Monetary and Financial Economics
Instituto Superior de Economia e Gestão

Exam – 7 July 2020 – **Duration: 1h 30mns**

Part A – MCQ [80 points = 4 points * 20 MCQ]

1. The idiosyncratic risk
   A) Is a variation of the systemic risk.
   B) Increases with the decrease of the systemic risk.
   C) It is the opposite of the systemic risk.
   D) None of the other answers is correct.

2. The money market
   A) Is the market where currency is traded.
   B) Is the market debt securities with original maturities above one year are traded.
   C) Is the market where the monetary authority intervenes.
   D) All the other answers are correct.

3. In a portfolio with two risky assets, it is possible that the portfolio risk is lower than the risk of the asset with the lowest risk, when:
   A) The correlation coefficient is +2.
   B) The correlation coefficient is +1.
   C) The correlation coefficient is -1.
   D) None of the other answers is correct.

4. The Capital Market Line
   A) Has a positive slope in the geometric space that considers in the abscissa axis the risk measured by the standard deviation and in the ordinate axis the expected return of the financial assets.
   B) Has a positive slope in the geometric space that considers in the ordinate axis the risk measured by the correlation coefficient and in the abscissa axis the expected return of the financial assets.
   C) Has a positive slope in the geometric space that considers in the abscissa axis the risk measured by the variance and in the ordinate axis the expected return of the financial assets.
   D) Has a positive slope in the geometric space that considers in the abscissa axis the risk measured by the standard deviation and in the ordinate axis the covariance of the financial assets.

5. According to Tobin's Separation Theorem, investors:
   A) They are risk averse and combine in their optimal portfolio only riskless assets.
   B) They are not risk averse and combine in their optimal portfolio only risky assets.
   C) They are risk averse and combine always in their optimal portfolio risky and riskless assets.
   D) They are not risk averse and combine always in their optimal portfolio risky and riskless assets.

6. The advantages of indirect financing include:
   A. *The reduction of transaction costs.*
   B. The elimination of adverse selection.
   C. The elimination of moral hazard.
   D. All the other answers are true.

7. In the exchange rate market, if the interest rate of deposits in foreign currency increases, everything else constant:
   A. *The curve of expected return for deposits in foreign currency shifts to the right.*
   B. The expected return of deposits in foreign currency decreases.
   C. The domestic currency appreciates.
   D. None of the other answers is correct.

8. A *yield curve* with a negative slope implies that the dominant expectations in the markets for the future level of interest rates:
   A. *Are of decreasing interest rates.*
   B. Can be of decreasing or of no changing interest rates.
   C. Are increasing with risk premium.
   D. Are increasing with liquidity premium.

9. An increase in money supply has a positive effect in stock prices. This causality
   A. *Is demonstrable via the Gordon model.*
   B. Is demonstrable via the interest rate parity.
   C. Is implicit in the Tobin model.
   D. Is incorrect.

10. Moral hazard,
    A. *None of the other answers is true.*
    B. Is equivalent to adverse selection.
    C. Is a consequence of the adverse selection problem.
    D. Contributes to an increase in transactions in the markets.

11. The future value
    A. *Is higher the lower the interest rate.*
    B. Is independent of the time until reimbursement.
    C. *Is higher the lower the interest rate.*
    D. None of the other answers is correct.

12. Who has a short position in a Futures contract,
    A. Deliver the underlying asset to who sold the Future, at a future date.
    B. Accepts the risk.
    C. Benefits when the price of the underlying asset increases.
    D. *None of the other options is correct.*

13. If there is an increase in the risk of stocks and there is an increase in the liquidity of bonds (everything else constant), bond demand:
    A. *Increases.*
    B. Decreases
    C. Does not change.
    D. There is not enough information to assess the impact on bond demand.

14. The term structure of interest rates:
    A. Presents the different bond interest rates with different levels of risk throughout time.
    B. *Presents the different bond interest rates with different levels of risk, liquidity and tax regimes, at the same point in time.*
    C. Presents the different bond interest rates with different maturities at the same point in time.
    D. Presents the different bond interest rates with different levels of risk, maturity, liquidity and tax regime, at the same point in time.

15. The Gordon model:
    A. Allows studying the impact of monetary policy on the stock market.
    B. Implies a constant growth rate of dividends.
    C. Allows relating the stock prices with the interest rates.
    D. *All the other answers are correct.*

16. Money demand,
    A. According to the Keynesian theory, it is only motivated by transaction and precautionary motives.
    B. Is a positive function of the interest rate and a positive function of income.
    C. According to the neo-Keynesian theory, it is a negative function of the conversion costs.
    D. *According to Baumol, none of the other answers is correct.*

17. The monetary multiplier,
    A. Is higher the higher the reserve coefficients.
    B. Is lower the higher the propensity of the non-monetary sector to hold currency.
    C. *Depends of the reserve coefficient and of the coefficient of preference for holding currency.*
    D. None of the other answers is correct.

18. The European System of Central Banks
    A. Defines and executes the euro area monetary policy.
    B. Is managed by the decision-making bodies of the European Commission.
    C. *Has the following bodies: Governing Council, Executive Board, and General Council.*
    D. Has an Executive Board with 6 members that are the operation decision-making body.

19. According to the traditional Keynesian view, a contractionary monetary policy,
    A. Causes a decrease of the real interest rate.
    B. Provokes the increase of output.
    C. *Can cause the decrease of the expected price level.*
    D. Causes a decrease in investment.

20. Non-conventional monetary policies:
   A. Include communication that influences the future interest rate expectations.
   B. Causes the change of the dimension of the balance sheet of the central banks.
   C. Include operations of "qualitative easing".
   D. *All the other answers are correct.*

Part B – [120 points = 20 points * 6 questions]

1. Which problems might be shared by selling bonds and selling second-hand cars?

Both in the bond market and in the second-hand car market, we may be faced with the existence of asymmetric information, that is, incomplete and unevenly distributed information between the contracting parties in a transaction in those markets. Usually one part has more information than the other and this information asymmetry gives rise to two types of problems:

1) Adverse selection takes place BEFORE the contract is signed, since agents with greater needs (with greater risks ...) more often accept worse negotiation conditions and have greater probability of being selected.

2) Moral hazard occurs AFTER the financial transaction. It represents the higher risk due to the engagement in too risky activities, making more likely to default on debt service or repayment of principal.

   In the bond market: As the risk of corporate bankruptcy is often not known, savers demand high interest rates. The "good" companies think that the interest is high and do not issue bonds. Only "bad" companies accept very high interest rates $\Rightarrow$ a decrease in the average quality of bonds $\Rightarrow$ higher interest rates $\Rightarrow$ less "good" companies issuing bonds.

2. Comment the following statement: "Both in the short- and in the long-term the increase in money supply in a certain country does not have any effect on the country's currency exchange rate".

The statement is false. In both the short and the long run, increasing a country's money supply decreases its currency's price (with exchange rates falling if we have direct quotation).
The difference is that in the short run the fall in the exchange rate will be more pronounced (we have an overshooting).
Basically, we know that in the short run, the decline in the exchange rate will be greater because the increase in the money supply causes a decrease in the domestic interest rate, an increase in the demand for foreign currency and an increase in the remuneration in foreign currency.
Considering money neutrality, in the long run, the interest rate will return to its initial level, as it will not be affected by the increase in the money supply. Therefore, in the long run the decline in the exchange rate will be less pronounced because it will only reflect the increase in the return in foreign currency.

3. Consider the following information regarding two financial assets.

a) Compute the expected returns, the risk (measured by the standard deviation), of each of the assets, and the correlation coefficient between the two returns.

b) Determine the analytical expression of the opportunity investment set.

	Asset 1		Asset 2	
Probability	Return (%)	Probability	Return (%)	
0,500	4	0,500	10	
0,250	6	0,250	7	
0,250	8	0,250	4	

	Pi	Ri	pi*Ri			Pi	Ri	pi*Ri
	0.500	4	2.00			0.500	10	5.00
	0.250	6	1.50			0.250	7	1.75
	0.250	8	2.00			0.250	4	1.00
E(Ri)			5.5	E(Ri)				7.8

	Ri-R	-1.50			Ri-R	2.25
		0.50				-0.75
		2.50				-3.75
Dev ^2		2.25		Dev ^2		5.0625
		0.25				0.5625
		6.25				14.0625

	Var	2.75		Var	6.19
	Stdevp	**1.66**		**Stdevp**	**2.49**

Covar	-4.1250
Coeff correl	**-1.0000**

Opportunity investment set
Rp=   6.40   +   -0.543   σp
Rp=   6.40   +   0.543   σp

4. "The three theories studied regarding the term structure of interest rates differ, essentially, by the degree of substitution that is assumed to exist between the securities of different maturities. This difference explains that a horizontal yield curve can have different readings relatively to the interest rate expectations". Comment the sentence, and justify.

5. "The Efficient Financial Markets Hypothesis (EFMH) requires that the economic agents have adaptive expectations to eliminate all the opportunities to generate extraordinary profits." Comment the statement defining what is the EFMH and its relation with the Expectations theory, including its implications and limitations.

The sentence is false. The EFMH requires economic agents to have rational expectations. According to the EFMH, prices of all financial assets adjust quickly and continually to changes in the fundamental values of those assets. In other words, financial markets are efficient and it is not possible for an investor to obtain consistently and continually a return rate on his investments (adjusted for risk) higher than the average market rate of return, given all available information.

Rational expectations are those that correspond to the optimal forecast or prediction, that is, they are the best possible forecast of the future internalizing all available information to the investor.

The implications of the theory of rational expectations are: i) forecast errors are on average zero and they are not predictable; ii) the application of the theory of rational expectations to financial markets is called the EFMH.

Two reasons for the expectations failing from being rational: i) not all information is available at all times; ii) not all available information is being used.

6. Consider that the ECB wishes to provide liquidity to the markets, in the amount of 75 billion EUR, via a reversible auction with variable interest rate, and receives the following proposals from the counterparts (billion EUR):

Interest rate, %	Bank A	Interest rate, %	Bank B	Interest rate, %	Bank C	Interest rate, %	Bank D
						0.07%	12.5
				0,06%	2.5	0,06%	15.5
		0,05%	5	0,05%	8.75	0.05%	12.5
0,04%	17.5	0,04%	12.5	0,04%	22.5	0.04%	15.75
0,03%	10.5	0,03%	25	0,03%	11.25	0.03%	5
0,02%	31.25	0,02%	37.5	0,02%	25		
0,01%	37.5	0,01%	25	0,01%	12.5		

a) What is the auction marginal interest rate?

b) What is the amount of funds provided at the interest rate of 0,03%?

c) Determine the total funds provided to banks C and D.

	Interest rate %	Bank A	Bank B	Bank C	Bank D	partial	cumm.
	0.0007				12.5	12.5	12.5
	0,06%			2.5	15.5	18	30.5
	0,05%		5	8.75	12.5	26.25	56.75
Marginal rate	0,04%	17.5	12.5	22.5	15.75	68.25	125
	0,03%	10.5	25	11.25	5	51.75	176.75
	0,02%	31.25	37.5	25		93.75	270.5
	0,01%	37.5	25	12.5		75	345.5
						0	345.5

		Bank A	Bank B	Bank C	Bank D	
Liquidity provided	75					
Marginal rate	0,04%					
Allotment rate	0.2674	(75-43.75)/68.25				
Total bank		4.6795	8.34249	17.2665	44.7115	75
Marginal revenue		4.6795	3.34249	6.01648	4.21154	18.25

a) auction marginal interest rate: 0,04%

b) Taxa de rateio de leilão: 0.2674

amount of funds provided at the interest rate of 0,03   51.75

Bank A	10.5
Bank B	25
Bank C	11.25
Bank D	5

c)

total funds provided to bank C   17.2665

total funds provided to bank D   44.7115

Total   61.978