

IS 1020 - Principles of Economics
Faculty of Information Technology
Batch 20

Assignment: Econocode

Topic: Elasticity

Index Number: 205080K

Name: Raguraj S.

Pseudo Code

START

Load Suitable Graph Module

DEFINE PROCEDURE showInfo():

SHOW TO USER("Name : Raguraj S.")

SHOW TO USER("Index Number : 205080K")

DEFINE PROCEDURE drawPlot(xvalue1,xvalue2,yvalue1,yvalue2,xlabel,ylabel):

SET x TO [xvalue1,xvalue2]

SET y TO [yvalue1,yvalue2]

SET x,y coordinates in the plot

SET X Label to xlabel

SET Y Label to ylabel

SHOW FINAL GRAPH

DEFINE PROCEDURE getRepetitionInputFromUser():

SHOW TO USER("What Elasticity Would you like to Measure ?")

SHOW TO USER("PED,YED,XED,PES\n Seperate By ',' eg: PED,YED,PES")

calculate=GET FROM USER()

wantToCalculate=Split values inside the calculate by commas

initialPrice=GET FROM USER("Enter initial Price of Gas cylinder: ") as floating point value

newPrice=GET FROM USER("Enter new Price of Gas cylinder: ") as floating point value

initialDemand=GET FROM USER("Enter initial Demand of Gas cylinder: ") as floating point value

newDemand=GET FROM USER("Enter new Demand of Gas cylinder: ") as floating point value

initialDemandCooker=GET FROM USER("Enter initial Demand of Inductive Cooker: ")

newDemandCooker=GET FROM USER("Enter new Demand of Inductive Cooker: ")

IF user wants to calculate "YED" then

initialIncome=GET FROM USER("Enter initial Income : ") as floating point value

newIncome=GET FROM USER("Enter new Income : ") as floating point value

END IF

FOR every elasticity we want to calculate do again and again:

IF(value of calculate is "ped"):

DO PROCEDURE ped(initialPrice,newPrice,initialDemand,newDemand)

ELSE IF(value of calculate is "xed"):

DO PROCEDURE xed(initialDemandCooker,newDemandCooker,initialPrice,newPrice)

ELSE IF(value of calculate is "yed"):

DO PROCEDURE yed(initialIncome,newIncome,initialDemand,newDemand)

ELSE IF(value of calculate is "pes"):

DO PROCEDURE pes(initialPrice,newPrice,initialDemand,newDemand)

END IF

END LOOP

inp=GET FROM USER("Would you like to view graph ? (y/n) : ") as string

if value if inp is "y":

show graph according to the user preference

getFromUser=GET FROM USER("Would You like to calculate another problem ?(y/n) : ")

if(value of getFromUser is "y"):

DO PROCEDURE getRepetitionInputFromUser()

else:

exit the program

DEFINE PROCEDURE ped(iPrice,nPrice,iQuantity,nQuantity):

SHOW TO USER("Change IN Price of Gas cylinder is : ",absoluteValue(iPrice-nPrice))

SHOW TO USER("Change IN Quantity of Gas cylinder is : ",absoluteValue(iQuantity-nQuantity))

value=((iQuantity-nQuantity)/(iPrice-nPrice))*(iPrice/iQuantity)

SHOW TO USER("PED is : "+ absoluteValue(value) in 2 point format)

Wait for 1 second

DEFINE PROCEDURE xed(iDemand,nDemand,iPrice,nPrice):

SHOW TO USER("Change IN Demand of Inductive Cooker is : ",absoluteValue(iDemand-nDemand))

SHOW TO USER("Change IN Price of Gas Cylinder is : ",absoluteValue(iPrice-nPrice))

value=((iDemand-nDemand)/(iPrice-nPrice))*(iPrice/iDemand)

SHOW TO USER("XED is : "+ absoluteValue(value) in 2 point format)

Wait for 1 second

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DEFINE PROCEDURE yed(iIncome,nIncome,iQuantity,nQuantity):
    SHOW TO USER("Change IN Income of Customer is : ",absoluteValue(iIncome-nIncome))
    SHOW TO USER("Change IN Quantity of Gas Cylinder is : ",absoluteValue(iQuantity-nQuantity))
    value=((iQuantity-nQuantity)/(iIncome-nIncome))*(iIncome/iQuantity)
    SHOW TO USER("YED is : "+ absoluteValue(value) in 2 point format)
    Wait for 1 second

DEFINE PROCEDURE pes(iPrice,nPrice,iQuantity,nQuantity):
    SHOW TO USER("Change IN Price of Gas Cylinder is : ",absoluteValue(iPrice-nPrice))
    SHOW TO USER("Change IN Quantity of Gas Cylinder is : ",absoluteValue(iQuantity-nQuantity))
    value=((iQuantity-nQuantity)/(iPrice-nPrice))*(iPrice/iQuantity)
    SHOW TO USER("PES is : "+ absoluteValue(value) in 2 point format)
    Wait for 1 second

DO PROCEDURE showInfo()
DO PROCEDURE getRepetitionInputFromUser()
END

```

Source Code – Language: Python 3

```

import matplotlib.pyplot as graph
import time
def showInfo():
    print("Name : Raguraj S.")
    print("Index Number : 205080K")
    print()

def drawPlot(xvalue1,xvalue2,yvalue1,yvalue2,xlabel,ylabel,tableHeading):
    x = [xvalue1,xvalue2]
    y = [yvalue1,yvalue2]
    graph.plot(x, y)
    graph.xlabel(xlabel)
    graph.ylabel(ylabel)
    graph.title(tableHeading)
    graph.show()

def getRepetitionInputFromUser():
    print()
    print("What Elasticity Would you like to Measure ?")
    print("PED,YED,XED,PES\nSeperate By ',' eg: PED,YED,PES")
    print("_____")
    calculate=input("Input : ")
    print("_____")
    wantToCalculate=calculate.split(',')
    #get needed input for a problem from user
    initialPrice=float(input("Enter initial Price of Gas cylinder: "))
    newPrice=float(input("Enter new Price of Gas cylinder: "))
    initialDemand=float(input("Enter initial Demand of Gas cylinder: "))
    newDemand=float(input("Enter new Demand of Gas cylinder: "))
    initialDemandCooker=float(input("Enter initial Demand of Inductive Cooker: "))
    newDemandCooker=float(input("Enter new Demand of Inductive Cooker: "))
    initialIncome=newIncome=""
    if "YED" in wantToCalculate:
        initialIncome=float(input("Enter initial Income : "))
        newIncome=float(input("Enter new Income : "))
        print("_____")
    for i in wantToCalculate:
        if i.lower()=="ped":
            ped(initialPrice,newPrice,initialDemand,newDemand)

```

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elif i.lower()=="xed":
    xed(initialDemandCooker,newDemandCooker,initialPrice,newPrice)
elif i.lower()=="yed":
    yed(initialIncome,newIncome,initialDemand,newDemand)
elif i.lower()=="pes":
    pes(initialPrice,newPrice,initialDemand,newDemand)
inp=input("Would you like to view graph ? (y/n) : ")
if inp.lower()=="y":
    if("PED" in wantToCalculate):
        drawPlot(initialDemand,newDemand,initialPrice,newPrice,"Demand","Price","GRAPH FOR PED")
    if("PED" in wantToCalculate):
        drawPlot(initialDemand,newDemand,initialPrice,newPrice,"Quantity Supplied","Price","GRAPH FOR PES")

getFromUser=input("Would You like to calculate another problem ?(y/n) : ")
if(getFromUser.lower()=="y"):
    getRepetitionInputFromUser()
else:
    exit()

def ped(iPrice,nPrice,iQuantity,nQuantity):
    print("PED : PRICE ELASTICITY OF DEMAND")

    value=((iQuantity-nQuantity)/(iPrice-nPrice))*(iPrice/iQuantity)
    print("Change in Price of Gas cylinder is : ",abs(iPrice-nPrice))
    print("Change in Quantity Gas cylinder is : ",abs(iQuantity-nQuantity))
    print("PED is : {:.2f}".format(abs(value)))
    print("")
    time.sleep(1)

def xed(iDemand,nDemand,iPrice,nPrice):
    print("XED : CROSS ELASTICITY OF DEMAND")
    print("Change in Demand of Inductive Cooker is : ",abs(iDemand-nDemand))
    print("Change in Price of Gas Cylinder is : ",abs(iPrice-nPrice))
    value=((iDemand-nDemand)/(iPrice-nPrice))*(iPrice/iDemand)
    print("XED is : {:.2f}".format(abs(value)))
    print("")
    time.sleep(1)

def yed(iIncome,nIncome,iQuantity,nQuantity):
    print("YED : INCOME ELASTICITY OF DEMAND")
    print("Change in Income is of Customer : ",abs(iIncome-nIncome))
    print("Change in Quantity is of Gas cylinder : ",abs(iQuantity-nQuantity))
    value=((iQuantity-nQuantity)/(iIncome-nIncome))*(iIncome/iQuantity)
    print("YED is : {:.2f}".format(abs(value)))
    print("")
    time.sleep(1)

def pes(iPrice,nPrice,iQuantity,nQuantity):
    print("PES : PRICE ELASTICITY OF SUPPLY")
    print("Change in Price of Gas cylinder is : ",abs(iPrice-nPrice))
    print("Change in Quantity of Gas cylinder is : ",abs(iQuantity-nQuantity))
    value=((iQuantity-nQuantity)/(iPrice-nPrice))*(iPrice/iQuantity)
    print("PES is : {:.2f}".format(abs(value)))
    print("")
    time.sleep(1)

showInfo()
getRepetitionInputFromUser()

```

Problem

Let assume, Because of the price increase in gas cylinders from 2000Rs to 3000Rs, Market research reveals that 1000Rs increase in price, dropped demand of cylinder from 1000 units to 900 units

So, Demand of the Inductive Cooker changed from 200 units to 300 units. Income of a customer increased from 50000Rs to 60000.

1. Find PED?
2. Find XED?
3. Find YED?
4. Find PES?

PED

Manual Calculation

- Initial Price of Gas cylinder: 2000
- New Price of Gas cylinder: 3000
- Initial Demand of Gas cylinder: 1000
- New Demand of Gas cylinder: 900
- Change in Price: 2000-3000 = 1000
- Change in Demand: 1000-900 = 100
- $\frac{\text{Change in Demand}}{\text{Change in Price}} \times \frac{\text{Initial Price}}{\text{Initial Demand}} = PED$
- $\frac{100}{1000} \times \frac{2000}{1000} = 0.20$

XED

Manual Calculation

- Initial Demand of Inductive Cooker: 200
- New Demand of Inductive Cooker: 300
- Initial Price of Gas cylinder: 2000
- New Price of Gas cylinder: 3000
- Change in Price: 2000-3000 = 1000
- Change in Demand: 200-300 = 100
- $\frac{\text{Change in Demand of Good X}}{\text{Change in Price of Good Y}} \times \frac{\text{Initial Price of Good Y}}{\text{Initial Demand of Good X}} = XED$
- $\frac{100}{1000} \times \frac{2000}{200} = 1$

YED

Manual Calculation

- Initial Income: 50000
- New Income: 60000
- Initial Demand of Gas cylinder: 1000
- New Demand of Gas cylinder: 900
- Change in Income: 50000-60000= 10000
- Change in Demand: 1000-900= 100
- $\frac{\text{Change in demand}}{\text{Change in Income}} \times \frac{\text{Initial Income}}{\text{Initial Demand}} = YED$
- $\frac{100}{10000} \times \frac{50000}{1000} = 0.50$

PES

Manual Calculation

- Initial Quantity Supplied of Gas Cylinder: 1000
- New Quantity Supplied of Gas Cylinder: 900
- Initial Price of Gas Cylinder: 2000
- New Price of Gas Cylinder: 3000
- Change in Price: 2000-3000 = 1000
- Change in Quantity Supplied = 100
- $\frac{\text{Change in Quantity Supplied}}{\text{Change in Price of Good}} \times \frac{\text{Initial Price of Good}}{\text{Initial Quantity Supplied}} = PES$
- $\frac{100}{1000} \times \frac{2000}{1000} = 0.20$

Sample Full Output

Name : Raguraj S.
Index Number : 205080K

What Elasticity Would you like to Measure ?
PED, YED, XED, PES
Seperate By ', ' eg: PED, YED, PES

Input : PED, YED, XED, PES

Enter initial Price of Gas cylinder: 2000
Enter new Price of Gas cylinder: 3000
Enter initial Demand of Gas cylinder: 1000
Enter new Demand of Gas cylinder: 900
Enter initial Demand of Inductive Cooker: 200
Enter new Demand of Inductive Cooker: 300
Enter initial Income : 50000
Enter new Income : 60000

PED : PRICE ELASTICITY OF DEMAND
Change in Price of Gas cylinder is : 1000.0
Change in Quantity Gas cylinder is : 100.0
PED is :0.20

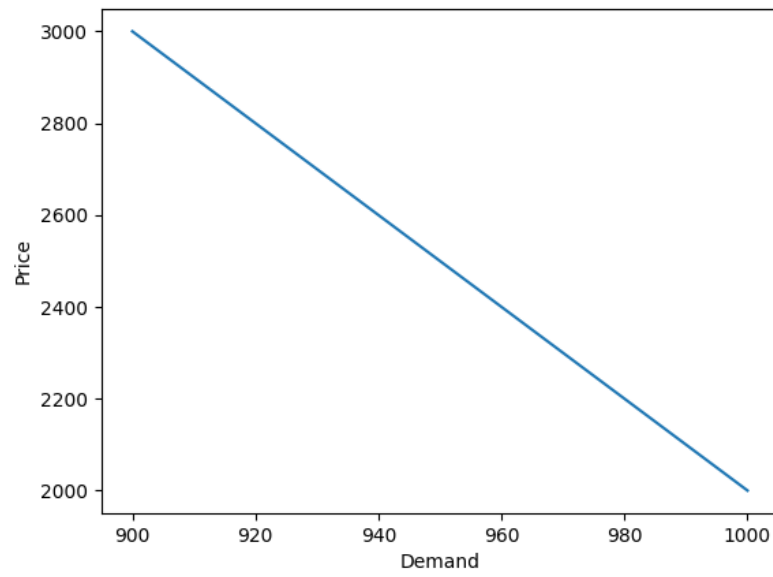
YED : INCOME ELASTICITY OF DEMAND
Change in Income is of Customer : 10000.0
Change in Quantity is of Gas cylinder : 100.0
YED is :0.50

XED : CROSS ELASTICITY OF DEMAND
Change in Demand of Inductive Cooker is : 100.0
Change in Price of Gas Cylinder is : 1000.0
XED is :1.00

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PES : PRICE ELASTICITY OF SUPPLY
Change in Price of Gas cylinder is : 1000.0
Change in Quantity of Gas cylinder is : 100.0
PES is :0.20

GRAPH FOR PED



GRAPH FOR PES

