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**Subject : Microeconomics**

**QNO1.** Explain the following concept.

The Difference Between Regressive, Proportional, and Progressive Taxes

You likely pay a version of each on income or goods

Regressive Taxes

Proportional Taxes

Progressive Taxes

Examples of Each

Regressive, Proportional and Progressive Taxes: An Overview

Tax systems in the U.S. fall into three main categories: regressive, proportional, and progressive and two of the three impact high- and low-income earners differently. Regressive taxes have a greater impact on lower-income individuals than the wealthy.

A proportional tax, also referred to as a flat tax, affects low-, middle-, and high-income earners relatively equally. They all pay the same tax rate, regardless of income. A progressive tax has more of a financial impact on higher-income individuals than on low-income earners.

A regressive tax levies the same percentage on products or goods purchased regardless of the buyer's income and is thought to be disproportionately difficult on low earners.

A proportional tax applies the same tax rate to all individuals regardless of income.

A progressive tax imposes a greater percentage of taxation on higher income levels, operating on the theory that high-income earners can afford to pay more.

Regressive Taxes

Low-income individuals pay a higher amount of their incomes in taxes compared to high-income earners under a regressive tax system because the government assesses tax as a percentage of the value of the asset that a taxpayer purchases or owns. This type of tax has no correlation with an individual's earnings or income level.1

What Is the Marginal Tax Rate?

A marginal tax rate is the rate at which tax is incurred on an additional dollar of income. In the United States, the federal marginal tax rate for an individual increases as income rises. This method of taxation, known as progressive taxation, aims to tax individuals based upon their earnings, with low-income earners being taxed at a lower rate than higher-income earners. While many believe this is the most equitable method of taxation, many others believe this discourages business investment by removing the incentive to work harder.

**﻿**

Qno 2.Define elasticity and explaine the following elasticity concepts.

ANS.

Elasticity of demand is fundamentally is the adjustment sought after because of the adjustment in at least one of the variable factors.price could be genuine model there are progressively different reasons like normal and furthermore buyers pay here I will clarify various sorts of flexibility of interest.

1. prince elasticity of demand is essentially change sought after amount because of progress in cost or we can say the reaction of interest change while change in cost so there can be numerous conditions where might request is changing like when cost increment so interest for those merchandise out of nowhere tumbled down or at whatever point cost of some ware descend so request increment for out of nowhere so for this we can called it value versatility.

2. Income elasticity of demand this is when request changed for merchandise because of progress in pay of consumers. Suppose I am at work and my pay is Rs.2000000 so I purchase iPhone versatile I can bear the cost of its costs yet a period come I am leaving the activity because of some explanation and land new position which has just Rs.500000 compensation so now I can't accepting iPhone portable and can't manage the cost of its value this is fundamentally reason for change came in my salary so along these lines when the pay of buyers is high they can manage the cost of the costs so request can likewise be all the more yet when the pay is tumbling down then buyers can't manage the cost of so request tumbling down.

3. Cross elasticity of demand Cross elasticity of demnd is change in the amount of interest for a decent when change come in the cost of another great.

Like for the most part I like to drink Monster vitality how about we accept the Redbull vitality as the contender of Monster guess Monster vitality is on Rs.250 and Redbull vitality has likewise a similar cost as of now I am drinking Monster vitality more often than not yet a period comes when Redbull vitality cuts down its cost to Rs.200 so now I am a balanced human they are for the most part same so as the cost of Redbull changed against the Monster vitality I might want to drink Redbull vitality so this is cross cost elasticity.as cost of one ware changed against another item so request changes consequently.

Yeah

Qno3. DEFINE MONOpoly and explain characteristics of monoPoly?

**MONOPOLY:** A monopoly is an economic market structure where a specific person or enterprise is the only supplier of a particular good.

A monopoly market is characterized by the profit maximizer, price maker, high barriers to entry, single seller, and price discrimination.

Monopoly characteristics include profit maximizer, price maker, high barriers to entry, single seller, and price discrimination.

**Characteristics of Monopoly;**

A monopoly can be recognized by certain characteristics that set it aside from the other market structures:

**Profit maximizer:** a monopoly maximizes profits. Due to the lack of competition a firm can charge a set price above what would be charged in a competitive market, thereby maximizing its revenue.

**Price maker:** the monopoly decides the price of the good or product being sold. The price is set by determining the quantity in order to demand the price desired by the firm (maximizes revenue).

**High barriers to entry:** other sellers are unable to enter the market of the monopoly.

**Single seller:** in a monopoly one seller produces all of the output for a good or service. The entire market is served by a single firm. For practical purposes the firm is the same as the industry.

**Price discrimination:** in a monopoly the firm can change the price and quantity of the good or service. In an elastic market the firm will sell a high quantity of the good if the price is less. If the price is high, the firm will sell a reduced quantity in an elastic market.

2.discuss price dtermination under monopoly?

Ans. **price dtermination under monopoly:**

 Monopoly is that market form in which a single producer controls the whole supply of a single commodity which has no close substitute.

From this definition there are two points that must be noted:

(i)**single producer**: There must be only one producer who may be an individual, a partnership firm or a joint stock company. Thus single firm constitutes the industry. The distinction between firm and industry disappears under conditions of monopoly.

(ii)**No Close Substitute:** The commodity produced by the producer must have no closely competing substitutes, if he is to be called a monopolist. This ensures that there is no rival of the monopolist. Therefore, the cross elasticity of demand between the product of the monopolist and the product of any other producer must be very low.

Qno4. Discuss the following models.

1.**The cournot Model:**

The Cournot model of oligopoly assumes that rival firms produce a homogenous product, and each attempts to maximize profits by choosing how much to produce. All firms choose output (quantity) simultaneously. The basic Cournot assumption is that each firm chooses its quantity, taking as given the quantity of its rivals. The resulting equilibrium is a Nash equilibrium in quantities, called a Cournot (Nash) equilibrium.

The Cournot model provides results which are of some importance to industrial economics. First of all, it can be shown that price will not in most cases equal marginal costs (see costs) and Pareto efficiency is not achieved. Moreover, the degree to which each firm’s price exceeds marginal cost is directly proportional to the firm’s market share and inversely proportional to the market elasticity of demand.

If the oligopoly is symmetric, that is, all firms have identical products and cost conditions, then the degree to which price exceeds marginal cost is inversely related to the number of firms.

Thus, as the number of firms increases, the equilibrium approaches what it would be under perfect competition. More generally, it can be shown that for the industry the degree to which price exceeds marginal cost is directly proportional to the Herfindahl-Hirschman Index of concentration. As concentration rises, industry performance deviates more from the norm of perfect competition.

Part 2.

**Stackelberg Model:**

Important Questions:

1. Isthereanyadvantageinbeingthefirstto choose?

2. HowdoestheStackelbergequilibrium compare with the Cournot?

Stackelberg Model:

Let’s assume a linear demand P(Q)=a-bQ

Mc1=Mc2=c

In sequential games we first solve the problem in the second period and afterwards the problem in the 1st period.

2nd period (firm 2 chooses q2 given what firm 1 has chosen in the 1st period q1):

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Stackelberg Model:

 MaxΠ2 =(P(q +q )−c)q =(a−b(q +q )−c)q

q

2

∂Π2

FOC: ∂q =0⇔a−2bq2 −bq1 −c=0

122122

 2

⇔q\* =R(q)=a−bq1−c=Cournot'sreactionfunction

Stackelberg Model:

In the 1st period (firm 1 chooses q1 knowing that firm 2 will react to it in the 2nd period according to its reaction function q2=R2(q1)):

 MaxΠ1 =(P(q +q )−c)q =(a−b(q +R (q ))−c)q

q

1

∂Π1 ∂q1

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FOC:

= 0 ⇔ a − 2bq − bR (q ) − bq R′ (q ) − c = 0 121121

1211211

 ⇔a−2bq −ba−bq1 −c+bq 1−c=0 11

  2b  2 ⇔a−c−2bq +bq 1+bq 1=0

111 222

 ⇔a−c−bq =0⇔q\* =a−c=3qN >qN =a−c 11

Stackelberg Model:

\*

Given q1 we solve for q2

 q\* =a−c−1q\* =a−c−1a−c=a−c=3qN <qN 2 1 22

 2b 2 2b 2 2b   4b  4 Thereforeq\* >q\*

12

q\*+q\* =a−c+a−c=3(a−c)>2(a−c)=QN

 12

2b 4b 4b 3b

 3(a−c) a+3c

p\* =a−bQ\* =a−b = >c

4b 4 Butp\* <a+2c=pN

3

. Stackelberg Model:

The equilibrium profits of both firms:

 22 Π1\* =(p\* −c)q\* =a+3c−ca−c=a−ca−c=(a−c) >ΠN =(a−c)

1 1

 4  2b   4  2b  8b 9b

 22 Π2\* =(p\* −c)q\* =a+3c−ca−c=a−ca−c=(a−c) <ΠN =(a−c)

2 2

 4  4b   4  4b  16b 9b

. Stackelberg Model:

Conclusion:

a) q\* > q\* (the leader produces more) 12

b)p\* >c (TherewillbeaDWL)

c) Π1\* > Π2\* (the leader has higher profits, there is an advantage of being the first to choose) d)Q\* >QN ⇒p\* <pN

Stackelberg Model:

Graphically: The isoprofit curves for firm 1 are derived as:

Π1(q,q )=(a−b(q +q )−c)q 12121

therefore:

π =(a−b(q +q )−c)q =aq −bq2 −bqq −cq 12111121

 ⇔bqq =(a−c)q −bq2 −π 1211

⇔q2 =(a−c)−q1−π bq

1

 ∂q π ∂2q 2π 2=−1+ ; 2=− <0

 ∂q q2 ∂q2 q3 1111

Stackelberg Model:

 Graphically(cont):

q2

 Given q2, firm 1 chooses its best response i.e. the isoprofit curve that corresponds to the maximum profit given q2

 q’ qM q’’

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π’<πM=(1/b)((a-c)/2)^2

q1

Stackelberg Model:

Graphically(cont):

The reaction function intercepts the isoprofit

curves where the slope becomes zero (i.e.

horizontal)

R(q )=argmaxΠ1(q,q )⇔Π1(R(q ),q )=0

q

1

therefore at the best response q = R (q ) the derivative is zero : dq2

dq1 q1=R1(q2) Industrial Organization- Matilde Machado Stackelberg Model 12

 12

12 1122

Moreover we know that: Π1(q,q)=π⇒Π1dq+Π1dq=0⇔ 2=− 1

dq Π1 12 1122 dqΠ1

Stackelberg Model:

Differences between Cournot and Stackelberg:

􏰀 In Cournot, firm 1 chooses its quantity given the quantity of firm 2

􏰀 In Stackelberg, firm 1 chooses its quantity given the reaction curve of firm 2

Note: the assumption that the leader cannot revise its decision i.e. that q1 is irreversible is crucial here in the derivation of the Stackelberg equilibrium. The reason is that at the end of period 2, after firm 2 has decided on q2, firm 1 would like to change its decision and produce the best response to q1, R1(q2). This flexibility, however, would hurt firm 1 since firm 2 would anticipate this reaction and the result could be no other but Cournot. This is a paradox since firm1 is better off if we reduce its alternatives.

Is it plausible to think that q1 cannot be changed? This seems more plausible for the case of capacities than for the case of quantities.

Stackelberg Model:

Note: When firms are symmetric, i.e. they have the same costs, then the Stackelberg solution is more efficient than Cournot (higher total quantity, lower price). This may not be the case for the asymmetric case. If the leader is the less efficient firm (higher costs) then it may well be the case that Cournot is more efficient than Stackelberg, since Stackelberg would be giving an advantage to the more inefficient firm.