

**SØK 2010**  
**Final exam**  
**June 8, 2016**

**Text in English**

Answer all questions. The number of points indicate the weights in computing your grade.

1. (10 points) What is a bank run? What can cause it, and what can prevent it? How are modern bank runs likely to differ from a bank run of 100 years ago?

*A bank run occurs if all (or a large number of) depositors want their money out at the same time. 100 years ago, that meant they wanted cash (currency). Today, runs more typically occurs as a result of a large number of depositors transferring their money electronically to another institution. A run is typically caused by fear that the bank is insolvent or at least illiquid so that deposits with the bank are not safe. Government funded deposit insurance is a good mechanism to prevent bank runs. Other kinds of guarantees, public or private, can help as well.*

2. (10 points) Suppose you buy a 10-year bond that originally was issued 2 years ago. You buy it at a price corresponding to 75% of the face value. There is no coupon. What is your yield to maturity?

*The formula that implicitly defines yield to maturity looks as follows:*

$$P_t = (1 + y)^{T-t} F$$

*where  $P_t$  is the price at time  $t$ ,  $T$  is the original maturity of the bond,  $y$  is the yield to maturity, and  $F$  the face value. We know that  $t = 2$ ,  $T = 10$ , and  $P_t = 0.75F$ . Solve for  $y$ :*

$$y = (F/P_t)^{1/(T-t)} - 1 = (1/0.75)^{1/8} - 1 = 0.037 = 3.7\%$$

3. (10 points) Suppose a stock analyst presents a case to you, arguing that the stock of a particular company is undervalued in the market. Considering what you believe about market efficiency, would you follow the analyst's advice and buy the stock? Why or why not?

*A stock is undervalued if there is good reason to believe that the price does not rationally reflect all available information and that other information suggests that the price will rise as this information is released. This means that the analyst claims to have superior information or insight relative to the market. That could be the case, for example, if the analyst has put more effort into studying the company than other analysts or market*

*participants. However, it may be a good idea to be skeptical of the claim of having superior insight. It could simply be a sales trick.*

4. (10 points) Explain how leveraging can increase the expected return as well as the risk of a given investment.

*A simple example of leveraging is that you borrow as much as the money you originally had to invest. Then you can invest twice the original amount. Your payoff will then increase (in dollar terms) by the payoff on the borrowed investment minus the interest paid. If this amount is positive, you have increased your rate of return computed as a percentage of your original amount. If, on the other hand, it is negative, your rate of return will be lower and could be negative. Because the range of possible returns is greater, leverage increases the risk. However, if the expected rate of return of the original investment exceeds the interest rate, the expected return on the entire investment will be larger with leverage.*

5. (10 points) How do banks handle loan losses? Explain how they affect the asset side as well as the liability side of a bank's balance sheet, and describe some of the steps that a bank usually takes in the process of handling loans in danger of default.

*Banks usually do this in a number of steps. An early step will be to increase the loan-loss provisions post on the liability side and reduce the bank's equity by a corresponding amount. The last step usually consists of writing down the value of the loan to zero on the asset side and cut provisions on the liability side by the same amount, now keeping the equity unchanged. [I did not take the students through other, intermediate steps, where the loan is reclassified to a lower rating, thus requiring more capital.]*

6. (50 points) Write a short essay (conciseness will be rewarded) about the 2007 – 09 global financial crisis, emphasizing, in particular, (a) its causes, (b), its economic and financial effects, (c) how the crisis was eventually resolved, and (d) what kind of new regulatory measures were put in place in its aftermath. In closing, present your own views regarding the strengths and weaknesses of these measures.

*This question is based on Brunnermeier's 2008 JEP paper, which was covered in class and the students were asked to read. For part d, Norges Bank's Financial Stability Report is provides valuable additional material. Some points about the subquestions:*

- a. Deregulation and financial innovation, which increased complexity and interconnectedness, while creating an illusion of lower risks. The higher complexity exacerbated problems of asymmetric information and moral hazard. Worth mentioning specifically is the change from the traditional banking model to "origination and distribution" and securitization, with effects on incentives for risk taking as well as monitoring, and exacerbating asymmetric information. Another point mentioning explicitly is the prevalence of OTC derivatives trading, which made interconnectedness opaque.*
- b. Key financial markets stopped functioning, especially commercial paper, repos, and derivatives. The global economy went into recession. World trade suffered.*

*Global growth rates have remained low even after the crisis, at least in the advanced economies.*

- c. The various efforts by the Federal Reserve and other central banks to restart financial flows were essential. So were the aggressive rate cuts undertaken by most central banks, some of which also added quantitative easing. Fiscal stimulation was implemented in the United States in 2009.*
- d. In the United States: Dodd-Frank, with a number of new measures. In Europe, Basel III, implemented in various fashions by the respective countries. Key is increased capital requirements relative to risk-weighted assets, as well as new liquidity requirements (short term and long term). Special requirements for institutions deemed systemically important as well as a special countercyclical buffer for all institutions. Norges Bank's Financial Stability Report gives a good overview.*
- e. Of course, each student is entitled to his or her own view. However, in general, the strength of the new measures is that they presumably have made the system more robust to shocks. A major weakness is complexity, which requires more resources for the regulators as well as the institutions. Complexity also serves as an invitation to lobbying and makes the system easier to cheat.*

### **Norsk oppgavetekst (bokmål)**

Besvar alle oppgaver. Antall poeng indikerer vekt i karaktersetting.

1. (10 poeng) Hva er en "bank run"? Hva kan forårsake det, og hva kan hindre det? Hvordan kan en moderne "bank run" forventes å arte seg annerledes enn en "bank run" for 100 år siden?
2. (10 poeng) Sett at du kjøper en 10-årsobligasjon som opprinnelig ble utstedt for 2 år siden. Du kjøper den til en pris tilsvarende 75% av pålydende. Obligasjonen har i ingen kuponger. Hvor stor er avkastning til forfall?
3. (10 poeng) Sett at en aksjeanalytiker presenterer et case for deg, som hevder at aksjen for et gitt selskap er undervaluert i markedet. Ut fra det du mener om markedseffisiens, ville du følge anbefalingen og kjøpe aksjen? Hvorfor eller hvorfor ikke?
4. (10 poeng) Forklar hvordan finansiell giring ("leveraging") kan heve både forventet avkastning og risiko for en gitt investering.
5. (10 poeng) Hvordan håndterer banker tap på utlån? Forklar hvordan slike tap påvirker både aktivaside ("asset side") og passivaside ("liability side") i bankens balanse, og beskriv noen av de skrittene en bank vanligvis tar i behandlingen av lån som står i fare for mislighold.
6. (50 poeng) Skriv et kort essay (konsise formuleringer teller positivt i karaktersettinga) om den globale finanskrisa i 2007 – 09, med spesiell vekt på (a) årsakene til krisa, (b) de økonomiske og finansielle konsekvensene, (c) hvordan krisa til slutt ble løst, og (d) nye

reguleringstiltak som ble innført i etterkant. Gi til slutt dine egne synspunkter på fordeler og ulemper ved disse tiltakene.

### **Norsk oppgåvetekst (nynorsk)**

Svar på alle oppgåvene. Poengtal indikerer vektor i karaktersettinga.

1. (10 poeng) Kva er ein "bank run"? Kva kan gi årsak til det, og kva kan hindra det? Korleis kan ein venta at ein moderne "bank run" ter seg annleis enn ein "bank run" for 100 år sidan?
2. (10 poeng) Sett at du kjøper ein 10-årsobligasjon som opphavleg vart utstedt for 10 år sidan. Du kjøper den til ein pris tilsvarande 75% av pålydande. Obligasjonen har ingen kupongar. Kor stor er avkastning til forfall?
3. (10 poeng) Sett at ein aksjeanalytikar presenterer eit case for deg, som hevdar at aksjen for eit gitt selskap er undervaluert i marknaden. Ut frå det du meiner om marknadseffisiens, ville du ha følgd anbefalinga og kjøpt aksjen? Kvifor eller kvifor ikkje?
4. (10 poeng) Forklar korleis finansiell giring ("leveraging") kan heva både forventa avkastning og risiko for ei gitt investering.
5. (10 poeng) Korleis handterer bankar tap på utlån? Forklar korleis slike tap påverkar både aktivaside ("asset side") og passivaside ("liability side") i bankens balanse, og beskriv nokre av dei stega ein bank vanlegvis tek i handsaming av lån som står i fare for misleghald.
6. (50 poeng) Skriv eit kort essay (konsise formuleringar teller positivt i karaktersettinga) om den globale finanskrisa i 2007 – 09, med særskild vekt på (a) årsakene til krisa, (b) dei økonomiske og finansielle konsekvensane, (c) korleis krisa til slutt vart løyst, og (d) nye reguleringstiltak som vart innførde i etterhand. Gi til slutt dine egne synspunkt på fordelar og ulemper ved desse tiltaka.