

# **EC7006 Macroeconomics II**

## **Labour Search and Matching in Macroeconomics**

### **Part C**

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Office hours: Friday 9:00-11:00 TRiSS; Available by appointment too).

**Course Information**  
Lectures: Monday 12:00 Room 3020 Arts Building  
Tutorial: Thursday 10:00 Room 3020 Arts Building

#### **Introduction**

This module focuses on the macro-economic aspects of labour supply, labour demand, unemployment volatility and matching in the labour market. In this course we will examine the baseline Real-Business Cycle (RBC) model, the baseline New-Keynesian model (NKM) with sticky wages, and the Diamond-Mortenson-Pissarides (DMP) search model. We will discuss the appropriateness of these models' predictions of observed labour market trends with a specific focus on the role of unemployment benefits, the 2008 recession, and the declining labour income share observed in developed economies.

After the course you should be able to discuss:

1. (a) The stylized facts of the labour market in developed economies; (b) the relative importance of the job finding rate and separation rates in a recession; and (c) differences in these rates between US and EU and what they mean for equilibrium unemployment.
2. The labour market predictions of the Real-Business Cycle and New Keynesian models and their shortcomings in explaining labour market volatility in developed countries.
3. (a) The basic Diamond-Mortenson-Pissarides (DMP) search model; (b) reservation rates and endogenous job destruction; (c) the DMP model with on the job search; and (d) the impact of productivity shocks and shocks to matching technologies on labour market outcomes.

#### **Outline of Part C**

##### **Session 1: Stylized facts and standard business cycle models**

This session discusses the stylised facts of labour markets in developed economies and introduces you to job inflow and outflow rates, the relationship between unemployment and the output gap, the concept of steady state unemployment along with the relationship of the unemployment rate to the job vacancy rate.

1. Stylized facts (Lecture Notes only):
  - Role of the labour market in the economy, declining labour income share in developed countries.
  - What do mean with employment, job creation and job destruction?
  - Okun's law on the relationship between unemployment and output gap.
  - Job inflow and outflow rates differentials between the US and EU (with a special focus on the recession and recovery).
  - Shimer problem
  - Beveridge curve
2. The baseline RBC model (Romer chapter 5.3-5.5, 5.7)
  - Depending on preference of students we will cover this model using either the Lagrangian approach or the Bellman approach.
3. Baseline New-Keynesian model with sticky wages (Lecture Notes only)

- This section will follow Davide's session on the most basic New-Keynesian model and highlight labour market implications.

### **Tutorial 1: NKM and Predictions**

This tutorial session will not be based on problem sets. We will complete what ever we did not cover in the previous session, discuss the predictions of the RBC and NKM models and, if we have time, discuss the Hanson and Rogerson model of indivisible labour.

### **Session 2: Diamond-Mortenson-Pissarides (DMP) search models (Pissarides chapter 1.1-1.4)**

This session introduces the baseline DMP search model. We will start by what we mean by search frictions and how this model differs from the NKM and RBC models. After introducing the concepts of matching technology and search frictions, we will discuss the behaviour of firms and individuals and the bargaining that takes place to form wages.

1. What are search frictions and why does it matter?
2. Baseline model:
  - Matching technology
  - The firm and the worker
  - The value of employment and employee behaviour
  - The value of firm vacancies and filled jobs
  - Exogenous job creation and destruction
  - Nash bargaining between workers and firms

#### **Tutorial 2:**

- Labour response to productivity shocks in RBC model and whether it lines up with empirical reality.
- Time path of employment rate in Shimer model

### **Session 3: Equilibrium in DMP model and expansions**

In this session we will derive the equilibrium in the DMP model discuss whether this model addresses the Shimer puzzle. We will also introduce endogenous job destruction (from the perspective of the firm) and the role reservation productivity rates in the longevity of jobs. We will also introduce exogenous labour turnover (where workers leave the firm because of a poor match).

1. Steady state, shocks and the Shimer puzzle (Pissarides chapter 1.5 and 1.7)
  - Productivity shocks
  - Unemployment benefits in duration of unemployment
  - Social planners problem
2. Job destruction (Pissarides chapter 2.1-2.3)
  - Endogenous job destruction and reservation rules
3. Exogenous Labour turnover (Pissarides chapter 4.1)

#### **Tutorial 3:**

- Vacancy filling rates with different matching technologies
- Multi-Worker firms
- Nash bargaining between workers and firms

### **Session 4: On the Job Search and Summary**

In this session we will finish our treatment of the DMP model by including on the job search.

1. DMP model with on the job search (Pissarides chapter 4.2-4.6)

- a. Probability of worker searching for a job
  - b. Probability of finding a job
  - c. Productivity Shocks
2. Summary of what we covered.

**Tutorial 4:**

- Productivity shocks in DMP model
- Endogenous job destruction
- On the job search

**Assessment**

Every week, I will upload on Blackboard a problem set with practical exercises. Please return your solutions to the teaching assistant before the class of the day in which the problem set must be delivered. This date corresponds to the second Thursday after it has been circulated.

We will not accept submissions by email or after the deadlines. We recommend that you work in groups to solve problems. The maximum group size is 3 people. Please submit one solution per group. All group members will receive the same score. Verify that you place the names of all who worked on the problems.

**Module website**

Slides, problem sets and additional materials will be made available on [Blackboard](#).

**Final grade:**

- Assignments (weekly problems sets): 20%
- Final exam: 80%

**Textbooks:**

Romer, D. (2012). *Advanced macroeconomics* (4<sup>th</sup> edition). McGraw-Hill.

Pissarides, C.A., 2000. *Equilibrium unemployment theory*. MIT press.