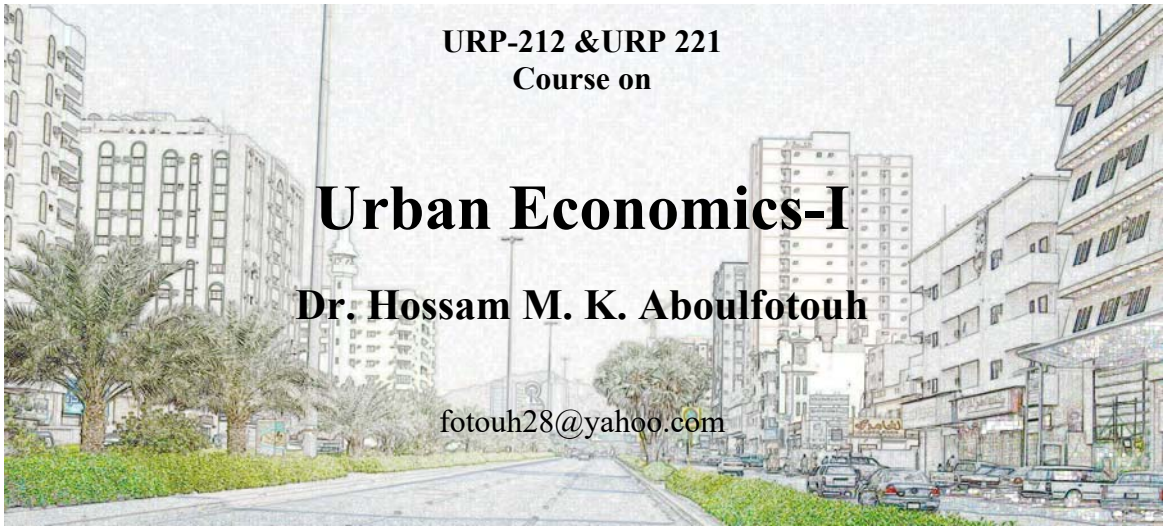
KING ABDULAZIZ UNIVERSITY
Faculty of Environmental Design
Department of Urban & Regional Planning



URP-212 &URP 221
Course on

Urban Economics-I

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Lecture notes#9: Land prices and the value of location.

1- Structure of the mono-centric cities

The processes of migration of peoples and investments from some human settlements (village, town, or small city) to such city and/or form one place to another in that city create its stages of urbanization, e.g.: Urbanization, Suburbanization, Dis-urbanization & Inter-urban Decentralization. Fig-1 shows a mono centric city in a latter stage of urbanization, which is composed of: historic core, suburban rings, and satellite urban areas.

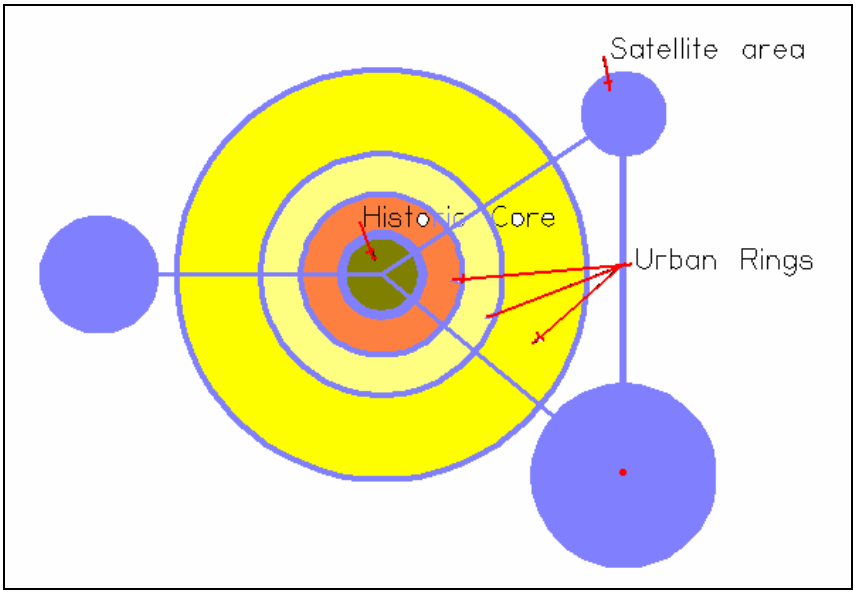

Figure-1

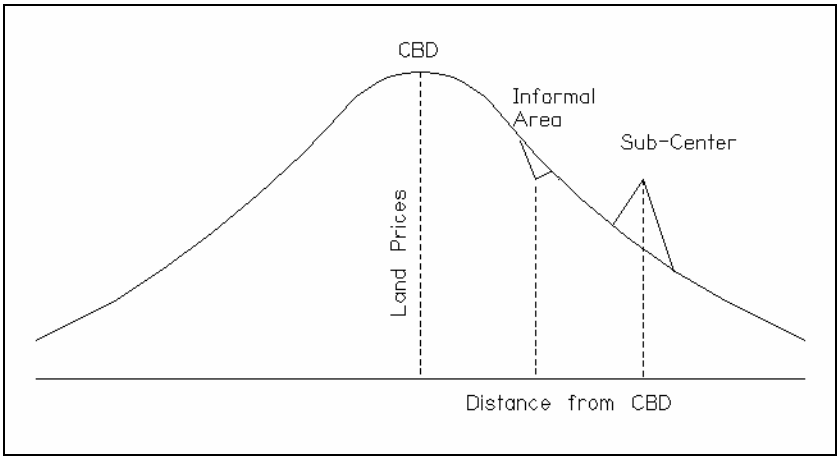

Figure-2

Fig-2 shows a profile of the land prices in the mono cintric model of a city, where land prices increase as the distance to the CBD decress, and it is a funcution of the cost of transportation corosponding to the comuting distance. A suden deviation from the trend of the curve might happen due to the following:

- Sub-centers or main Arterial Street of mixed uses, which increase the land values.
- Urban deterioration and or informal construction in such area reduce the land value.

2- Factors affecting the land values.

What affects land value?

A. Proximity to the city center, sub centers, and main arterial streets, and seashores, rivers, lakes.
B. Proximity to good services, and the availability of public utilities.
C. Proximity to recreational facilities, and/or heritage areas.
D. Proximity to market area.
E. Proximity to raw material and man-mad or natural reassures.
F. Area accessibility by good roads and public transit systems.
G. Land topography and Visual vista.
H. Land uses and zoning regulations.
I. Pollution, environmental hazards, physical deterioration, informality, crimes.
J. Risk of floods, volcano, earthquakes, and other disasters.
K. Costs of transportation and property or production taxes, in comparison to revenues and profits.
L. Sizes of land lots and parcels.
M. Wrong information and other.

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Land rent models: an example is **Von Thünen's model** of land rent in a mono centric city, which is concerned with location, transportation costs, land fertility, and characteristics of a land parcel. His equation could be summarized as follows, which assumes that the profit of production at specific location implies the land rent of this location in the city:

Land Rent= (Production quantity per a unit of area) * (Yield - Transportation costs per a unit of Travel Length).

(see: Thünen, Von J.H. (1826) , Der Isolierte Staat in Beziehung auf Landschaft und Nationalökonomie. Trans. By C.M. Wartenberg (1966) Von Thünen's Isolated State. Oxford: Pergamon Press.)

3- The equation of land price/rent in a mono-centric city.

3-1 The polynomial quadratic equation is of the following form.

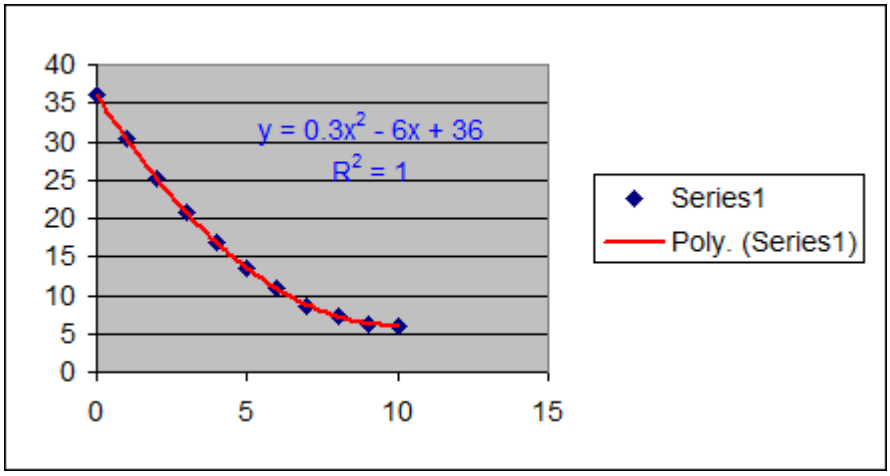
$$Y = (I * X^2) - (J*X) + K$$

If the land price P is Y and the distance from the city center D is X, we can write it in the following form, where a, b, and c are constants, and that could be reckoned from the data of field survey.

$$P = (I * D^2) - (J * D) + K$$

If I=0.3, J=6, and K=36, one can reckon the values of the Land price P for different values of the distance D from the city center, as in the following figure.

D (X)	P (Y)
0	36
1	30.3
2	25.2
3	20.7
4	16.8
5	13.5
6	10.8
7	8.7
8	7.2
9	6.3
10	6



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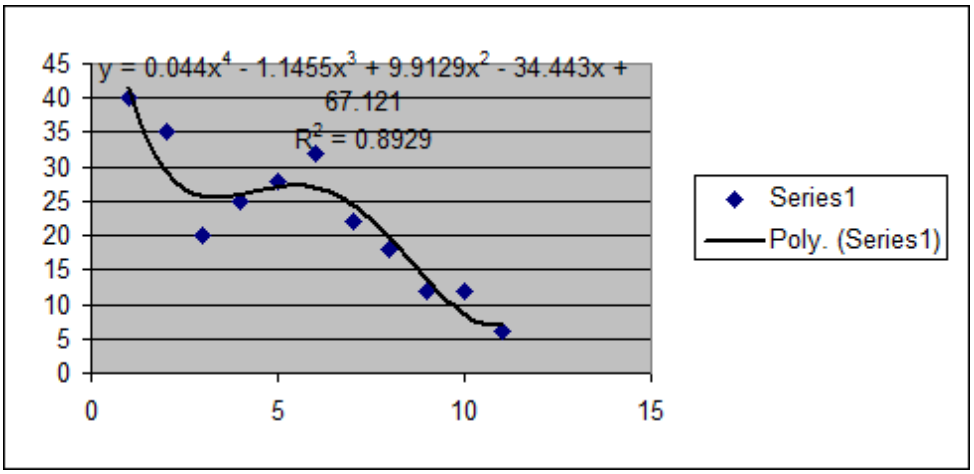
i	0.3
j	6
k	36

In excel sheet one can reckon **P** by writing: =SUM((I*(POWER(D,2))-(J*D)+(K)))

L_R= P * R
and
P = L_R/R
where,
L_R= Land rent
R= interest rate or money rent
and if
$P = (I * D^2) – (J * D) + K$
then
$L_R/R = (I * D^2) – (J * D) + K$

3-2 The polynomial equation of the fourth order (or above) could be used to include the deviations (fluctuations) in land prices from the general trend, due to other factors. One can use also the logarithmic equation.

D (or X)	P (or Y)
1	40
2	35
3	20
4	25
5	28
6	32
7	22
8	18
9	12
10	12
11	6



$P = (I * D^4) – (J * D^3) + (K * D^2) - (L * D) + M$

Where P (or Y) is land price per m^2 and D (or X) is the (commuting) distance form, e.g., center of the city, an urban pole, or area of tourist attraction.

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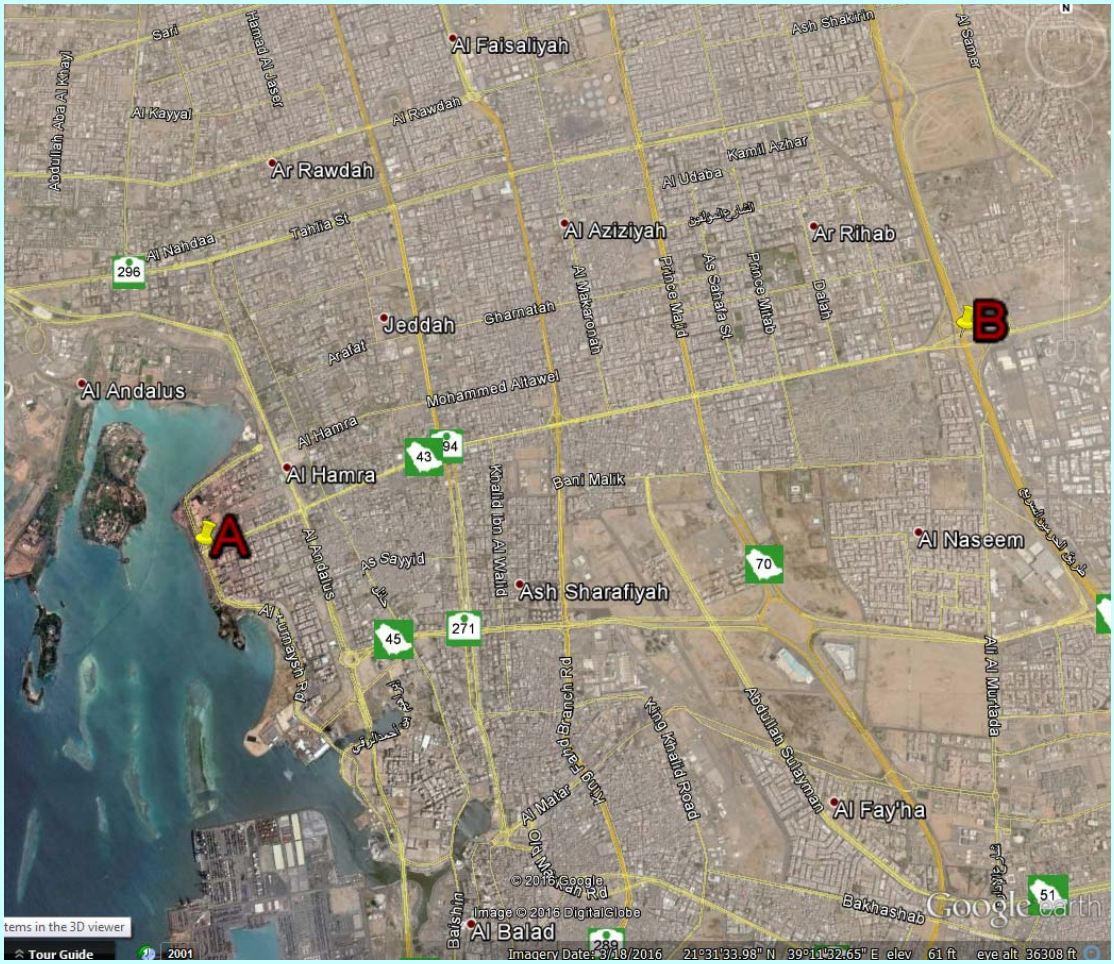
Assignment-1:
The following map shows part of Jeddah. Points A and B mark part of Falasten arterial street, about 9 Km, which starts from the seashore at point A and ends at its intersection with Alharamen road at point B. Try to collect the data of land prices per 0.5 Km along this part of the street and plot it in a polynomial graph of the 4 order, showing its equation. Also, based on your analysis mention, why the final graph of land prices has such form/trend?



Source: Google Earth Data 2016

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