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ES22016 Money and finance

Seminar problems

The problems provided as part of this module are designed to apply the theories learned to practical and realistic scenarios, allowing students to apply their knowledge and practice their ability to explain real-world events using economic theories in plain English. Seminars are dedicated to discussing these problems, but we are not able to discuss all problems due to time constraints. Having additional problems allows students to practice their knowledge in preparation of the assessment; they can compare their solutions with the indicative answers provided and for any additional clarifications attend the office hours.

The below table gives an indication about the problems to be discussed in class for each topic. At times it will be not be possible to discuss each problem and at other times it might be possible to discuss an additional problem if time permits. It is expected that students are prepared to discuss all problems in each seminar.

	Seminar problems
Topic 1	1, 2
Topic 2	3, 5
Topic 3	7, 10
Topic 4	11, 14
Topic 5	15, 17
Topic 6	20, 22
Topic 7	23, 26
Topic 8	28, 29
Topic 9	33, 36
Topic 10	39, 40
Topic 11	42, 43
Topic 12	45, 46
Topic 13	51, 52
Topic 14	55, 56
Topic 15	57, 58
Topic 16	2, 3
Topic 17	10, 36
Topic 18	16, 20
Topic 19	22, 29
Topic 20	43, 48

The problems for topics 16 to 20 are taken from the textbook and the problem numbers refer to the numbers of the problems therein. These problems are not included in the problems available for this module, but have to be taken directly from the textbook. The indicative answers, however, are provided together with the answers to topics 1 to 15, using the original numbering of the problems in the textbook, but organised by topic.

The difficulty of problems will vary, as the difficulty of questions in the exam will vary, to allow for an assessment of the degree to which the learning outcomes have been met and the final mark to reflect the standards achieved. The questions discussed in the seminar will therefore be a mix of more easy and more difficult questions. Furthermore, some problems will require the application of more than one model for a complete answer, but these are not necessarily more difficult than problems requiring the use of only a single model.

Topic 1

Problem 1

An investor who is risk-averse would always choose the option that gives the lowest risk.

Is this statement true?

Problem 2

Carefully explain the difference between moral hazard and adverse selection.

Topic 2

Problem 3

Michael Tippet is an independent financial advisor and while discussing investment options with a client, he points out three possible investment funds that might be suitable for the needs of his client. The first fund he has picked out, UK Small Cap Fund, invests into small listed companies and in the past has shown an annual return of 12% and a volatility in returns of 27%. Another fund, called UK Safe Return Fund, invests mainly in utility stocks and other defensive stocks, generating an annual return of 7% with an annual volatility of 13%. The final fund under consideration, UK Growth Fund, has a different investment strategy in that it not only invests into stocks, but also bonds issued by companies. Its annual return and volatility are 8% and 11%, respectively. As financial advisor, he believes that market conditions are stable and expects similar returns to those observed in the recent past also in the future from all funds. His client tells him that he finds the investment strategy followed by UK Safe Return Fund appealing and wants to consider this fund further.

a. As his financial advisor, should Michael Tippet recommend to invest into UK Safe Return Fund?

b. Recently, Michael Tippet has advised a different client and given that client's circumstances, he proposed to invest 40% of the monies considered into UK Small Cap Fund and 60% into UK Growth Fund. His current client dislikes risk more than his previous client, how would he change the recommended portfolio for his current client?

Problem 4

During a discussion with family members, your older brother asserts with his usual confidence that diversification of investments is always beneficial. His claim is that if you only have a small number of assets you can invest in, say two, then you choose the two that have the lowest correlation as that is best for diversification.

Is your brother's claim correct?

Problem 5

Georgina Warren seeks advice on her investments from her long-standing investment advisor, Janice Young, with the aim of investing into stocks included in the FTSE100. Unknown to Janice Young, she has sought a second opinion from a different investment advisor. Comparing the datasheets she has obtained from both advisors about the stocks included in the FTSE100, Georgina Warren observes that both advisors agree to a large degree on the risks and returns of each stock. The recommended investments, however, differ substantially between both advisors. Janice Young recommends to invest 85% of Georgina Warren's wealth into the stock market and 15% into government bonds, while the other advisor suggested a mix of 60% to 40%. The portfolio of stocks also differs between both advisors substantially; Janice Young recommends to invest in a small number of stocks only, while the new advisor recommends a roughly equal investment into all stocks contained in the FTSE100.

Can you explain these differences in recommendations using portfolio selection theory?

Problem 6

At a reception in the aftermath of a meeting of financial advisors, Thomas Hartford complains to colleagues that his clients are generally not interested in his complete advice. He points out that he always recommends a selection of stocks, or occasionally other risky assets, to invest in, in addition how much their client should put into safe assets such as government bonds. In most cases, however, his clients only take up his recommendation on the stocks and other assets, ignoring his recommendation to invest into government bonds, even though this is the part he probably puts most effort in as this is very individual advice. His colleagues say that they recognises this and always wonder why clients ignore an important part of the advice.

a. Why is it important to consider the advice on investing into government bonds?

b. Why is the advice on investment into government bonds individualised, but the advice on investing into other assets not?

Topic 3

Problem 7

Estimating the Capital Asset Pricing Model for a range of large stocks listed on the London Stock Exchange, you have chosen the FTSE 100 index as your market portfolio. A friend advises that it is better to use the FTSE 250 index or even the FTSE All-Share index as your market portfolio because they cover a wider range of stocks. You argue that as you only consider stocks included in the FTSE 100 index, this is the best match for your purposes.

a. Is your friend's suggestion an improvement on your approach?

b. Is either of the mentioned indices the true market portfolio?

c. Is the true market portfolio identical for all investors?

Problem 8

You seek to determine the expected return of assets you consider for investment, but want to establish which risk factors are relevant to them and what their influence is. You have identified a number of firm-specific factors that affect the returns of assets, but also various macro-economic and political factors you deem relevant. Using Arbitrage Pricing Theory, you have then estimated the influence of each of these factors for a variety of assets, giving you then the expected return for each asset. A friend tells you that you make your life too difficult, he always just uses the Capital Asset Pricing Model and he is sure that it makes hardly any difference, because, after all, the influence of the market portfolio simply aggregates all the other factors that you considered.

Is you friend correct in his assessment?

Problem 9

Your financial advisor suggests you invest in 16 stocks only, which he has handpicked for their future prospects. He points out that his chosen stocks are representative of the market as a whole, covering all the major industries that are represented. Being very conscious about the risk of stock investments, you worry about the lack of diversification given that well over 1,000 stocks are listed on the London Stock Exchange alone.

Are you right to question the approach taken by your financial advisor?

Problem 10

Consider a market in which 50 stocks are traded. You have established that the average volatility of stocks is 12% p.a. and that the average correlation between stocks is 0.7. Your aim is to hold an equally weighted portfolio that consists of as few 'average' stocks as possible, but has a total risk that is no more than 10% above the systematic risk of the market.

How many stocks do you need to hold?

Topic 4

Problem 11

The shares of Trafalgar plc. trade at 431p and you are seeking information whether it is advisable to invest into this company. When collecting information about the company you establish that it has paid a dividend of 13p during the last year, having grown its dividend by 4% each year in the past and you believe that the company will able to maintain this growth for the foreseeable future. You have further determined the volatility of the shares as 22% p.a. and its correlation with a broad market index is 0.82. This market index is expected to increase by 8% p.a. and has shown a variance of 0.04 and treasury bills yield 3.5% p.a.

a. Would you recommend to purchase shares of Trafalgar plc.?

b. Would your answer change if the dividend were to grow at 5% each year?

c. How do you explain that such a small difference between the growth rates affects your results significantly?

Problem 12

Jones & Co. seek to expand their business and have drawn up three possible avenues for investment:

- Expanding their current business in the domestic market would require an investment of £100m and they expect to generate profits giving a return on investment of 11% each year for the foreseeable future. Having discussed this investment with their bank, the bank has agreed to grant a loan of £60m at a loan rate of 8% p.a.
- They could expand in an overseas market, investing £70m, which would generate an initial return on investment of 7%, but their profits are expected to grow by 4% every year. Their bank would provide a loan of £35m at a loan rate of 9% p.a.

- The final investment opportunity would be to diversify their business by expanding into new markets, which would require an investment of £110m, to which the bank would lend £65m at a loan rate of 9.5% p.a. The investment is expected to yield a return of 11.5% p.a. for the foreseeable future.

For these investments they are able to raise up to £100m in equity.

If Jones & Co. face equity costs of 12% p.a., what would be your advice on their investments?

Problem 13

You observe that after an increase in the stock price the next price change of the stock is more likely to be positive than negative. After a decrease in the stock price, you find that the next price change is more likely to be positive than negative. You conclude that the market cannot be efficient as whatever the last observation of the price change, the price is more likely to increase than decrease.

a. Is your conclusion correct, assuming you have performed appropriate statistical test supporting your observation?

b. If instead, you observed that after a decrease in the stock price the next price change is more likely to be negative than positive, would your conclusion hold?

Problem 14

You have two companies that compete in the same market, facing comparable competitive forces. Despite them being so similar, the profits of the listed company Pillmeyer AG has grown at a rate of 4% p.a., while Hertig KG, which is privately owned, has only grown at 3% p.a. With the current owners of Hertig KG seeking to sell their company, they need to determine its value to be able to set an appropriate price. As Pillmeyer AG is listed on the stock exchange, they know that its value is €117m and according to their latest annual report they generated profits of €4.5m. Internal numbers show that Hertig KG showed profits of €1.7m.

What is the value of Hertig KG?

Topic 5

Problem 15

You observe the following term structure on government bonds:

Maturity (years)	1	2	3	4	5	6	7	8	9	10
Yield (% p.a.)	3.24	3.31	3.57	3.82	4.13	4.41	4.93	5.02	5.52	5.97
Maturity (years)	11	12	13	14	15	16	17	18	19	20
Yield (% p.a.)	6.08	6.12	5.86	5.68	5.52	5.35	5.27	5.22	5.20	5.19

a. What is the expected yield of a 3-year bond in 4 years' time?

b. How do you explain the change of the yield the 3-year bond experiences, given your answer to part a.?

c. In how many years' time do you expect short-term yields to decline?

d. In how many years' time do you expected the yield 5-year bonds to decline?

Problem 16

A bank has obtained deposits to the amount of \$50m from a wealthy individual and agreed to pay interest of 5.5% p.a. for a period of 2 years, while the current level of interest rates for all maturities is 5.25%. It can grant loans at the current level of interest to companies with repayments to be scheduled in 5 years. In order to completely eliminate any interest rate risk, how much loans do they need to provide to companies?

Problem 17

As an intern at Khalili Bank in the country of Avar, you are asked to provide a brief statement for a client meeting on the likely economic conditions in the next few years.

You have only recently moved to Avar and are very much unaware of the economic situation. However, you observe that the yield curve has an inverse hump shape, i. e. it initially decreases and from year 4 onwards increases again.

What would be your conclusions?

Problem 18

A pension fund has long-term liabilities due to commitments of future pension payments. It determines the value of these commitments by discounting at the currently prevailing interest rate for 25-year government bonds. Until pension payments have to be made, the pension fund has invested a considerable part of their reserves into Treasury Bills and comparable short-term debt instruments. They valued the instant access these investments guaranteed, without being too much affected by changing interest rates. The yields on long-term bonds have been falling recently and the pension fund made considerable losses as a consequence.

a. Why does the pension fund suffer losses as long-term interest rates fall?
b. How can the pension fund reduce the risk of losses from future decreases in the long-term interest rate?

Topic 6

Problem 19

Steaucescu SRL has purchased new machinery to upgrade and expand their current production facilities. The machinery was purchased from a manufacturer in France for a price of €12m. The main currency at which Steaucescu SRL invoices their customers is the Romanian Leu and due to recent considerable volatility of their currency, they seek to hedge their payment to their French supplier, which is due in 4 months. The current exchange rate is 5 Leu/€ and the interest rates in Romania are 7.2% p.a., while in France they are 4.8% p.a.

a. What is the forward rate that Steaucescu SRL would obtain?

b. Explain why the forward rate differs from the spot rate.

Problem 20

RiskConsult LLP is a hedge fund that invests extensively in small listed companies that are mostly neglected by investors; their current portfolio encompasses holdings in approximately 150 of such companies. They have achieved annual returns of 11% with a volatility of 18%, while the market showed an annual volatility of 27% and generated only 7%, although some investors were not satisfied with their investment strategy as it showed a correlation of 0.8 with the market, limiting their diversification benefits from investing into RiskConsult LLP. With some of their investments being financed through a loan, which is due to be repaid in three months time, RiskConsult LLP seeks to lock in any gains they have made to avoid having to sell holdings at a loss in the future. Due to agreements with their investors, they are not able to sell these stocks and retain the proceeds in cash as they normally would do. They have set aside a representative part of their portfolio, valued at $15m, that they seek to sell for the repayment of the loan.

a. Which instrument is most suitable to hedge the exposure of RiskConsult LLP?

b. If only derivatives on the market are available, how many contracts would you need to obtain for your hedging strategy in part a.?

Problem 21

Seven years ago, a company has agreed a £25m loan with a bank at a variable loan rate that is adjusted every 3 months to the SOFR + 0.25%. As the company has mainly fixed obligations, but at the time could not find a bank offering competitive loan rates on 10-year bonds, they entered a swap agreement with their bank, which had an initial time to maturity of 10 years, matching the terms of their loan. The swap rate at the time of the agreement was 7.5% p.a. and the current term structure for government bonds is

Maturity (years)	SOFR	1	2	3	4	5	6	7	8	9	10
Yield (% p.a.)	2.96	3.24	3.31	3.57	3.82	4.13	4.41	4.93	5.02	5.52	5.97

The company is generally regarded as safe by investors due to their market position and safety of business and attracts a risk-premium of 0.25% p.a..

If the interest rate on their loan has just been reset, what is the current value of their swap?

Problem 22

As part of their investment strategy, Alliance Insurance plc has developed a small division that purchases swaps and forwards from selected banks who have agreed such contracts with their clients, but may want to divest for reasons of risk management. A junior trader is observing the negotiation between an experienced trader and her counterparty at the bank. They are discussing the terms of a USD-GBP currency swap for a nominal \$100m, which the bank has agreed for one of their leading customers. This currency swap has a remaining time to maturity of 8 years. The junior trader is astounded to hear that the insurance company has eventually bought the swap and received a payment of \$4m for purchasing this swap; he has never seen a situation where a security is bought and the seller pays the purchaser.

How do you explain this agreement?

Topic 7

Problem 23

An investor has obtained information on a company, but is unsure about the impact this will have on the stock price, once it becomes publicly known. The company is seeking to expand overseas to counter increased competition in their domestic markets. This could be seen as a positive move by the company to secure future profitability and the stock price should increase. On the other hand, it can be seen as a sign that profitability in their domestic market, which makes up the majority of their current profits, is under more strain than the market has anticipated and this would reduce the stock price. Having gone through both scenarios, he believes that the stock price will either increase by about 10% if the information is seen positively, or the stock price will decrease by 20% if the information is interpreted negatively.

Develop an investment strategy using options that allows the investor to take advantage of his information.

Problem 24

You seek to invest further into Vamelia plc as your analysis suggests that this company will outperform many competitors in the near future. However, you have already hold 24.85% of the outstanding share as a long-term investment and financial regulations require you to make a takeover offer for all outstanding shares if your shareholding reaches 25%. You are not interested in acquiring Vamelia plc completely, and would also not have the financial resources to do so.

a. How can you benefit from the prospects of Vamelia plc without purchasing their shares?

b. If no derivatives on Vamelia plc are available in the market, could you use derivatives on a broader stock index to achieve a similar, although not identical outcome?

Problem 25

Can option values be negative, like those of futures and swaps?

Problem 26

If two portfolios have the same value at some point in the future, why will the prices of those two portfolios always be identical, even before this point in time?

Topic 8

Problem 27

In each time period, a stock, currently trading at £50, increases or decreases by 10% with equal probability. If you buy a European call option with a strike price of £55 maturing in 2 time periods, how much do you expect to pay if the risk-free rate is 5% per time period and the return on the stock is expected to be zero?

Problem 28

A Digital Option is an option that pays a fixed amount if it is exercised and is otherwise similar to a standard option. A Digital Call option pays the agreed amount if at maturity the price of the underlying asset is above the strike price and a Digital Put option pays the agreed amount if at maturity the price of the underlying asset is below the strike price.

Consider a stock, currently trading at £50, which increases by 10% or decreases by 20% with equal probability. If you buy a Digital put option with a strike price of £45 maturing in 2 time periods which pays you £10, how much do you expect to pay if the risk-free rate is 5% per time period?

Problem 29

A Barrier Option is an option that pays the normal option payoff, but only if during the life time of the option certain price limits (barriers) either have been breached or have not been breached. An 'Up-and-in' Call option allows the buyer to obtain the usual payments of a call option, provided during the life of the option, the stock price has exceeded the barrier price.

Consider a stock, currently trading at £50, which increases by 10% or decreases by 20% with equal probability. If you buy an 'Up-and-in' Call option with a strike price of £40 and a barrier at £53 maturing in 2 time periods, how much do you expect to pay if the risk-free rate is 5% per time period?

Problem 30

A stock, currently trading at £50 and has a volatility of 25%. You buy a European call option with a strike price of £55 maturing in 2 months, the risk-free rate is 5% p.a. and the return on the stock is expected to be 12% p.a.

a. Using the Black-Scholes formula, how much do you expect to pay for this Call option?

b. How much would be value of a Put option with the same characteristics?

Topic 9

Problem 31

You are holding 2000 stocks whose characteristics have been discussed in problem 30.

a. If you wanted to ensure to hedge the value of your position perfectly diring the coming 2 months at a price of £55 using put options, how many put option would you have to purchase?

b. Once you have purchased these put options, what further actions do you have to take in order to ensure your perfect hedge?

Problem 32

You believe to have spotted the mispricing of a call option on a leading company. The company has released new information, that has lead to widespread confusion in the market about its future prospects and has reduced the price of its stocks by just over 5% during the day. At the same time, a call option has increased in value. You now believe the call option to be overpriced as its value should have gone down with the stock price.

Is it correct that you have identified the mispricing of this call option?

Problem 33

Constantin Theopoleus is the CEO of CT Engineering E.P.E. As part of its investment programme to update their ageing machinery, the board considers the investment options and how these investments can be financed. Constantin Theopoleus intervenes at that point and states that obviously they will take a loan to finance the investment as they should be able to secure a loan at 8-9% p.a., while using equity currently costs 12-15% p.a., depending on how it is calculated. Therefore, loans are cheaper and it would increase the value of the firm to use loans when financing these investments. Is this assertion correct?

Problem 34

James Copeland is perplexed by the reaction of markets to an announcement his company has made. As the Chief Financial Officer he has made a disclosure that the company, Engineering Solutions plc, will expand its reach by opening another five offices across the country and finance the acquisition of suitable office space and the recruitment of staff by drawing on a £50m loan facility their bank has provided. Engineering Solutions plc provides engineering consultancy mainly for infrastructure projects and their main clients include Network Rail, National Highways, and major utility companies working on the establishment of wind farms as well as nuclear power plants, making their income stream highly predictable. While such a move to expand its geographical coverage was expected by the market, their share price did not react. In contrast to that, on the same day, another company, AIChip plc, made a long-anticipated announcement of expanding its business by investing into the production of high-end computer chips for use in applications involving artificial intelligence; their market is characterised by a large degree of uncertainty about future developments. Similar to Engineering Solutions plc, they announced that the expansion of their business would be financed though a loan facility provided by their bank. In this case the stock price increased by 8% after the announcement.

How can you explain the differences in the stock market reaction?

Problem 35

Vijay Foods plc owns a chain of supermarkets and Vijay Singh is its main shareholder and Chief Executive Officer. Recently Vijay Foods announced that as an alternative to modernising its existing supermarkets, it could expand its business by introducing budget supermarkets in the region of Marab, where Vijay Singh is a prominent local politician with ambitions to break into national politics. With their existing supermarkets, Vijay Foods plc target mainly middle class families and the business is performing well. The budget segment is highly contested by a large number of well established operators and financial analysts have been sceptical whether Vijay Foods plc can make a successful entry into this market. Undeterred, Vihjay Singh has approached his bank for a loan to finance both the modernisation of its existing supermarkets and the introduction of the new chain of budget supermarkets. His bank has declined to provide the loan and he has decided to use his considerable personal wealth to provide a private loan to the company. While the stock market had not reacted significantly when the expansion plans were announced, the stock price dropped instantly by 6% as the private loan was disclosed.

Why did the stock price drop after this announcement?

Problem 36

Hiromara Co. is a local producer of energy drinks, but suffers from expanding international competitors taking an increasing market share. Previous launches of new products have been either a failure or lead to moderate success. They have now developed and already announced a new drink they seek to bring to the market and plan a large marketing campaign for which they need to raise ¥10bn. In many previous cases the main shareholder has agreed to finance such investments by the company issuing new shares, but he has made it clear that his financial resources are limited and he would not be able to provide funding at the scale sought. Approaching their bank, Hiromara Co. is able to secure a loan for the required amount. Taking the willingness of the bank to provide the loan, which was only forthcoming after close scrutiny of its plans, as an endorsement of their plans, the agreement is announced publicly. Expecting a positive response from the stock market, especially as a loan has been raised, Hiromara Co. is disappointed that the stock price remains virtually unchanged.

How do you explain the lack of stock market response to the announcement of the funding of the marketing campaign through a bank loan?

Topic 10

Problem 37

Fritelli SpA and Mariagno SpA are two stationary companies focussing on high-end writing utensils, such as fountain pens, and accessories. They are both targeting the same market and are fierce competitors, where neither of these two companies seems to have a meaningful advantage over the other. The companies are located within 10 minutes walk of each other in the small town of Limosine and are the result of two brothers falling out over the running of their company, resulting in the company being split. Fritelli SpA is owned to 74% by Giorgio Mariagno, who also manages the company, while Mariagno SpA is owned to 78% by Antonio Mariagno, but due to health concerns has delegated the running of the company to an outside manager and is not involved in any but the most important decisions by the company. By coincidence, both companies announce within days that they will seek to raise equity from outside investors to strengthen their balance sheets and fund further expansion of their respective business lines; the amounts sought would in both cases reduce the holdings of the current owners to below 50%. The reaction of the stock market to this announcement is very different; in the case of Fritelli SpA the stock price drops by 7 while there is no reaction in the stock price of Mariogno SpA.

How can you explain the difference in the reaction of the stock market to the announcement of raising equity?

Problem 38

Alcatraz SA produces pipes and pumping stations for water and sewage companies. With many competitors in the field and utility companies employing strict tender rules for any large projects, it has become difficult for companies in this sector to remain profitable, Alcatraz SA being no exemption. Future business plans are often kept secret in this sector as to not give away information to competitors unnecessarily, however, Alcatraz SA has taken the unusual step to use an analyst conference and quite openly discuss their plans for the future development of the company. Financial analysts left the conference impressed by the openness of the company and were grateful for the insights not only into Alcatraz SA itself, but also the industry as a whole. A few weeks after this conference, Alcatraz SA announces that in order to increase their investments into the future development of the company, it will cut its dividend by

50% for the foreseeable future. This announcement took the market, as well as the financial analysts attending the conference, by surprise. However, the stock market did not react much to this announcement with the stock closing down 0.7% compared to the market overall closing down 0.6%.

How can you explain that there was no impact on the stock price after the dividend cut was announced?

Problem 39

Röthlisberger AG has lost significant market share in recent years and performed poorly overall, resulting in the dismissal of the senior management. The new management team is seen as highly competent and convinced that the company can be turned around quickly. Having taking up their new roles, the new management team is facing an immediate need to make investments for which additional funds are required. At the board meeting, it is discussed whether the dividend should be reduced, at least temporarily, to preserve cash and reduce the amount that needs to be borrowed for the necessary investments.

Do you think a decision to cut dividends is appropriate?

Problem 40

OfficeSolutions plc is a real estate company that owns large office spaces in many large cities to rent out as temporary locations for companies whose office undergo renovations or who have a sudden demand for additional office space. Their business has been performing very well recently and due to the lack of available office space to purchase, they have accumulated significant cash reserves. They have now approached RetailSpace plc with the aim of acquiring this company, who operate a similar business as OfficeSolutions plc, but focus on providing retail spaces. With the growth of online shopping, demand for retail space has been low and they have not performed well recently. Its acquisition by OfficeSolutions plc would however fulfill a long-term vision by the founder and CEO if OfficeSolutions plc to provide spaces for all commercial activities in town centres. In discussion with Lambrecht& Co, the investment bank advising them, they have been discussing how to pay for the acquisition. Lambrecht& Co have advised that the acquisition will not be well received by the market, but as OfficeSolutions plc seems insistent on completing the acquisition, they strongly recommend to make a cash offer rather than a stock offer. They advise that using their cash reserves to pay for the acquisitions would be seen as neutral by the market, while issuing shares in OfficeSolutions plc to the owners of RetailSpace plc would be seen as negative and will lead to a fall in the stock price.

What is the rationale for the advice given by Lambrecht& Co?

Topic 11

Problem 41

PLending Ltd. was founded 5 years ago to facilitate tailored peer-to-peer lending. They developed software that provides a platform for borrowers and lenders to negotiate the terms of the loan and is mainly used by high net-worth individual lenders and the borrowers are mainly mid-sized companies. These companies are mostly operating in well-established industries. The companies seeking loans are overall well-established themselves with ample public information about their business available and they typically show profitabilities that are slightly above average, all while using up-to-date technologies and ideas, although they are not at the forefront of innovations. While the platform expanded quickly and gained a loyal following by borrowers as well as lenders, it's growth has stalled in the last few months. At a strategy meeting of the Board of PLending Ltd. it is noted that the type of borrowers is rather limited to highly profitable and well-established companies in what many would describe as conventional industries. With many smaller, younger and very innovative industries struggling to secure the finance they need for developing and marketing new and innovative products and ideas, it was brought up that PLending Ltd. could seek to expand into this market segment.

As a member of the board, you argue that such a strategy would inevitably fail as you would unlikely break into this market segment. In your opinion small companies in such newly emerging industries would be either dominated by venture capitalists or banks specialising in such lending, but not peer-to-peer lending. How would you justify your stance?

Problem 42

Since the advent of online platforms for borrowing and lending, the amount of deposits private households has gradually declined. Deposits have been invested into money market funds that are traded on an exchange and they invest in government securities mainly. In addition, direct lending portals have become increasingly popular. Potential borrowers, small firms and individuals borrowing $10,000 or $50,000, provide standardised information about themselves on the portal, state the purpose of the loan and suggested terms. Lenders can then evaluate these offers and make counter-offers for a loan of $1,000 to any of the borrowers. The loans will only be paid out if the target amount is reached, i. e. 10 or 50 borrowers agree terms with a lender. Banks have reacted to this development by increasing deposit rates and hope to reverse the outflow of monies from the banking system. However, financial regulators have raised concerns abut this development. While on the one hand they are concerned by the increasing risks household face by providing loans through direct lending platforms, they are also concerned about the risks they face when buying or selling money market funds as prices inevitably will vary with market demand. Consumer representatives, however, point out that these investments provide a much higher return than bank deposits and should therefore be welcomed.

Are there any other concerns about the developments observed?

Problem 43

In a period of prolonged low-interest rates during a recession in the dominant mining sector of Uralia, investors have been searching for yield. Bank deposits have interests close to zero and government bonds are only marginally higher. Local entrepreneurs have developed an online platform that allows small companies and individuals to seek loans of UR$1,000, UR$5,000, or UR$10,000 at interests of 2%, 4%, or 7%, depending on the risk category they are assigned in an initial screening by the platform. All loans are fixed for 2 or 5 years. While those seeking to borrow money have to undergo an initial assessment, anyone seeking to lend money can do so. The identity of the borrower is only revealed after the loan agreement is finalised, but the amount and risk category are revealed upfront. After a rather slow start, the platform has become a popular investment tool that has been widely promoted by financial advisors and features prominently in many popular TV shows on investments. Banks notice that substantial amounts of deposits are withdrawn and transferred to loans agreed via this platform. They are naturally concerned about the competition for their own business, which often charges a higher loan rate, and would like the financial regulator to intervene.

The banks can obviously not ask the financial regulator to intervene in order to protect their own business from competition. What argument can the banks use to convince the regulator to intervene for their benefit?

Problem 44

The reserve bank in Offen, a developing country, has as its mandate to maintain economic conditions that promotes economic and social development. It has operationalised these aims by setting as its aims to keep inflation below 10% p.a., promote a steady growth of investment, and ensure stable banks. In order to achieve these aims, the reserve bank conducts monetary policy mainly through interest rate changes at which banks can borrow from the reserve bank or deposit excess funds; it also regulates the banking system through capital and liquidity requirements. In recent years the economy has been performing well due to high commodity prices, the main export in Offen, and the reserve bank has kept interest rates high and required banks to hold substantial liquidity reserves to avoid an unsustainable expansion of the economy. The governors of the reserve bank are concerned about a recent trend in which loans are obtained not through banks, but direct lending using money market funds, which are unregulated. These money market funds often are undercutting the loan rates that banks offer and have lead to a substantial expansion of lending in the economy.

While most governors are concerned about the credit growth undermining their attempt at maintaining a steady growth of the economy, Yuliana Oberamantsova raises concerns mainly about the implications for the investors in money market funds, for which no trading facilities exist so far. While there is no evidence that they are taking excessive risks that investors are not aware of, what other reasons might she have for investors to be disadvantaged? Would providing a trading platform for money market funds alleviate any concerns?

Topic 12

Problem 45

Voltera GmbH is a leading German manufacturer of electrical equipment used in a wide variety of industrial machinery. New markets have opened after the collapse of one of its main competitors and they seek to expand their business. Voltera GmbH has no meaningful experiences in the markets they seek to expand into, being both geographically different to their current main market and the type of machinery which uses their equipment is also different. While they can use some of their own resources to expand their business, they will have to rely on a loan for a substantial part of the investment. Approaching their bank, they have commenced discussion about a loan which is significantly larger than what they required thus far. During the discussion with their loan officer, they had the impression that their bank would support their investment plans. It comes therefore as a complete surprise that the loan offer obtained from the bank will only allow Voltera GmbH to finance some of the expansion. Subsequent negatiations lead to a slight increase in the loan amount offered, but it fell well short of the amount required for their initial plans. Their bank makes it clear that the it is not a question of increasing the loan rate as profits from the interest is not the driver behind this decision.

How can you explain that Voltera GmbH is not offered the full loan amount?

Problem 46

CallServices Ltd. is a long-established provider of call centers and has contracts with many retailers in the fashion industry to provide services to callers inquiring about their products, dealing with complaints, as well as managing returns and replacements. They are well known for their high level of satisfaction with customers due to employing knowledgable phone operators. The more recent trend to replace phone conversations with online chats has been less successful for the company and customer satisfaction has become a concern. In order to overcome this problem in dealing with customers, CallServices Ltd. has developed a plan to make more use of artificial intelligence and use chat robots more widely. They have observed that other companies which have pioneered this technology have suffered significant loss in customer satisfaction and have lost very profitable contracts as a consequence. CallServices Ltd. is convinced, however, that using the expertise of their call center staff they can develop a system that exceeds the performance of their call centers.

Approaching banks about financing their investment in developing the requisite software, CallServices Ltd. get offered loans that fall short of their requirements. The loans offered would allow them to invest into the training of their existing staff and expanding their offering in the more traditional call center services, but developing the artificial intelligence would not be possible with the loans offered. Why do banks only offer loans that are insufficient to make the investment into the new technology?

Problem 47

Contra plc provides material for the building industry for many years. One of their main customers is BYH Ltd., the country's largest provider of prefabricated homes. BYH Ltd. has been loss-making for a long period of time while demand for standardised houses was subdued and individually designed and build houses were much more popular, despite the higher costs. Seeking to avert bankruptcy, it has been reported in the local newspaper that the current owner has approached Contra plc to explore whether they are interested in buying BYH Ltd. Rumours have it that Contra plc is interested in such a purchase, but no formal offer has been made. At the same time, Contra plc has also planned to modernise their existing business by updating their production facilities to comply with upcoming environmental regulations. Given the financial situation of Contra plc, it is obvious that they could not conduct the modernisation and the purchase of BYH Ltd. at the same time. Contra plc. has been in negotiation with their bank on financing the modernisation of their business, but since the reports about them being interested in buying BYH Ltd. have been published, their bank has repeatedly cancelled meetings to finalise the loan and suggested that a smaller loan of approximately half the size would be sufficient to finance the first phase of a modernisation and that once this is completed, an additional loan might be sought.

How can you explain this behaviour of the bank?

Problem 48

At a meeting with fellow Chief Financial Officers at a conference, Pauline Harris shares a recent encounter with one of the banks her company uses. She reports that her company enquired about a loan for \$100m and was quoted a preliminary loan rate of 10.75% p.a., which she complained was rather high. In response to her complaining about a rather high loan rate, the loan officer at her bank told her that he could offer her a loan of \$150m for 10.25%. Pauline Harris looks at the people she is talking to and sees their puzzled faces. She continues by saying that she looked equally confused, but that it was luckily a phone conversation, so her surprise was not seen by the loan officer. Pauline remarks that somehow banks have gone crazy if they offer a larger loan at lower rates.

Is there an explanation for the offer of the bank?

Topic 13

Problem 49

Bank of Hampton operates a lucrative business in providing student loans on a commercial basis. They consider all students enrolled at Hampton University for a loan that would cover their tuition fees and reasonable living expanses for the duration of their degree. Such loans are then repaid with interest after graduation over either 15 or 25 years. Students are interviewed when applying for such a loan and based on the interview, together with their university application and other supporting documents, an offer of a loan may then be made. Generally students are offered a loan without having to provide any guarantees by parents, but some students and their parents choose to do so and are offered the same loan, although at a lower loan rate. Based on the information the bank has, there is no difference in the risk assessment between students that provide a guarantee through their parents or other relatives and those which do not. However, repayment rates of those providing guarantees are significantly higher.

The bank ascribes this observation to the higher effort students put in after graduation to avoid having to get their parents involved in the repayment of their student loan. Is there an alternative explanation?

Problem 50

Terme Moreno SpA operates nine spa and wellness hotels across Italy. In an expansion drive a few years ago it had a acquired another 6 properties to build new hotels, but these projects have been put on hold due to a deep and prolonged recession that has in particular affected the luxury market in which Terme Moreno SpA is operating in. Currently these properties are surplus to requirements, but have been retained for future development. The hotels are currently operating well below capacity and the immediate future of Terme Moreno SpA does not suggest improved business. In order to position itself better in the market, they seek to conduct a programme of wide-ranging updates of their existing hotels. Their bank agrees to financing these investments in principles, but in order to grant the loan seek collateral in form of the undeveloped properties. In addition, the bank requires Terme Moreno SpA to agree to them using their property as collateral in their own financing of this loan. The bank has hinted that without that agreement, the loan conditions would be significantly more onerous for Terme Moreno SpA, if they would be able to obtain a loan at all.

In addition to obtaining the loan in the first place, why would Terme Moreno SpA agree to such an arrangement?

Problem 51

Mettli AG is a Swiss pharmaceutical company that is best known for developing drugs for rare diseases using the latest advancements in science. They had some widely publicised success in recent years, but also a much larger number of failures which is less widely known. In addition to their significant research into such innovative drugs, requiring substantial investment, they also produce widely-used drugs which are sold in pharmacies without prescriptions, providing a stable income. Having mostly financed themselves through private equity investments until recently, they now seek a loan for the general financing of working capital for the company as they seek to expand sales of their widely-used drugs into more markets that have recently been opened and where few competitors exist. Having approached a number of banks, they have been disappointed at the response they have received. All banks were only willing to provide loans well below the amount sought; while this would allow them to expand into some markets, it would fall short of their ambitions. It is only once they revealed that they would be willing to use their future income from these drugs as collateral, that banks were willing to provide loans of the size required.

How can you explain this change in loans offers by banks?

Problem 52

Johan Rasmussen has been repeatedly turned down for a loan for the company he leads, Rasmussen Metals. It was only after he found a specialist lender which focussed on companies in mining non-precious metals and related industries, that he was able to secure a loan to modernise his business with the latest technology. In order to obtain the loan, he had to agree to use his storage of metals as collateral and that the lender could rehypothecate this collateral. Through trade publications he has become aware that it has become a well-known problem for companies like his to obtain loans, even though they are highly profitable and can easily use their extensive holdings of metals as collateral. The same publications also state that companies larger than him do not seem to face the same constraints in financing their businesses, even though their risk might be larger due to exposure in politically unstable countries. A brief survey suggested that of larger companies only 5% of respondents had to allow rehypothecation, while for mid-sized companies this rose to 54% and small companies were often not able to gain loans at all, even when rehypothecation was offered.

How can you explain these results?

Topic 14

Problem 53

Looking back through past loan agreements, Rafael Noval observes that over time loans for his company have become ever more expensive. Having set up his small company offering swimming tuition in private pools around holiday homes in southern Spain, he was offered an attractive loan rate of 6.5%, which then on renewal only 2 years later increased to 7.5% and then every year increased by 0.25% afterwards, without the general interest level being increasing during that time period. He believes that his now well established business would be much safer for banks than it was when he founded it. Looking around for alternative loans, he observes that no other bank would offer him a better loan rate. However, his friend Maya Fernandez has just set up a new business looking after gardens of holiday homes and was able to secure a loan at a loan rate of 6.75%, despite having no meaningful gardening or business experience.

How do you explain this observation?

Problem 54

Rossmann Hydro Ltd. is in financial difficulties arising from large compensation costs after a hydroelectric dam they operate has caused damage to surrounding properties due to an increasing water table that required costly mitigation measures to avoid future damage. The company is financed to a large extend by loans granted by a consortium of banks, insurance companies and pension funds. To allow Rossmann Hydro Ltd. implementing the mitigation measures, additional loans are required and knowing that the exposure of the existing lenders to their company is already high, they approached a variety of banks, who all declined a loan. When approaching their existing lenders, lengthy negotiations finally resulted in a loan being agreed, although its size was less than what was required, making the implementation of mitigation measures only possible if stretched over a longer time period.

Why would existing lenders provide a smaller than needed loan and new lenders are refusing to provide loans at all?

Problem 55

AILogic Ltd. has been developing tools that helps developers improve the performance of artificial intelligence applications. They have frequently relied on short-term loans to overcome cash shortages that arose if they needed to pay their developers before payments from their customers were obtained. Seeking to keep costs down, AILogic Ltd. has always scoured the market for the best conditions at the time and taken the most favourable loan, regardless who did offer it. Since they required a loan last two years ago, the banking market has changed through the entry of a number of new banks, some newly founded and some backed by banks in other countries. Seeking offers for loans again, they observe that most banks refuse to provide a quote and state that they are only interested in long-term business relationships with companies and do not provide ad hoc loans.

What caused this change in the ability of AILogic Ltd. to obtain a loan by seeking out the best conditions?

Problem 56

Farkas plc is a leading Hungarian supermarket chain, which for the past 20 years has used Csernai Bank for all its banking transactions, from cash handling, processing card payments, account services to providing loans to finance their company. They are currently undergoing a restructuring of their business, which has become necessary after competition from budget supermarkets had reduced their profits over the years and left them with high interest payments from ever larger loans that have been used to invest into the business. In the midst of their restructuring, the central bank announces that Csernai Bank has been put into administration due to excessive losses on mortages given over a decade ago. While all stocks listed on the local stock exchange show losses after this announcement, Farkas plc shows losses far in excess of comparable companies.

These large losses in the value of their stock comes as a surprise to the senior management of Farkas plc. How could you explain this development?

Topic 15

Problem 57

The banking system of Badenia is under significant stress. After the collapse of a large regional bank, depositors have been concerned about their bank failing and have been withdrawing deposits in large quantities, demanding cash or transferring their deposits overseas. Thus far the central bank has provided liquidity assistance to the banks affected, but the deposit withdrawals have not subsided despite assurances to the public that other banks are not affected in the same way as the regional bank and are safe. Prior to the recent events, the banks in Badenia were renowned for their conservative lending policy and been criticised often for not taking sufficient risks. Foreign banks, hedge funds, insurance companies and pension funds observe the events in Badenia and see a good opportunity to purchase high-quality loans these banks have provided at a discount. The widespread interest in these loans makes discounts to their true value small, limiting the profits of these foreign buyers. While initially the purchase of loans by foreigners is seen negatively, once the discussion about these purchases becomes more widespread, deposit withdrawals stop as suddenly as they began.

Politicians explain this development with the desire of the population to prevent a foreign takeover of their banks. Are they correct?

Problem 58

Reacting to banking crises in neighbouring countries, the government of Ruthenia decides to introduce a deposit insurance scheme to promote economic growth through building more trust in the banking system. Banks are required to pay a premium of 0.4% of their average deposits for the previous three years towards financing the deposit insurance, which will be government-backed, but operated privately through a designated company. The premium of 0.4% has been determined by actuaries on the basis of past risks banks have taken when giving loans as well as the leverage of banks. After five years operating the deposit insurance scheme, it is audited and the actuaries involved in assessing the adequacy of the premium charged, report that the risks banks take have increased and therefore a premium of 0.55% of deposits would be more adequate. The central bank as the relevant banking regulator objects to this increase in the deposit insurance premium by claiming that in the next audit the actuaries will return and demand an even higher premium and therefore suggest that the premium should be increased even more.

Is the central bank right in their demand?

Problem 59

Garabito is dominated by two banks, which share the market for loans as well as deposits about equally and their characteristics are very similar. An economic crisis brought on by the fall in the global market price for agricultural products has increased the losses from loans to both banks. One bank, First Garabito Bank, is facing a bank run as depositors fear the safety of their deposits in light of the losses the bank has accumulated on its loans. The other bank, National Garabito Bank, does not experience a bank run. Experts at the central bank are unable to explain this observation as they can see no difference between the banks, losses are similar in both banks and even the characteristics of depositors are nearly identical.

Can you offer an explanation?

Problem 60

Lodomia has a banking system that caters on the one hand to its domestic population, but it is also a major off-shore centre seeking to attract wealthy individuals. While all banks are serving both types of customers, they are by law required to provide banking services to any legal resident demanding it, they have different degrees of reliance on one or the other market. To improve the trust in the banking system by local residents and foreign residents alike, the government of Lodomia has decided to introduce deposit insurance for all banks. This decision was driven by a number of bank failures in neighbouring countries that lead to an increased anxiety in Lodomia about the stability of their banks. During the consultation with banks about the introduction of the deposit insurance scheme, some banks suggest that no deposit insurance should be provided, while other banks are suggesting there should be deposit insurance with an upper limit.

Why do banks make such different suggestions on the introduction of deposit insurance?

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