

☑ **BE-409 A19, general information**

Course code: BE-409

Course name: Real Estate Economics

Date: October 10th 2019

Duration: 4 hours

Resources allowed: none, except non-digital English dictionary

Notes:

If you would like to supplement you answer by illustrations or calculations, you can use the scantron sheets. Please use the code on the bottom of every **question** page when you fill out the Scantron sheets (not this page).

The exam consists of 4 questions and the candidates are expected to answer all questions. The weights indicated for each question are approximates.

The professors sometimes ask for exam answers to be used for teaching purposes, but in order for this to take place, the university needs your consent.

Do you grant the University of Agder permission such permission?

Select one alternative

Yes

No

Attaching sketches to this question?

Use the following code:

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1 BE-409 2019, Question 1 (ca 15%)

a) What is agglomeration economies? Explain.

b) What types of agglomeration economies may exist?

c) In a market economy, will there be an equilibrium size of a cluster and if so, will this be efficient? Explain and illustrate.

Fill in your answer here

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2 BE-409 2019 Question 2 (ca 25%)

Explain briefly:

- a) Why do cities form?
- b) Why do attractive locations within a city typically have higher density than less attractive locations?
- c) What is the leftover principle?
- d) How may the price of land be influenced by the prospect of population growth?
- e) Why, in the case of externality, is a profit maximizing property developer's decision on level of density not optimal from the society's point of view?
- f) How will a tax on land alter the equilibrium level of land rent, and how the burden of the tax will be divided between a landowner and a tenant?
- g) How will a tax on real estate rental income influence an investor's required capitalization rate?
- h) What defines a house-price bubble, and what are the conventional signs of a house-price bubble?

Assume that a plot of land earns a yearly stream of income (rent) equal to 100.000 NOK and this income stream lasts forever. Given a market interest rate equal to 2%:

- i) What is the maximum an investor would be willing to pay for ownership of this plot of land?

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3 BE-409 2019 Question 3 (ca 40%)

A defining characteristic of a monocentric city is that all employment is in the central area.

a) Why would the central area be occupied by firms rather than residents?

Given that all employment is in the city business centre, by means of a monocentric city model (i.e. the Alonso-Muth-Mills model):

b) Show that the housing bid-rent can be expressed by:

$$R(d) = (r^a q + c) + k(b - d)$$

where:

$R(d)$ is housing rent

k is cost of commuting per km

d is distance to the city center

q is land per unit of housing

r^a is agricultural rent per acre
city border

b is distance from the city center to the
city border

c is structure rent

c) Illustrate the housing bid-rent gradient and explain why housing rent varies across locations.

d) Derive the urban land rent function and explain its different components.

Now, assume that the government wishes to increase the density of residents in the city and does so by enforcing a law stating a maximum (and uniform) size of housing lot. This maximum size is set well below the initial size of the lot. Let the total number of households in the city be unchanged. To simplify, compare the situation *prior* to introducing the law (i.e. the situation described in questions c) and d) with a new situation in which the law has been enforced and complied with, assuming all else equal:

e) Illustrate how this law will alter the housing bid rent curve and compare the housing rent in the city centre with that prior to introducing the law.

f) Explain how the law affects the land rent. Illustrate.

4 BE-409 2019 Question 4 (ca 20%)

The central bank of Norway recently increased the policy interest rate, leading to an increase in mortgage interest rates. Also, the Norwegian government is now considering whether to constrain individuals' access to a mortgage loan by reducing the maximum level of debt to income from 5 to 4,5.

a) By means of the DiPasquale-Wheaton model (the four-quadrant model), what will be the long run effect of this in the space and asset markets? Illustrate and explain.

b) Based on your findings in *a)*, explain how the national gross domestic product (GDP) is affected.

Fill in your answer here

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