UNIVERSITY OF BATH

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ES32078 Economics of banking

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	2, 3
Topic 2	5, 6
Topic 3	11, 12
Topic 4	15, 16
Topic 5	17, 18
Topic 6	2, 3
Topic 7	10, 36
Topic 8	16, 20
Topic 9	22, 29
Topic 10	43, 48

The problems for topics 6 to 10 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 5, 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

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 2

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 3

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 4

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 2

Problem 5

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 6

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 7

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 8

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 3

Problem 9

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 10

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 11

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 12

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 4

Problem 13

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 14

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 15

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 16

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 5

Problem 17

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 18

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 19

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 20

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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