UNIVERSITY COLLEGE LONDON

EXAMINATION FOR INTERNAL STUDENTS

MODULE CODE	:	**ECON3007**
ASSESSMENT PATTERN	:	**ECON3007A**
MODULE NAME	:	**Economic Policy Analysis**
DATE	:	**18 May 2016**
TIME	:	**10:00 am**
TIME ALLOWED	:	**3 hours**

This paper is suitable for candidates who attended classes for this module in the following academic year(s):

2015/16

TURN OVER

SUMMER TERM 2016

ECON3007: ECONOMIC POLICY ANALYSIS

TIME ALLOWANCE: 3 HOURS

*Answer **FIVE** questions from Part A and **ONE** from Part B*

Questions in Part A carry 10 per cent of the total mark each and questions in Part B carry 50 per cent of the total mark each.

In cases where a student answers more questions than requested by the examination rubric, the policy of the Economics Department is that the student's first set of answers up to the required number will be the ones that count (not the best answers). All remaining answers will be ignored.

PART A

Answer **FIVE** questions from this section.

A1. Are the following statements true or false? Justify your answer (answers without explanation will not be considered).

a) Most of the rise in life expectancy over the 1850-1950 period was due to increases in life expectancy after age 55.
b) Over the last 20 years employment rates of men ages 65-69 have risen in the UK.
c) Government pensions in Britain are becoming more generous over time,

A2. Are the following statements true or false? Justify your answer (answers without explanation will not be considered).

a) Empirical evidence clearly shows that Unemployment Insurance benefit extensions help people to search longer, and to find better jobs.
b) An unemployed person with present-biased preferences often procrastinates job search behaviour, which slows down the process of finding a job.
c) In most countries unemployment insurance is provided by the government. This can be explained by the fact that it is very hard to monitor job search behaviour. Therefore, private companies fail to provide sufficient levels of insurance.

A3. Using a simple diagram, based on the simplest possible model where an economy produces one final good using skilled and unskilled labour with a constant returns to scale production technology, and where the supply of labour is inelastic (i.e. the labour supply curve is vertical), explain:

a) What happens to wages of unskilled native workers when unskilled immigrants enter the country?
b) What is the migration surplus, and who will benefit from it?
c) Who gains and who loses? Are the gains larger or smaller than the losses?
d) Assume now that labour supply is elastic. How would you change your answers above?

A4. The following statement is taken from a recent article in the Daily Telegraph:

> *Tough going for Chancellor George Osborne so far - peer after peer have been standing up and criticising his proposed changes to tax credits, not least over the impact on the working poor.*
> *Daily Telegraph, October 27th, 2015.*

a) Referring to an existing in-work Tax Credit system, explain how an earned income tax credit can provide incentives to work while also redistributing to low-income families.
b) How do labour supply elasticities influence the optimal design of in-work tax credits?

A5. Discuss the following statement: "If students were randomly assigned to teachers then we could be certain that value-added measures of teacher performance were not biased by non-random sorting of students to teachers. Even in the absence of random assignment, there is suggestive evidence that non-experimental estimates of teacher value added have little contamination due to sorting."

A6. This problem concerns price indices.

a) Define 'Elementary Aggregate' in the context of the calculation of inflation
b) Write down the Carli, Dutot and Jevons formulas that are used to construct the Elementary Aggregates for the UK's Price Indices
c) The Table below gives (hypothetical) prices in three periods of the price of a particular brand of white bread in two different shops.

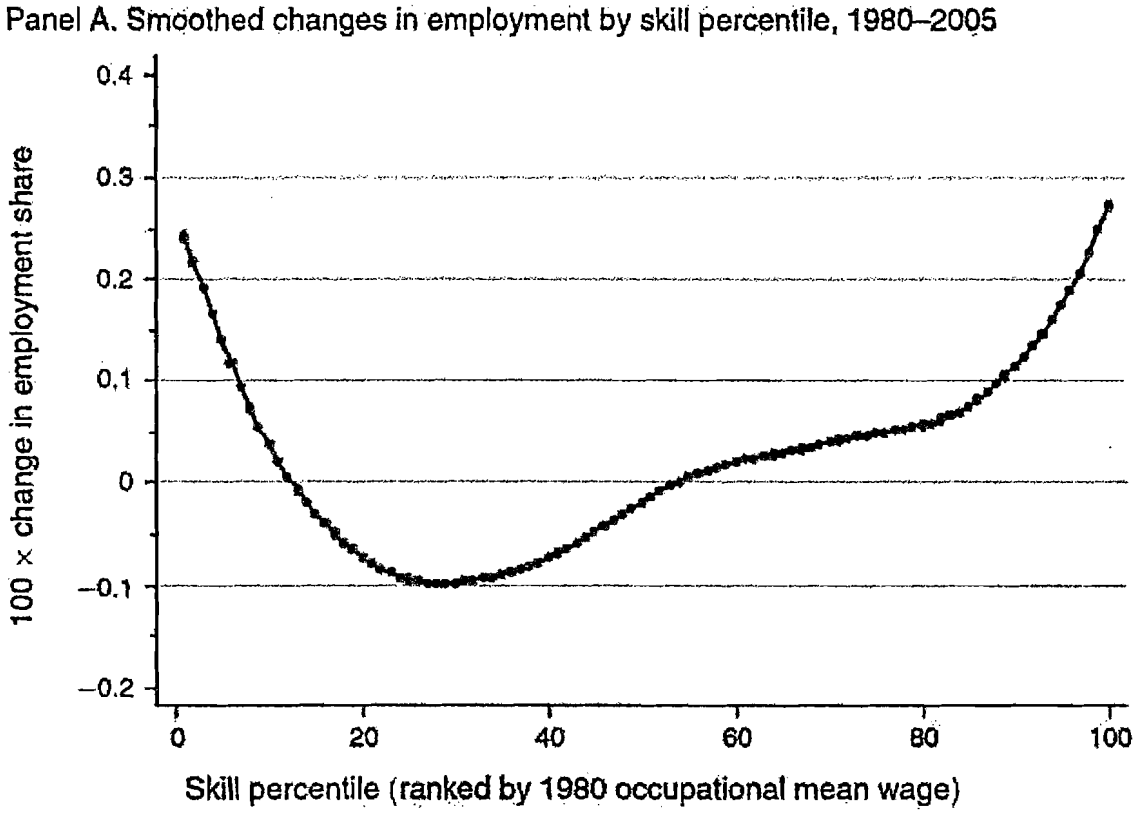
	Period 1	**Period 2**	**Period 3**
Shop A	1	1.25	0.95
Shop B	1	0.8	1

Calculate:

i) The average price change between periods 1 and 2 using each of the Carli and Jevons formulas
ii) The average price change between periods 2 and 3 using each of the Carli and Jevons formulas
iii) The average *chained* price change between periods 1 and 3 using each of the Carli and Jevons formulas

Comment briefly on these numbers.

A7. The following chart shows 1980 to 2005 changes in the employment shares of occupations by 1980 skill percentile in the US labour market.



Source: Autor, D. and D. Dorn (2013) The Growth of Low Skill Service Jobs and the Polarization of the US Labor Market, American Economic Review, 103, 1553-97.

Discuss the following questions:

a) How can we use the chart to illustrate the phenomenon of job polarization?
b) How can the routinization of work hypothesis be used as a basis to explain the pattern of employment change shown in the chart?
c) How pervasive do you think job polarization is in contemporary labour markets around the world?

PART B

Answer **ONE** question from this section.

B1. This problem concerns defined benefit and defined contribution pension plans.

a) Define defined benefit pension and defined contribution pension. How are they different from each other? Discuss issues of how they are taxed, and the liquidity of the pensions.
b) How are they different from a savings account? Discuss issues of how savings versus pensions are taxed, and the liquidity of the different items.
c) Is Britain's Minimum Income Guarantee (MIG) a defined benefit or defined contribution plan? Is the State Second Pension (S2P) plan a defined benefit or defined contribution plan? Explain.

B2. Assume that the government conducted a survey on the unemployed to understand better their job seeking behaviour, and their economic situation in general. They found that, under the current unemployment insurance (UI) benefit level, the consumption level of the unemployed is 10% lower than consumption level of similar individuals who are employed. The survey also indicates that unemployed individuals do not seem to care about the level and duration of the job seekers' allowance (unemployment benefit in the UK): they claim that they want to find a job as soon as possible, and raising the benefit level would not discourage them from searching for job.

a) Assume that the government believes that the effort put by job seekers on job search activities is not affected by the benefit-level (or its duration). Do you think the current unemployment benefit-level is optimal? If not, would you increase or decrease the current benefit? Explain.
b) In surveys, it is often the case that individuals do not predict well their reactions to "hypothetical" policy changes. Suppose you do not trust the survey responses related to job search behaviour, but you have access to administrative data on the universe of UI claimants from the UK. The data covers 1996-2008. In the data you observe the length of non-employment duration, the date when UI was claimed, previous earnings, the benefit-level paid out, and some demographic characteristics (such as age, gender,

or education). You also did some readings on the UK unemployment insurance system (job seeker allowance), and learn that those who claim benefit before they reach age 25 receive a 20% lower benefit.

Using these data, how would you test whether job search behaviour changes in response to a benefit change? Describe the empirical strategy that you would implement. Explain what are the identification assumptions underlying your procedure, and whether you can test whether these assumptions hold.

c) Johannes Spinnewijn, a behavioural economist at the London School of Economics, argues that individuals tend to be overconfident about how easy it is to find a job, and therefore they under-estimate the expected length of their unemployment duration.

How does under-prediction of unemployment duration affect consumption and saving decisions of the unemployed?

d) If individuals under-predicted the effect of job search effort on the likelihood of finding a job, how would their job seeking behaviour be affected (relatively to a situation where they accurately predict the effect of job search on finding a job)?

B3. The following passage is extracted from an online article about Ted Cruz's claim that immigration depresses wages:

...Cruz's argument implies that an influx of low-skilled workers cripples local municipalities, driving down wages for locals and having a deflationary effect on regional economies. But researchers from the National Bureau of Economic Research in an April 2015 study of U.S. Census data from 1980 to 2000 found that the overall impact was the opposite. That, over time, such regional economies grow as their populations expand and immigrants become consumers as well as workers.

"In general equilibrium, immigrants will affect not only labor supply, but also labor demand," said the Bureau's study. "Local real wages can rise as a result of immigration, even in a model where native-born and immigrant labor are perfect substitutes." On average, each immigrant was found to generate 1.2 local jobs for local workers, with most of those going to native-born workers.

In fact, when it comes to immigrants taking jobs, the most at-risk population is previous immigrants, according to a survey of population data between 1994 and 2007 by the Economic Policy Institute. That's because they work in jobs for which they can be easily substituted, and newer immigrants may be willing to work for even lower wages.

"For native-born workers, the effects [of immigration] tend to be very small, and on average, modestly positive," the Institute said...

Source: http://www.thestreet.com/story/13399577/1/is-ted-cruz-right-that-immigration-drives-down-wages.html

a) Explain the possible reasons for why Cruz could be right when saying that low-skilled immigrants drive down wages.

b) Explain the difficulties which need to be addressed in an empirical study of the effect of immigration on wages
c) Based on the lectures construct an argument for why the claims made in the Economic Policy Institute study cited in the text may be right.

B4. The following passage is extracted from a recent article on *The Independent*:

> *Just six per cent of people in Denmark want to cut the top rate of tax, according to a poll. While there was little support for lowering the top rate, 39 per cent of Danes supported lowering tax for those with the lowest incomes.*
> *The Independent, January 1st, 2016.*

a) Describe the key ingredients that determine the rate of tax on the top income bracket in a Mirrlees optimal tax framework. In doing so explain the use of the taxable income elasticity in designing income tax rates at the top of the income distribution.
b) How would your answer to (a) be changed if you were describing the optimal setting of the tax rate on low incomes?
c) It is sometimes argued that the optimal tax rate on interest income from capital is zero. Explain why the 'normal' return to capital may be zero in an optimal tax system and provide arguments for a positive optimal tax rate on capital income.

B5. Take a school where there is a single student, who attends lectures on two subjects, A and B, taught by two different teachers, also named A and B for simplicity. In order to assess their learning on each subject, students are tested at the beginning and end of the year. Let VA_A and VA_B be the average value added in subjects A and B. VA_A and VA_B depend on the effort of both teachers, h_A and h_B, as well as on the effort of the student, h_S, which is not subject specific (think of it as general study effort, affecting both subjects). Furthermore, it is possible that the effort of teacher A affects learning in subject B, and vice versa, so that $VA_A = f_A(h_A, h_B, h_S)$, and $VA_B = f_B(h_A, h_B, h_S)$. The earnings of each teacher are given by $Y_i = a + bVA_i$, for i=A,B. The cost of teacher's effort is equal to $C_i(h_i) = e^{ch_i}$, and it is the same function for the teachers of both subjects.

a) Assume that $VA_i = \alpha h_A + \beta h_B + \gamma h_S$, for i=A,B. Teacher i chooses her level of effort to maximize earnings minus the costs of effort $(Y_i - C_i(h_i))$, taking as given the effort levels of the other teacher and of the student, the earnings function, and the function determining VA. In addition, her net benefits need to be above a participation value, denoted by $\bar{V}$, otherwise she will not enter the teaching profession. Formulate the problem solved by each teacher, and solve for their optimum effort choices, as a

function of the parameters of the earnings, VA, and cost functions, and the effort levels of the other teacher and the student in the school.

b) Students get utility out of their average test score across subjects, $\overline{VA} = \frac{VA_A + VA_B}{2}$, net of their effort costs, equal to $C_S(h_S) = e^{dh_S}$ (i.e., their net utility is given by $\overline{VA} - C_S(h_S)$). Write down the problem solved by the student, and solve for her optimum effort choice, as a function of the parameters of the earnings and cost functions, and the effort levels of the other teachers in the school, which are all taken as given by the student when solving her problem.

c) Now assume that $VA_i = e^{\alpha h_A + \beta h_B + \gamma h_S}$. What are the optimum effort choices of teachers in this case, under the same assumptions as in a).

d) Once again, assume that $VA_i = e^{\alpha h_A + \beta h_B + \gamma h_S}$. What is the optimum effort choice of the student in this case, under the same assumptions as in b).

e) How would you use your answers in (a) through (d) to determine the equilibrium levels of h_A, h_B, and h_S, in this school, under the two scenarios for the VA function given above? Discuss the main differences between the equilibria in the case where $VA_i = \alpha h_A + \beta h_B + \gamma h_S$, and in the case where $VA_i = e^{\alpha h_A + \beta h_B + \gamma h_S}$.

f) Behrman, Parker, Todd and Wolpin (2015) compare the impacts on mathematics learning of providing incentives to students only (treatment 1), providing incentives to teachers only (treatment 2), or providing incentives to all teachers and students in the school (treatment 3). When thinking about designing incentives in schools, what are the implications of the results in a)-e) for the choice between individual incentives (treatments 1 and 2) and group incentives (treatment 3)?

B6. Answer the following questions:

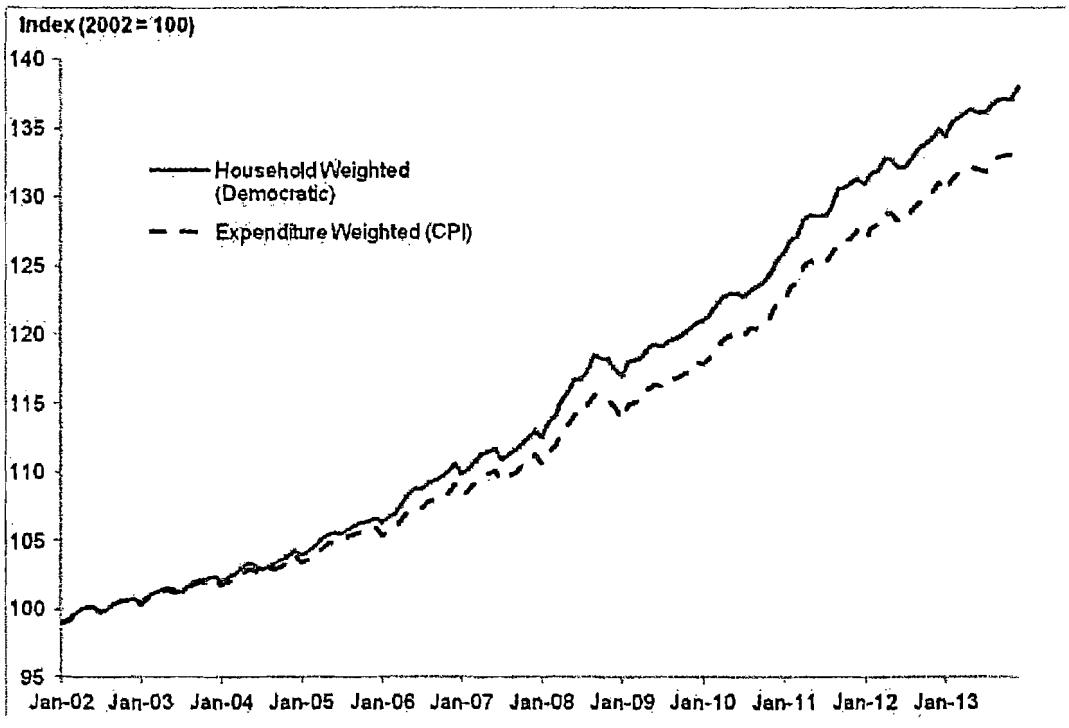
a) The price indices calculated and published by the Office for National Statistics in the UK (e.g. the Consumer Prices Index, the Retail Prices Index) are examples of Cost-of-Goods Indices (COGIs).
   i. Distinguish between a Cost-of-Goods Index and a Cost-of-Living Index (COLI).
   ii. Give the formula for one COGI (state which one you are giving) and the formula for the Konüs COLI.
   iii. Government transfers and tax thresholds in the UK are adjusted ('indexed') every year in line with a COGI (in most cases either the CPI or the RPI). What would be the implication over the longer term for the level of those transfers and tax thresholds if the government switched from using a COGI to a COLI as the basis for this indexation?

b) A consumer has the following utility function over two goods:
   $u(q_1, q_2) = 0.5 \ln(q_1) + 0.5 \ln(q_2)$
   The goods are divisible (that is, the consumer can consume fractions of each good).

i. Calculate the demands for each of q_1 and q_2 when income equals 1, $p_1=1$, and $p_2=1$.
ii. Calculate the utility level ($\hat{u}$) at these prices .
iii. Write down the cost function at an arbitrary utility level (u).
iv. Suppose the price of good 2 increases to $p_2=2$. Income remains at 1 and the price of good 1 remains 1. Calculate the Laspeyres index, the Paasche Index and Konüs Cost of Living Index (with reference utility level ($\hat{u}$)).
v. Would the Konüs Cost of Living Index have been different if it was calculated with reference to a different utility level? Why or why not?

c) COLIs are more difficult to calculate that COGIs. Why is this? Give two ways that an index that targets the cost of living can be constructed (or approximated) in practice.

d) Imagine you are a Civil Servant. A government minister has asked for a briefing after seeing the following figure, taken from "UK Consumer Price Statistics: A Review" (the 'Johnson Review' – published in January 2015). The figure below shows two estimates of the price level, with the level in 2002 set at 100. The solid line is constructed using a measure of inflation where the quantity weights are unweighted average budget shares across UK households. The dashed line is constructed using a measure of inflation where the quantity weights are economy-wide average budget shares. Prepare a short briefing on this for the Minister.



B7. "Economics of crime models predict that changing economic incentives can significantly affect the participation of individuals in crime."

Critically appraise this statement and, in doing so, connect your discussion to the following factors:

a) The way in which economists study criminal behaviour in standard utility models.
b) Empirical evidence on the impact of the legal labour market on crime.
c) Empirical evidence on the impact of criminal earnings.

Overall, to what extent do you think that your critical discussion of these factors leads to support for the basic postulates of the economics of crime model?

How relevant are the research findings in this area for public policy debates on crime reduction?