Indian Institute of Technology, Patna

HS201 - Micro Economics

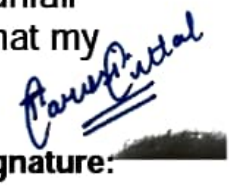
MID SEMESTER EXAMINATION
FALL 2020

NAME- TARUSI MITTAL ROLL NO: 1901CS65

INSTRUCTIONS TO CANDIDATES

a) This is an **open book** examination.
b) Write your **name and roll number on the answer sheet**
c) The question paper comprises 3 pages
d) Answer all questions. Upload your handwritten answers showing all steps and diagrams wherever necessary.
e) All questions have equal weight.
f) You will have to put your digital signature against the declaration below. Papers without the signatures will not be checked.

I, TARUSI MITTAL declare that I have not resorted to any unfair means in answering this paper. If found otherwise, I agree that my paper will be cancelled.

Name: TARUSI MITTAL **Signature:** 

This portion is for examiner's use only

	Marks	Remarks
1		
2		
3		
4		
Total		

1. Between 2008 and 2009, average circulation of U.S. newspapers fell by 7%. The *New York Times* suffered a relatively smaller decline, with weekday circulation falling 3.6% to 1,039,031. The *Times* announced a quarterly loss of $74 million with circulation revenue increase slightly due to a price increase in 2008 from $1.25 to $1.50. In early May 2009, it was reported that the *Times* would raise its weekday price from $1.50 to $2 and that the price increase would increase revenue by $40 million. (Source: "New York Times set to increase price", *Financial Times*, May 2, 2009). **10 marks**

a. Using the 2008 price and circulation information, calculate the price-elasticity of demand for the *New York Times* weekday edition.

b. At the current circulation of say 1.04 million and price of $1.50, and assuming 300 weekdays a year, what is the New York Times' current annual revenue from weekday sales?

c. Consider the expected 2009 price increase from $1.50 to $2. What is the percentage change in price?

d. Suppose that the expected 2009 price increase from $1.50 to $2 does indeed yield $40 million in incremental revenue. What is the percentage change in revenue over your answer in (b)?

e. Substitute the percentage changes from (c) and (d) into the following rule: percentage change in revenue = percentage change in price + (price-elasticity of demand x percentage change in price). (Note that this rule was not taught in the lecture on elasticity.) Calculate the price-elasticity of demand which would imply the $40 million increase in revenue.

f. Compare the elasticity from (e) at a price of $1.50 with the elasticity from (a) at a price of $1.25. Does the difference in elasticities seem reasonable?

2. In late 2005, software giant Microsoft announced that it would increase R&D spending by $2.6 billion the following year. Wall Street analysts worried that the increased investment would reduce earnings and shareholder return. However, Microsoft CEO Steve Ballmer suggested that Microsoft had delayed the update of Windows too long. "Windows is a product that has to be watered periodically ... We've gone a bigger gap than I'd like to go [this time]" (Source: "Ballmer lobbies for Microsoft's R&D spending plan", *Computerworld*, January 6, 2006). **5 marks**

a. Referring to Table 8.6, calculate Microsoft's R&D-sales ratio for 2003-05.

Table 8.6 Microsoft ($ million)

Year	Sales (Revenue)	R&D Expenditure	R&D/Sales
2005	39,788	6,184	15.5%
2004	36,835	7,779	21.1%
2003	32,187	6,595	20.5%

b. If Microsoft predicted sales revenue to be the same in 2006 as 2005, with the increase in R&D spending, what would the R&D-sales ratio? Comment on this ratio in relation to previous years.

c. Relate Microsoft's plan to increase R&D expenditure to Mr Ballmer's remark that they had waited too long before updating Windows.

d. Did Microsoft under- or over-estimate the sensitivity of the demand for Windows to updating?

3. The administration of Prime Minister Lee Hsien Loong seeks to "re-make" Singapore as a travel destination. It has invited tenders for two integrated resorts, including casinos. One will be located in Marina South to attract the meetings and convention business, while the other will be located in Sentosa Island to attract tourists. Typically, Australian governments have auctioned casino licenses for a lump-sum fee. By contrast, European governments have charged casinos a gambling tax. **10 marks**

(a) Suppose that a lump sum fee of $100 million per year and a 25% betting tax would raise the same revenue for the government. Suppose that the casino applies uniform pricing and that marginal cost of operation is constant at $1 per bet. Compare the two policies in terms of (i) the price of betting, and (ii) the volume of betting.

(b) Would you recommend that the government use the lump-sum license fee or the betting tax?

(c) Whales are people who travel worldwide to gamble on a large scale. Casinos compete to attract whales with special facilities, free air travel and accommodation, and other perks. How should casinos adjust the odds to whales relative to small-scale gamblers?

Tanvi Mittal
1901CS65

PAGE NO.: 1
DATE: / /

Que 1:-

(a) For the weekday edition of New-York Times

% change in quantity demanded = -3.6%.

% change in price = $\frac{1.5 - 1.25}{1.25}$ = 20%.

Price Elasticity = $\frac{\%\text{ Change in quantity demanded}}{\%\text{ change in price}}$

$= \frac{\Delta Q}{\Delta P} = \frac{-3.6}{20}$

$= \boxed{-0.18}$ Ans

(b) Current circulation = 1.04 million
Current price = $1.50
No. of days = 300

Annual Revenue from weekday sales = 1.04 x 1.5 x 300
= $\boxed{\$ 468 \text{ million}}$ Ans

(c) Increase in price in 2009 → $1.5 to $2

% change in price = $\frac{2 - 1.5}{1.5}$

$= \boxed{33.33\%}$ Ans

Tarusi Mittal
1901CS65
Tarusi Mittal

(d) % change in revenue $= \left(\frac{40}{468} \times 100\right) \frac{\$ \text{ million}}{\$ \text{ million}}$

$= \boxed{8.547\%}$ Ans.

(e) % change in revenue = % change in price + (price elasticity of demand × % change in price)

% change in revenue = % change in price (1 + price elasticity of demand)

$\Rightarrow$ $8.547 = 33.33$ (1 + price elasticity)

$\Rightarrow$ price elasticity of demand $= \frac{8.547}{33.33} - 1$

$= -0.74$

$\boxed{\text{Price elasticity of demand} = -0.74}$ Ans.

(f) Price elasticity at \$1.50 $= -0.74$
Price elasticity at \$1.25 $= -0.18$

The values show that both are inelastic in nature. But, there is a reasonable difference amongst the two values

Tarun Nittal
19015565

PAGE NO.: 3
DATE: / /

Que 2:-

(a) According to the table

R&D-sales ratio for 2003 = $\frac{20.5}{100}$ = 0.205

R&D-sales ratio for 2004 = $\frac{21.1}{100}$ = 0.211

R&D-sales ratio for 2005 = $\frac{15.5}{100}$ = 0.155

Total R&D-sales ratio over all the years from 2003-2005 = $\frac{\text{Total R\&D expenditure}}{\text{Total sales (Revenue)}}$

$= \frac{6595 + 7779 + 6184}{32187 + 36835 + 39788}$

$= \frac{20558}{108810}$ = 0.1889 Ans.

(b) Predicted sales revenue in 2006 = $ 39788 million (same as 2005)

Predicted R&D expenditure in 2006 = $6184 million + $2.6 billion

= (6184 + 2600) million $

= 8784 million $

Ratio = $\frac{8784}{39788}$ = 0.22 Ans.

The ratio is greater than the ratio of all the three years individually as well as combined.

Tanisi Mittal
1901CS65
Tanisi Mittal

PAGE NO.: 4
DATE: / /

(c) CEO Steve Ballmer in his statement said that Microsoft should launch product periodically. Due to this Microsoft increased its R&D expenditure as they felt that its been a long time since they launched their previous product.
By investing in R&D, the product will gain new features and will suffice with the demands of the consumers. So, keeping in mind the long-run profits and thinking that the new product will be liked by the consumers since the new market requires new and updated technology time to time, they increased the R&D expenditure.
Therefore, increasing in R&D was a big step to compete against other product in the market and to have greater profits in the long run.

(d) Microsoft over-estimated the sensitivity of the demand for windows to updating.
Despite the warnings from wall Street, Microsoft increased its R&D expenditure by $2.6 billion. Microsoft was over enthusiastic and very much optimistic about the consumers response towards the new product.

Tarun Mittal
19015565
Tarunmittal

Que 3:-

(a) [i] Price of betting: As given, both policies will generate same $ million

Lum-sum fee :- The casino would have a pressure in this case to bring back $100 million already paid. So, the bet prices will be kept high but due to this the customers may vary. So customer turnout will drive this decision

Betting tax:- Here the 25% taxes will be paid to the govt. So, the casino can freely choose the price of bets so as to make profits and attract more customers. Both casino and govt will benefit from each person coming. But for same revenue casino will have to generate $400 million.
So, if $100 mn is kept same as taxes given to govt. Price in betting tax will be higher to ensure that casino crosses the $400 million.

[ii] Volume of Betting:

Lum-sum fee :- Here so as to bring back the price paid to the govt the casino will have an unpaid pressure until the amount is generated

Betting tax:- Here the 25% taxes will be paid and the casino can purely follow its strategies how to attract customers and can take risks by trying various policies.

But in all the cases, the people investing will depend upon the strategies used both by the govt and the investors.

Tanusi Mittal
19015565
Tanusi Mittal

PAGE NO.: 6
DATE: / /

(b) I would recommend that the govt. should use the betting tax.
In the initial years, as betting tax will be there and it would be easy for the person's investing in casino business as he would be able to run his business without any fear. Also, the govt will be able to make a continuous revenue.
In the later years, now as more and more people will invest in the casino business, and also the casinos now will have a larger crowd intaking, the profit and revenue of both the casino and the govt. will increase and seeing this more people will invest in this business
As a conclusion; although in the initial years the revenue may be less, but as more people will try to invest in this due to the betting tax scheme, eventually govt will also make huge profits/revenue.

(c) For the casinos, the whales are the major source for their incomes. whales provide a major significant profit to the casinos if they loose. Because they have big win, big loss strategy. And even if they win they attract a worldwide attraction towards the casino and hence more whales will come to gamble significantly resulting in a big profit. The casinos maintain a sufficient - win - loss ratio to ensure that they do not end up in loss. So, their major aim is to increase the no. of whales.

Tanusi Mittal
19015565

PAGE NO.: 7
DATE: / /

The casinos put forward various strategies to attract whales like - free and best accomodation, various national trips, make them VIP customers and give them a major limelight in their parties, free food during those days and many more according to their needs and interests.

So, the casinos to make sure they earn more should adjust the odds to whales rather than small scale gamblers.

—x—x—x—x—x—x—x—x—x—x—x—x—