgage rates jumped to 13%. If the S&L sells the mortgage, how much of a loss is expected?

Problem 5 (20 %)

A. On January 1st, the shares and prices for a mutual fund at 4:00 pm are:

Stock	Shares owned	Price
1	1,000	$ 1.92
2	5,000	$ 51.18
3	2,800	$ 29.08
4	9,200	$ 67.19
5	3,000	$ 4.51
cash	n.a.	$5,353.40

Stock 3 announces record earnings, and the price of stock 3 jumps to $32.44 in after-market trading. If the fund (illegally) allows investors to buy at the current NAV, how many shares will $25,000 buy? If the fund waits until the price adjusts, how many shares can be purchased? What is the gain to such illegal trades? Assume 5,000 shares are outstanding.

B. A client needs assistance with retirement planning. Here are the facts:

- The client Dave is 21 years old. He wants to retire at 65.
- Dave has disposable income of $2,000/month.
- The IRA Dave has chosen has an average annual return of 8%.

If Dave contributes half of his disposable income to the account, what will it be worth at 65? How much would he need to contribute to have $5,000,000 at 65?

Formula Sheet:

$$\text{Price (Zero-coupon)} = \frac{FV}{(1+i)^n}$$

$$\text{Expected price} = \text{probability} \times \text{price}$$

$$\text{Variance} = \text{probability} \times (\text{price} - \text{Expected price})^2.$$

$$\text{Standard deviation} = \sqrt{\text{probability} \times (\text{price} - \text{Expted price})^2}$$

$$\star \text{ Loan value (LV)} = \frac{FP}{1+i} + \frac{FP}{(1+i)^2} + \frac{FP}{(1+i)^3} + \cdots \frac{FP}{(1+i)^n}.$$

$$\star \; PV = PMT\left[\frac{1 - \frac{1}{(1+i)^n}}{i}\right] + \frac{FV}{(1+i)^n}.$$

$\star$ Real & Nominal interest.

$$i = i_r + \pi^e.$$

$\star$ Return on Bond $\quad R = \dfrac{PMT + P_{t+1} - P_t}{P_t}$

$$R = i_c + g.$$

$\star$ Duration: $\quad \%\Delta P = -DUR \times \dfrac{\Delta i}{1+i}$

$$\text{Duration} = \sum_{t=1}^{n} \frac{cP_t}{(1+i)^t} \Big/ \sum_{t=1}^{n} \frac{cP_t}{(1+i)^t}.$$

$\star$ Expected Return $\quad R^e = R_1P_1 + R_2P_2 + \cdots R_nP_n$

$\star$ Risk $\quad \sigma = \sqrt{\sum_{i=1}^{n} P_i(R_i - R^e)^2}.$

* Expectation Theory: $i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + \cdots i^e_{t+(n-1)}}{n}$

* Liquidity Theory $= i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + \cdots i^e_{t+(n-1)}}{n} + l_{nt}$

* Corporate Bond (1 − Tax Rate) = Municipal bond.

* Required rate = R_f + DRP + LP + MRP + Inflation premium.

* Required Reserves + Excess Reserves = total Reserves

* Effective rate $= \left(1 + \frac{i}{n}\right)^n - 1$.

* $PV = PMT\left[\frac{1 + \frac{1}{(1+i)^n}}{i}\right]$

* Net Asset Value (NAV) $= \frac{(\text{Asset} - \text{Liabilities})}{\text{No. of outstanding shares}}$

$= \frac{\text{Net worth}}{\text{No. of outstanding shares}}$

* $FV = PMT\left[\frac{(1+i)^n - 1}{i}\right]$

* $FV = PV(1+i)^n$.