

PAPER CODE	EXAMINER	DEPARTMENT	TEL
ECO320	Tiago Freire	IBSS	0450

2nd SEMESTER 2013/14 Final Examination

BA ECONOMICS – Year 4

ADVANCED MACROECONOMICS

TIME ALLOWED: 2 hours

INSTRUCTIONS TO CANDIDATES

- 1、 This is a closed-book examination, which is to be written without books, tapes, or notes.
- 2、 Total marks available are 100, divided in Section A (40 marks) and Section B (60 marks). Answer all questions.
- 3、 In section A, a total of 40 marks are available. The number of marks awarded for each question is given in [] after each question.
- 4、 In section B, a total of 60 marks are available. The number of marks awarded for each question is given in [] after each question.
- 5、 Answer should be written in the answer sheet(s) and/or booklet(s) provided. Only English solutions are accepted.
- 6、 You cannot use a calculator or any other electronic device during this exam.
- 7、 All materials must be returned to the exam supervisor upon completion of the exam. Failure to do so will be deemed academic misconduct and will be dealt with accordingly.

SECTION A (problem solving, total marks 40)**Present your derivations to the solutions of the problems. (Total marks 40)**

A1. Consider the following rational expectations model of the economy:

(1) $y_t = b(p_t - E_{t-1}p_t)$: Aggregate supply

(2) $y_t = a(m_t - p_t) + \varepsilon_t$: Aggregate demand

(3) $m_t = \bar{m} - cy_t$: Counter-cyclical monetary policy

Where y_t is log output in period t , p_t is the log price level in period t , m_t is the log money supply in period t and ε_t is an exogenous, independently distributed, mean zero random variable. The terms a, b, c and \bar{m} are constants and strictly positive. $E_{t-1}p_t$ stands for expectations of inflation in period t given information at period $t-1$.

(a) Taking into account central bank behavior, solve the model for y_t and p_t as functions of constants (a, b, c and \bar{m}) and ε_t . **[15 marks]**

(b) Discuss the arguments for and against the rational expectations hypothesis. **[5 marks]**

A2. Consider a model with the central bank pursuing an optimal discretionary monetary policy:

$$(1) U = -1/2 [ax_t^2 + (\pi_t - \pi^*)^2] : \text{Social Loss}$$

$$(2) \pi_t = \lambda x_t + E_t \pi_{t+1} + u_t : \text{Aggregate supply}$$

$$(3) x_t = -\theta [i_t - E_t \pi_{t+1}] + E_t x_{t+1} + \bar{g} : \text{Aggregate demand}$$

$$(4) u_t = \rho u_{t-1} + \hat{u}_t ; 0 < \rho < 1 : \text{Supply shock}$$

Where U is aggregate utility function, x is the output gap; π is the inflation rate; π^* is the central bank's inflation target; i is the nominal interest rate; \bar{g} is an exogenous autonomous demand (deterministic); E is the rational expectations operator. u is a cost-push disturbance, which is auto-correlated with previous period's disturbance, with auto-correlation coefficient ρ and \hat{u}_t is a random shock with $E_{t-1} \hat{u}_t = 0$. λ and θ are constants.

(a) Derive the first-order condition in x and π that must be satisfied by an optimal discretionary monetary policy? [Hint: find the output gap that minimizes social loss] **[8 marks]**

(b) In the absent of a random shock, what is the long-run equilibrium value of i_t ? **[8 marks]**

(c) Discuss whether it is optimal for the monetary authority to follow a discretionary monetary policy or a rule-based policy (i.e. Taylor Rule). **[4 marks]**

SECTION B (short answer questions, total marks 20)

Write a short answer (around 15 lines), which can include formulas or graphs.

- B3. In the New Keynesian Macroeconomic models discussed in lectures there were two sources of recession: (i) a demand shock; (ii) a supply shock. If you assume no government intervention, how does the economy return to equilibrium after a shock?
[Note: assume no government intervention] **[20 marks]**

- B4. In response to the 2008 economic crises the US Federal Reserve lowered its key Federal Reserve funds interest rate. Furthermore, the US Congress passed the American Recovery and Reinvestment Act (2009) that involved direct spending in infrastructure, education, health and energy. Discuss which program, in theory, was more effective in returning the economy to its long-term trend. Assume the US is a closed economy. Do not forget to mention factors that might influence your answer. **[20 marks]**

- B5. One of the problems of the Chinese economy is a high inflation rate. Discuss the role of the exchange rate regime (fixed exchange rate vs flexible) in keeping a low and stable inflation rate. **[20 marks]**

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