



University College Dublin  
An Coláiste Ollscoile, Baile Átha Cliath

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**SEMESTER 2 EXAMINATIONS – 2015**

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**ECON41620**

**MA Advanced Macroeconomics**

Professor Barry Reilly

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. Solution methods for systems of equations in rational expectations models.
- ii. The Lucas critique
- iii. New-Keynesian and expectations-augmented Phillips curves
- iv. Estimation methods for DSGE models
- 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. The relationship between changes in total assets and changes in leverage for banks.

## **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) Lutz Killian. "Not All Oil Price Shocks are Alike: Disentangling Demand and Supply Shocks in the Crude Oil Market"
- (a) Robert J. Gordon: "The History of the Phillips Curve: Consensus and Bifurcation"
- (b) 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) Joseph Stiglitz and Andrew Weiss. "Credit Rationing in Markets with Imperfect Information".
- (b) Andrew Haldane and Vasileios Madouros. "The Dog and the Frisbee".
- (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) Describe how to implement a recursive identification in a VAR. What kind of factors do you have to take into account when deciding on the ordering of the identification?
- (c) What problems are caused by VARs having large numbers of coefficients? Describe a method that helps to solve these problems.
- (d) 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 two of the first-order conditions around a no-growth steady-state path.
- (c) Show how to calculate the values of the key variables in the model in a zero growth non-stochastic steady state.
- (d) What are the RBC model's strengths and weaknesses as a model of the business cycle?

### Question 3: The New Keynesian Model

Consider the three-equation New-Keynesian model

$$\pi_t = \beta E_t \pi_{t+1} + \gamma x_t + u_t$$

$$x_t = E_t x_{t+1} - \sigma (i_t - E_t \pi_{t+1} - r_t^n)$$

$$i_t = r_t^n + \theta_\pi \pi_t + \theta_x x_t$$

- (a) What do the terms in these equations represent? What do the equations mean and, roughly, how were they derived?

- (b) What properties must the interest rate policy rule have for this model to have a unique stable equilibrium?
- (c) Briefly describe what optimal monetary policy under commitment looks like in this model
- (d) Discuss the empirical fit of the behavioural equations in this model.

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**End of Paper**