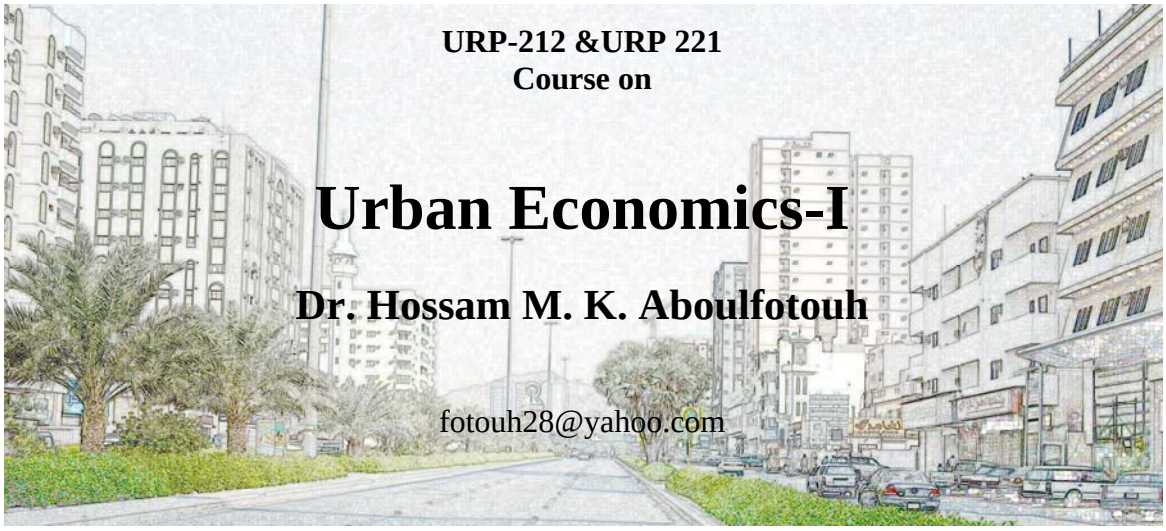
KING ABDULAZIZ UNIVERSITY
Faculty of Environmental Design
Department of Urban & Regional Planning



URP-212 &URP 221
Course on

Urban Economics-I

Dr. Hossam M. K. Aboulfotouh

fotouh28@yahoo.com

Lecture note#5: Affordability, Market value, Rent and Cost estimate, Down payment, Installments, and Subsidies.

1- *Affordability*: implies the purchasing power of a person to get and/or use any of the urban goods, e.g., a housing unit. It is a presenting from the monthly income of the person, which he spends/pays in order to get a private/public good. In housing, it is about 25% of the person's monthly income, e.g., as a monthly rent. Fig-1 shows the profile of the affordability versions in housing (Rodell, 1990).

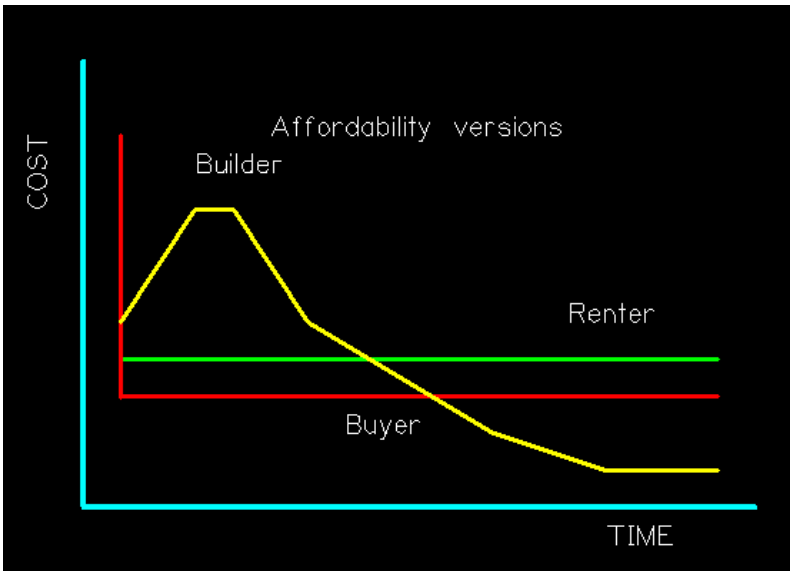


Figure-1: Cost-profiles of the affordability versions over time: Renter , Buyer, and Builder. (as shown in: Rodell, Michel J., *Reviving Affordability Theory*, From the Book: Housing and Income in the Third World Urban Development, Mulkh Raj & Peter Nientied (Eds.), Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi, 1990).

2- *Market Value* (of buildings): equals the market rent P_r divided by the interest rate R. In theory, the market rent equals the annual interest rate, but this is not the case in all cities of the world; P_r might be below or above the annual interest rate R. For Example in Jeddah, the housing rent is between 7 and 10 % and the interest rate in local banks is between 1.5 and 2%.

3- *Building rent per month*: is the annual rent divided by 12 (number of months).

4- *Subsidies*: are governmental grants (and sometimes in the form of money-in-kind) to enable the urban poor and the low-income groups to get access to social services, affordable houses, and other urban goods.

5- *Cross-subsides*: are money (or money in-kind) taken from (or provided by) the rich people or the investors in order to finance projects for the poor and low-income groups.

Application:

The Government of the Kingdom of Saudi Arabia is planning to implement a program for re-housing 2000 families of poor and low-income groups at Al-Wazeriah district in Jeddah. Therefore, Jeddah Municipality has assigned for the project a site of 10 *acres* as a local-subsidy (free). According to the results of the socio-economic survey, the ranges of average monthly incomes of the target families were: 1500, 1800, 2100, and 2400 SR; and the average family-size was 5 persons. Besides, the basic data of the linear representation of the demand curve of the target groups are: P_o=900 SR, & Q_o= 2000 housing units.

Other given information:
1-The average cost of inner infrastructure = 80 US $ per square meter of land, where 25 % of which is a subsidy from the Central Government.
2-The average construction cost = 180 US $ per m^2.
3-The minimum area of a housing unit = 70 m^2.
4-Annual interest rate= 8%
5-Maximum rent = 25% of monthly income.
6-Exchange rate 1 US $ = 3.7545 SR (in 1436H).

Reckon the following:
1-The quantity of housing-units for each income.
2-The total costs of the housing unit and its monthly rent.
3- The amount of subsidy for each income (for rent)

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Dr. Hossam M. K. Aboulfotouh
Email: haboulfotouh@kau.edu.sa and fotouh28@yahoo.com
Mobile: +966543435601

An example of the design solution:

1- Reckoning the quantity of housing-units for each income-group; assuming that Q_o = 2000 units.

P_o	900
Q_o	2000

Linear Equation $Q_n = Q_o [(P_o - P_n)/P_o]$

Incomes	Affordable Rent (25% of the monthly income)		Quantities of houses		Quantity of houses for each income	
2400	p1	600	q1	667	q1	667
2100	p2	525	q2	833	(q2-q1)	167
1800	p3	450	q3	1000	(q3-q2)	167
1500	p4	375	q4	1167	(q4-q3)	167

The total quantity of houses for the four income groups= 1168 housing units.
The remainder from Q_o = 2000 – 1168 = 832 housing unites (for the incomes below 1500 SR/month, say for P5).

2- Reckoning the total costs of the housing unite and its monthly rent.

2-1 Land cost = 10 * 4200 * (80 * 3.7545 * 0.75) = **9461340** SR

2-1 Building costs and shares form land cost

The building costs per m^2 = 180 US$ * 3.7545= 676 SR.
Suppose that the area of housing unites for the incomes (2400, 2100, 1800, and 1500 SR) are (120, 100, 90, 80, and 70 m^2) respectively, the following table shows the process of reckoning.

Quantity of houses	Areas of houses (each flat) in M^2	Building cost per M^2 in SR	Building costs of houses (each flat) in SR	Total area of houses in M^2	Share from cost of land per each M^2 of building in SR	Share of flat from cost of land in SR	Total cost in SR	Monthly Rent in SR
a	b	c	d=(b*c)	e=(a*b)	f	g= (f *b)	h= (d+g)	I=(h*0.08)/12
667	120	676	81097	80040		6192	87289	582
167	100	676	67581	16700		5160	72741	485
167	90	676	60823	15030	51.6	4644	65467	436
167	80	676	54065	13360		4128	58193	388
832	70	676	47307	58240		3612	50919	339
Total area of houses in the whole project				**183370**	**f= 9461340/ 183370** = 51.6 SR			

Notice that if all the housing unites are of equal size, the share of each from the land cost is the result of dividing the total land cost by Q_o.

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3- Rent Subsidy:

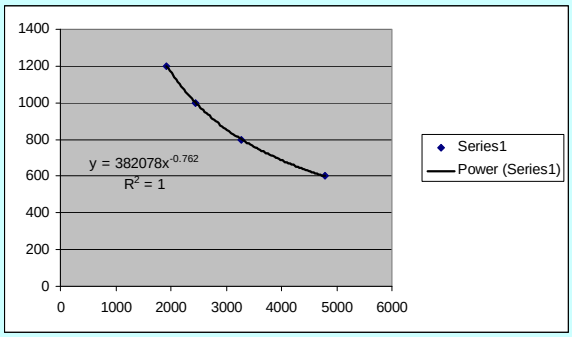
Affordable Rent levels in SR		Monthly rent in SR	Rent subsidy
AR		I	
P1	600	582	Below AR
P2	525	485	Below AR
P3	450	436	Below AR
P4	375	388	13 SR above AR
P5	Below 375	339	Some of this group might be fully subsidized

Assignment:
The equation of the demand curve $Y = T * X^{-E}$ could be written as follows:

$X = (T/Y)^{1/E}$

In Excel Sheet X =**sum(power((T/Y), (1/E)))**

A- If T= **382078**, and E=**0.762**, for the Y values (P_n) : **1200, 1000, 800, 600** SR., reckon the corresponding values of X (Q_n); and use the following given information to reckon the items in (B) here below.



Other given information:
1- Area of the site = 120 Hectare.
2- Land price = 50 US $ per m^2.
3- The average cost of the inner infrastructure = 100 US $ per m^2 of land, where 15 % of which is a subsidy from the Central Government.
4-The average construction cost = 250 US $ per m^2.
5-The minimum area of a housing unit = 100 m^2.
6-Annual interest rate= 7%
7- Exchange rate 1 US $ = 3.76SR (in 1437H).

B-Reckon the following:
1- The quantity of housing units for each income.
2-The total costs of the housing unit and its monthly rent.
3- The amount of subsidy, for each income-level (for rent)

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