

**Monetary and Financial Economics**  
Instituto Superior de Economia e Gestão

Exam – 17 June 2020 - **Duration: 1h 30mns**

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

1. Comment the following statement “The function of the financial markets is to increase economic efficiency”.

The statement is true, but incomplete. Besides increasing economic efficiency, increasing efficiency in allocating capital, financial markets also perform two other essential functions. On one hand, financial markets facilitate the transfer of funds from agents with excess financing capacity (greater than their investment opportunities) to agents who need financing (for their investment opportunities). On the other hand, financial markets are crucial for risk sharing in the economy. Therefore, if the financial markets are functioning well, they will foster savings for economic agents, and will allow the financing of more productive investment projects, creating favourable conditions for increasing economic growth.

2. Discuss the validity of the theory of the purchasing power parity to explain the behaviour of long-term Exchange rates.

The purchasing power parity (PPP) theory is an application of the single price law to the general price levels of different countries, supposing that the exchange rate of the currencies of two countries adjusts when there are changes in the price levels of these countries. Accordingly, ceteris paribus, if we allow a rise (or fall) of  $x\%$  in the general price level in country A compared to the general price level in country B, the currency of country A will depreciate (or appreciate)  $x\%$  against the currency of country B. In reality, it is very difficult to validate this theory, since it presupposes very unrealistic hypotheses, namely, the hypotheses that all goods are identical, that all goods are tradable and that there are no transportation costs or import taxes.

3. Consider the following information regarding two financial assets.

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

- b) Determine the composition of minimum variance portfolio.

Asset 1		Asset 2	
Probability	Return (%)	Probability	Return (%)
0,500	4	0,500	6
0,300	5	0,300	8
0,200	6	0,200	10

**a**

	Pi	Ri	pi*Ri		Pi	Ri	pi*Ri
	0.500	4	2.00		0.500	6	3.00
	0.300	5	1.50		0.300	8	2.40
	0.200	6	1.20		0.200	10	2.00
<b>E(R1)</b>			<b>4.7</b>	<b>E(R2)</b>			<b>7.4</b>
	Ri-R	-0.70			Ri-R	-1.4	
		0.30				0.6	
		1.30				2.6	
<b>Dev ^2</b>		0.49		<b>Dev ^2</b>		1.96	
		0.09				0.36	
		1.69				6.76	
<b>Variance</b>		0.61		<b>Variance</b>		2.44	
<b>Stdev</b>		<b>0.78</b>		<b>Stdev</b>		<b>1.56</b>	
	Covariance		1.2200				
	Correlation coefficient		<b>1.0000</b>				

**b**

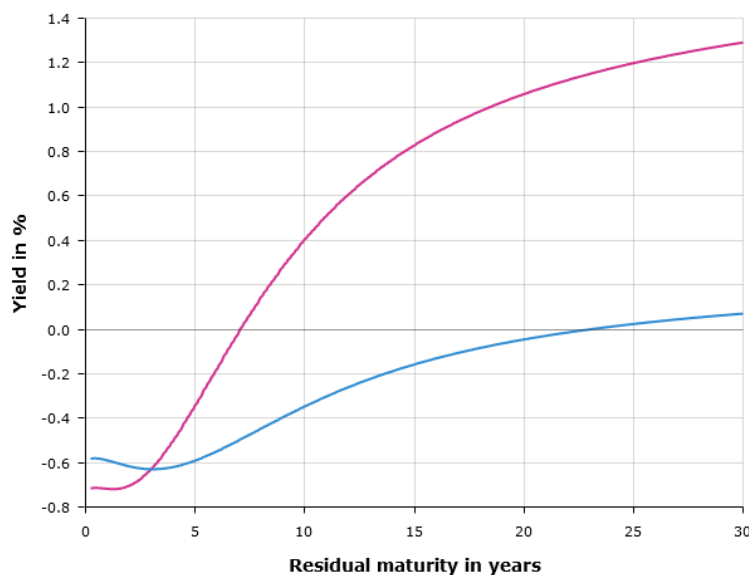
**Min var portfolio**

<b>Rp</b>	<b>4.7</b>
<b>x1</b>	<b>1</b>
<b>x2</b>	<b>0</b>
<b>σp</b>	<b>0.78</b>

4. The chart depicts the interest rate curve for bonds in the euro area rated AAA, on 26 May 2017 (red line) and on 26 May 2020 (blue line).

a) Read the curve in 26 May 2020 (blue) according to the theory of expectations and with the theory of risk premium. Justify your answer.

b) How do you explain the development of the interest curve between May 2017 and May 2020?



a)

### Expectations theory

Long-term interest rate = average of the intermediate short-term interest rates, expected to occur during the maturity of the bond.

Expectations of rising interest rates: the average of the future short-term interest rates is higher than the current short-term interest rates: positive slope.

### Liquidity premium/risk premium theory

Different maturity bonds are imperfect substitutes. Investors prefer short and long maturity assets; there is a liquidity premium for long-term bonds. Mildly positively sloped yield curve in May 2020, does not necessarily imply expectations of rising interest rates, since we need to consider the liquidity premium. Most likely the expectations are for interest rates to keep the current levels.

b)

The 2020 yield curve is flatter and with lower interest rate levels.

In 2017 the expectations were that interest rates would increase more than the actual expectations.

Current expectations show negative short-term interest rates for some time in the future.

5. What is the difference between interest rate swaps and interest rate forward contracts? Discuss its advantages and disadvantages.

Swaps: Financial contracts where both counterparts have to exchange cash flows (there is no exchange of assets).

Interest rate swaps: exchange of two treasury flows, that generate interests, and that have different characteristics.

Interest Rate Forward: agreement between two counterparts for a financial transaction that will take place in the future. Not very liquid; not easy to find counterparties.

Long position = agreement to buy bonds in a future date. Allows fixing the interest rate for available fund in the future.

Short position = agreement to sell bonds in a future date. Allows decreasing the risk of price volatility caused by the changes in the interest rates.

Advantage: flexibility.

Disadvantages: 1. Illiquidity, may be difficult to find a counter-part. 2. Risk of lack of payment (asymmetric information).

6. Consider the following information regarding the euro area monetary system at 31 December of year  $X$  in billion EUR:

$$\begin{aligned}
 DO &= 1750; & DP_{\leq 2Y} &= 950; & Dpa_{\leq 3M} &= 1250 \\
 R &= 178; & DT &= 4750; & rL &= 1.75\%; & rC &= 1\% \\
 c &= 6\%
 \end{aligned}$$

a) Compute the monetary base ( $H$ ) and the monetary aggregates  $M1$ ,  $M2$  and  $M3$  at 31 December of year  $X$ .

b) Assess the liquidity of the MFIs at 31 December of year  $X$  and comment the results.

c) Assume that in the beginning of year  $X + 1$  the Eurosystem implements operations to provide liquidity of 125 billion EUR. Quantify and analyse the effects of those operations on the liquidity of the MFIs and on the potential expansion of  $M3$  in that year.

			C	<b>285</b>		
a)	DT	4750	<b>M1=C+DO</b>	<b>2035</b>		
			<b>M2=M1+D</b>			
	DO	1750	<b>P</b>	<b>4235</b>		
	DPa2	950	<b>M3=C+DT</b>	<b>5035</b>	M=mH	
	DP3m	1250	<b>H=C+R</b>	<b>463</b>	H	415.625
	<b>R</b>	178	b) Rlv	<b>47.375</b>		
			b	<b>0.057</b>	m	<b>12.114</b>
	Rc	<b>47.5</b>	c	0.060	m	<b>12.114</b>
	rc	0.01				
	RI	<b>83.125</b>				
	rl	0.0175				
c)	Rlv	<b>47.38</b>				
	dRlv	125				
	dM3=	m	Rlv			
	dM3=	<b>2088.2</b>				
	dM3 %	41.5%				

$$m = \frac{1}{b+r-rb}$$

$$m = \frac{1+c}{c+r_L+r_C}$$