UNIVERSITY COLLEGE LONDON

EXAMINATION FOR INTERNAL STUDENTS

MODULE CODE	:	**ECON3023**
ASSESSMENT PATTERN	:	**ECON3023A**
MODULE NAME	:	**Economics of Financial Markets**
DATE	:	**03 May 2016**
TIME	:	**2:30 pm**
TIME ALLOWED	:	**2 hours**

This paper is suitable for candidates who attended classes for this module in the following academic year(s):

2015/16

2015/16-ECON3023A-001-EXAM-134

SUMMER TERM EXAMINATIONS 2016
ECON3023: ECONOMICS OF FINANCIAL MARKETS

Time allowance: 2 hours. Answer FOUR questions: ONE of the two in Part A (20% of your grade), and ALL in Part B (80% of your grade). Each question in Part B has equal weight. Please, explain your answers. A numerical answer without explanation will not give you full credit.

In cases where a student answers more questions than requested by the examination rubric, the policy of the Economics Department is that the student's first set of answers up to the required number will be the ones that count (not the best answers). All remaining answers will be ignored.

Part A (20%) (Answer ONE question)

Question A.1
It is frequently claimed that we cannot let some financial institutions go bankrupt since they are "too big to fail." Discuss why this is the case, and give some historical examples of cases in which regulators and policy makers have (or have not) intervened to save a big financial institution.

Question A.2
It has been claimed that one of the main causes of the 2007/8 U.S. subprime crisis has been bad economic policy. Explain which policies may have contributed to the crisis and to the slow recovery from it.

Part B (80%) (Answer ALL questions)

Question B.1
In our economy there are three dates $t = 0, 1, 2$ and a single, all-purpose good at each date. There is a continuum of ex-ante identical agents of measure 1. Each has an endowment of one unit of the good at time $t = 0$ and nothing at dates $t = 1, 2$. There are two assets, a short asset and a long asset. The short asset produces one unit of the good at date $t + 1$ for every unit invested at date $t = 0, 1$. The long asset produces $R = 1.5$ units of the good at date 2 for every unit invested at date 0. If instead it is liquidated at date 1, it produces $r = 0.5$.

At date 0 each agent is uncertain about his preferences over the timing of consumption. With probability 1/2 he expects to be an early consumer, who only values consumption at date 1. With the complementary probability he expects to be a late consumer, who only values consumption at date 2. Note that he never values consumption at date 0. Each agent has preferences represented by a Von Neumann-Morgenstern utility function, with

$$u(c) = \ln c.$$

Suppose there is a bank operating in a perfectly competitive sector (e.g., because of free entry). At date 0 the agents deposit their endowments in the bank. The bank allocates all agents' endowments in a portfolio of x units of the long asset and y units of the short asset. The portfolio (x, y) must satisfy the budget constraint $x + y \leq 1$. Let c_1 denote the amount consumed at date 1 by an early consumer and c_2 denote the amount consumed by a late consumer at date 2. Note that he will consume either c_1 or c_2 but not both.

a) What is the banking solution? That is, what portfolio and consumption levels will the bank choose?

b) Explain why with this solution a bank run may be possible.

c) If the bank wants to avoid the possibility of a bank run, what amount will it invest in the short asset? What level of consumption (c_1, c_2) will it offer to the consumers?

d) Suppose the exogenous probability of a bank run is Π. Compute the optimal portfolio and consumption plan (as a function of Π) for the case in which the bank accepts the possibility of a bank run.

e) If $\Pi = 0$, what is the optimal investment in the short asset?

f) If $\Pi = 1$, what is the optimal investment in the short asset?

g) If $\Pi = 0.2$, will the bank accept the possibility of a bank run?

Question B.2

Consider the model of financial contagion of Allen and Gale. Specifically, consider an economy with three dates $t = 0, 1, 2$ and a single, all-purpose good at each date. There are four regions in the economy. In each region there is a continuum of identical banks. In each region there is a continuum of ex-ante identical agents of measure 1. Each agent has an endowment of one unit of the good at date $t = 0$ and nothing at dates $t = 1, 2$. In order to provide for future consumption, each agent deposits his endowment in the representative bank of his region. The bank can invest the deposit in two assets, a short asset and a long asset. The short asset produces one unit of the good at date $t+1$ for every unit invested at date $t = 0, 1$. The long asset produces $R = 2$ units of the good at date 2 for every unit invested at date 0, and produces the amount $r = 0.3$ at date 1).

At date 0 each agent is uncertain about his preferences over the timing of consumption. With some probability he expects to be an early consumer, who only values consumption at date 1. With the complementary probability he expects to be a late consumer, who only values consumption at date 2. Note that he never values consumption at date 0.

The probability of being an early or late consumer depends on the state of nature that occurs. There are two, equally likely, states of nature, denoted by S_1 and S_2. The following table indicates the proportion of early consumers in each region depending on the state of nature (the letters A, B, C, D indicate the four regions).

	A	B	C	D
S_1	0.7	0.3	0.7	0.3
S_2	0.3	0.7	0.3	0.7

Note that the average proportion of early (and late) consumers in the entire economy is 0.5 in either state of nature.

Each agent has preferences represented by a Von Neumann-Morgenstern utility function, with

$$u(c) = \ln c.$$

a) Determine the efficient solution (optimal risk sharing), that is, the investment in the long and in the short asset and the level of consumption for early and late consumers. Is this solution incentive compatible?

b) Suppose now there is a market for interbank deposits. Show that in this case the first best can be achieved if the four representative banks are linked in a complete network.

c) Now suppose that the representative bank in region A operates without any relation with the banks in the other regions. Suppose the bank decides to implement the first best, that is, to choose the same investments in the short and the long asset and the same levels of consumption as under part a. Suppose that in this economy only essential crises (bank runs) occur (that is, whenever there are multiple equilibria, late consumers coordinate on the equilibrium in which they wait). Suppose that state S_1 occurs. Will there be a bank run?

d) Do interbank deposits help provide liquidity when there is an aggregate excess demand for liquidity in the system?

Question B.3

In our economy there are three dates $t = 0, 1, 2$ and a single, all-purpose good at each date. There is a continuum of ex-ante identical individuals of measure 1. Each has an endowment of one unit of the good at time $t = 0$ and nothing at dates $t = 1, 2$. There are two assets, a short asset and a long asset. The short asset produces one unit of the good at date $t + 1$ for every unit invested at date $t = 0, 1$. The long asset produces R units of the good at date 2 for every unit invested at date 0 (and produces nothing at date 1).

At date 0 each individual is uncertain about his preferences over the timing of consumption. In particular there are two types of consumers: early consumers and late consumers. There are two states of nature denoted by $s = L, H$. With probability λ_s an individual expects to be an early consumer, who only values consumption at date 1. With probability $1 - \lambda_s$ he expects to be a late consumer, who only values consumption at date 2. Note that he never values consumption at date 0. Suppose the agents' preferences are represented by $u(c) = \ln c$; moreover, suppose $R = 1.6$, $\lambda_L = 0.4$, $\lambda_H = 0.6$, with states L and H equally likely.

a) Set up the maximization problem to find the efficient solution for this economy.

b) Consider the feasibility constraints in this problem. List and illustrate the different cases that can arise in terms of slack and binding constraints. Can the constraints at time 1 be slack? And those at time 2? Give an economic interpretation.

c) Which constraints guarantee that the efficient solution is incentive compatible?

d) Compute the efficient solution, making sure it is incentive compatible.