Universidade de Lisboa
Instituto Superior de Economia e Gestão
Departamento de Economia

Mestrado em Economia Monetária e Financeira
Fundamentos de Economia Financeira
2017-2018

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Prova de avaliação: **Época Normal**
19.6.2018 (18.00h-21.00h, 101 F1)

Closed book exam. No auxiliary material (on paper, electronic or any other form) is allowed.

1. `[5 points]` Consider a deterministic, two-period, representative-agent finance economy where the initial asset stock is zero, the flow of endowment is $\{y_0, y_1\}$ and the intertemporal utility function is

$$U(c_0, c_1) = \log c_0 + \beta \log c_1,\ 0 < \beta < 1$$

   a) Specify the agent's problem. Define the general equilibrium.
   b) Characterize the implicit behavioral assumptions. Solve the representative agent problem.
   c) Find the equilibrium asset return. Provide an intuition.

2. `[7 points]` Consider Arrow-Debreu economies with the data that follows: (1) the information is given by a binomial tree with two periods, $\mathbb{T} = \{0, 1\}$ and N states of nature for period 1; (2) the endowment distribution for the period $t = 1$ is $y_{1,s} = y_0 \cdot (1 + \gamma_s)$, for state $s = 1, \ldots, N$; (3) agents are homogenous; (4) the representative agent has a discounted time-additive, von-Neumann-Morgenstern utility functional with a CARA Bernoulli utility function,

$$u(c) = \frac{c^{1-\theta}}{1-\theta},\ \theta > 0$$

   (a) Define the equilibrium, and provide an intuition.
   (b) Determine the solution for the consumer problem, and provide an intuition.
   (c) Determine the equilibrium stochastic discount factor. Assuming that $\mathbb{E}[\gamma_s] = \gamma > 0$ find a bound to the expected value of the stochastic discount factor by using Jensen's inequality. Provide an intuition for your results.

3. `[8 points]` Consider a finance economy in which there is a risk-free asset with return $1 + r$, for $r > 0$, and a risky asset with return $R = (1 + r - \varepsilon, 1 + r + \varepsilon)$ for $0 < \varepsilon < 1$. Assume that the representative consumer has a logaritmic Bernoulli utility function and the endowment process is $Y = \{1, Y_1\}$ where $Y_1 = (1 - \gamma, 1 + \gamma)$ for $0 < \gamma < 1$.

   (a) Find the probabilities for the two states of nature assuming that there are no arbitrage opportunities (Hint: use the condition $\mathbb{E}[M(R - R^f]] = 0$).
   (b) Find the Sharpe index for the risk premium. Justify.
   (c) Find the Hansen-Jaganathan bound. Justify.
   (d) Does the equity premium puzzle holds in this case ? Provide an intuition.