



University College Dublin  
An Coláiste Ollscoile, Baile Átha Cliath

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**SEMESTER 2 EXAMINATIONS – 2014**

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**ECON41620**

**MA Advanced Macroeconomics**

Professor Cillian Ryan

Professor Paul Devereux

Professor Karl Whelan\*

**Time Allowed: 2 Hours**

**Instructions for Candidates**

This exam has three sections.

Section A is worth 30% and requires 4 questions from 8.

Section B is worth 30% and requires 1 question from 3 in both sub-sections.

Section C is worth 40% and requires 2 questions from 3.

If you answer more than the required number of questions, all answers will be graded and the best answers counted.

**Instructions for Invigilators**

Foreign language/English dictionaries are permitted.

Scientific calculators are permitted

Programmable calculators are not permitted

## **SECTION A (30 Points)**

Write a short discussion on *four* of the following topics.

- i. Methods for de-trending macroeconomic data
- ii. The Lucas critique
- iii. New and old Phillips curves
- iv. The Taylor principle
- v. Interest rate risk spreads and the financial accelerator
- vi. Why bank runs lead to reductions in the supply of credit
- vii. Capital adequacy regulations for banks
- viii. Macro-prudential regulation

## **SECTION B (30 Points)**

Answer both parts 1 and 2, which are equally weighted.

### **Part 1**

Select *one* of the following papers to discuss. Outline the contribution of the paper and comment on what you learned from reading it. Can you think of criticisms of the paper or perhaps areas where it could be extended or improved?

- (a) Glenn Rudebusch. "Do Measures of Monetary Policy in a VAR Make Sense?"
- (b) Richard Clarida, Jordi Gali, and Mark Gertler. "The Science of Monetary Policy: A New Keynesian Perspective."
- (c) Frank Smets and Rafael Wouters. "Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach."

## **Part 2**

Select *one* of the following papers to discuss. Outline the contribution of the paper and comment on what you learned from reading it. Can you think of criticisms of the paper or perhaps areas where it could be extended or improved?

- (a) Andrew Haldane and Vasileios Madouros. "The Dog and the Frisbee".
- (b) Martin O'Brien and Karl Whelan. "Changes in Bank Leverage: Evidence from US Bank Holding Companies".
- (c) Ricardo Cabellero: Macroeconomics after the Crisis: Time to Deal with the Pretense-of-Knowledge Syndrome.

## ***SECTION C (40 Points)***

### ***Answer Two Questions***

#### ***Question 1: VAR Models.***

- (a) Suppose you are running a VAR system featuring the central bank interest rate, inflation and GDP. You start by estimating each equation by OLS. How should you interpret the residuals to these equations?
- (b) What kind of considerations should you keep in mind when applying an identification method to VAR like the one outlined in part (a)? Describe how to implement a recursive identification.
- (c) Compare and contrast VARs and DSGE models as tools for forecasting and policy analysis.

### **Question 2: The RBC Model**

Consider an economy in which a social planner wishes to maximise

$$E_t \sum_{k=0}^{\infty} \beta^k \left( \frac{C_{t+k}^{1-\theta}}{1-\theta} - aN_{t+k} \right)$$

where  $C_t$  is consumption,  $N_t$  is hours worked, and  $\beta$  is the representative household's discount rate. The social planner faces the constraint

$$C_t + K_t - (1 - \delta)K_{t-1} = A_t K_{t-1}^\alpha N_t^{1-\alpha}$$

- (a) Show how to derive the first-order conditions for this problem.
  
- (b) Show how to log-linearise one of the first-order conditions around a no-growth steady-state path.
  
- (c) What are the RBC model's strengths and weaknesses as a model of the business cycle?

### **Question 3: Credit Rationing**

This question relates to the Stiglitz-Weiss model of credit rationing.

The model's assumptions are as follows.

- The model economy consists of a number of potential firms, each of whom have a project that could be undertaken.
- Any firm undertaking a project must borrow  $B$  and put up collateral  $C$ .
- Projects deliver a sum of  $R$  but this is uncertain and its distribution varies across borrowers: Borrowers of type  $\theta$  have a return distribution of given by probability density function  $f(R, \theta)$  where higher values of  $\theta$  induce a mean-preserving spread in the distribution of project returns.
- The probability density function for  $\theta$  is  $g(\theta)$  and  $G(\theta)$  is its cumulative density function.

- Borrowers are observably identical to banks: The bank does not observe an individual's value of  $\theta$  but is aware of the form of the distribution  $G(\theta)$ .
  - The interest rate  $r$  is determined endogenously in the model which has an upward-sloping supply curve in which more loans are provided when banks obtain a higher return.
- (a) Describe the decision that firms take when deciding whether to borrow to undertake a project. How does this decision vary according to the firm's value of  $\theta$ ?
- (b) Suppose the bank did know the borrower's type? What would its expected return be for a particular interest rate  $R$ ?
- (c) Given that banks do not know a borrower's type, what is its expected return conditional on a firm being willing to borrow at a particular interest rate  $R$ ?
- (d) Describe the determination of the interest rate and loan quantities in the model. When are we more likely to see credit rationed?

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**End of Paper**