Report On

ESTIMATIMG ELASTICITY OF DEMAND FOR TOP 10 IMPORTS

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CERTIFICATE

This is to certify that the report on "**Estimating elasticity of demand for top 10 imports**" is a bonafide work carried out as part of the course Engineering Economics , under the guidance of **Dr.Rajesh Acharya**, by Anantha Mayuri (14MT04),K.Madhubala (14MT22),K.Sravan Reddy (14MT24),K.Yuva Simha (14MT25),T.S.K.Sushma (14MT40) of VI Sem B.Tech at the Department of Metallurgy and Materials Engineering , National Institute of Technology Karnataka,Surathkal, during the academic semester Dec – Apr,2017 in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Metallurgy and Materials Engineering , at NITK Surathkal.

Place: NITK, Surathkal
Date: 30th March, 2017

Signature of the instructor

DECLARATION

We hereby declare that the report on "Estimating elasticity of demand for top 10 imports" submitted as part of the partial course requirements for the course Engineering Economics for the award of the degree of Bachelor of Technology in Metallurgy and Materials Engineering at NITK Surathkal during the Dec-Apr 2017 semester has been carried out by us. We declare that the report has not formed the basis for the award of any degree, associateship, fellowship or any other similar titles elsewhere.

Further, we declare that we will not share, re-submit, idea, framework and/or any publication that may arise out of this work for academic or profit purposes without obtaining the prior written consent of the Course Instructor.

Place: NITK, Surathkal.

Date: 30th March, 2017

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ABSTRACT

This Report is done to Estimate the Price Elasticity of Demand and Regression of Top 10 Imports by Deflating the Price using WPI.

Elasticity is predominantly used to assess the change in consumer demand as a result of a change in a good or service's price. The Wholesale Price Index or WPI is "the price of a representative basket of wholesale goods". The changes in this index are used to measure inflation in their economies by few countries, in particular India.

Estimating elasticity of demand and cost behaviour of imports is of outmost importance to learn about a country's growth and it can be calculated by performing regression on Price and Quantity of the imports.

INTRODUCTION

What is Elasticity?

The elasticity is defined as the extent to which a demand or supply curve changes to a change in price .Elasticity may also refer to the extent to which consumers or producers change their demand or the amount supplied with respect to the change in income or price.

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

Variety of Demand Curves:

- Elastic Demand:

  Quantity demanded responds predominantly to the changes in the price. (Elasticity > 1)

- Inelastic Demand:

  Quantity demanded responds only slightly to the changes in the price. (Elasticity < 1)

- Unitary Elasticity:

  Elasticity = 1

- Perfectly Elastic Demand:

  Quantity demanded does not respond to a change in price. (Elasticity = ∞)

- Perfectly Inelastic:

  Demand Quantity drops to zero at the slightest increase in price. (Elasticity = 0)

WHOLESALE PRICE INDEX (WPI):

The wholesale price index is an index that measures and tracks the changes in the price of goods in the stages before the retail level. WPI shows the average price change of goods included in the index and is often expressed as a ratio or percentage, and the change is one indicator of a country's level of inflation.

WFI can is calculated by assuming the WPI value of Base year as 100.

$$WPI= ((P-Q)*100)/Q$$

Where P= Price in Present year

Q=Price in Base year

Deflated Price:

Deflating the Price means the conversion of the Nominal Value of the goods/commodities and services to Real Value by using Price Indexes. Deflated price can be calculated as:

$$Deflated\ Price= (Price*100) /WPI\ value$$

Regression:

- It is a measure used in investing, finance and others to determine the strength of the relationship between one dependent variable and a series of other changing variables (independent variables).

- It helps in understanding the relationships between variables, such as commodity prices and the stocks of businesses.

- Estimation of Cost behaviour can be done by doing regression analysis for Price and Quantity of a goods and services.

STEPS INVOLVED IN FINDING THE ELASTICITY OF DEMAND FOR TOP 10 IMPORTS:

1. Collection of data - Top 10 Imports:

- The data regarding the top 10 imports was collected from the website "Commerce India". In the website, the data has been categorised based on HS Code level. (HS Code means Harmonized System Code which is used to differentiate the goods and services in International trade). There are four HS codes namely 2,4,6,8.

- There are about 100 commodities, whose import data is available on HS Code level 2. Further, the subdivisions of the commodities present in Code 2 can be obtained in HS Code Level 4 and so on.

- In the last HS code, i.e., Code 8, information about the imports is available for about 10000 subdivided commodities. Out of the 10000 commodities, top 10 Imports were selected. Imports value(price in lakhs) and quantity of the top 10 imports during the period, 2004-2005,2005-2006,....2015-2016 was searched for, and was tabulated neatly in an excel sheet.

2. Calculation of WPI values and deflated price:

- Data required to calculate WPI values was obtained from the website" Office of Economic Adviser". The period 2004-2005 was considered the base year and hence WPI value would be 100 for all 10 imports.

- Later WPI values were calculated for the remaining years. The values obtained in all the time periods are different for different commodities. The values obtained were tabulated.

- After finding out WPI values, Deflated Price was calculated according to the formula (mentioned above).

3. Unit deflated Price and Regression:

- Further, Unit Deflated price for all the 10 imports during different time periods was calculated using the formula:

Unit Deflated Price= Deflated price obtained/Quantity

- Once the Unit Deflated Price was calculated, a graph between ln (Unit deflated price) and ln (Quantity) was drawn for a particular commodity. Then, data analysis of regression was done for X and Y axes values. The result of the regression analysis will be X variable which is nothing but ELASTICITY value of the Import.

- Similar procedure of calculating Elasticity from Regression analysis was carried out for the remaining 9 Imports.

References:

- Government of India, Ministry of Commerce & Industry, Department of commerce (http://commerce.gov.in/eidb/default.asp) – **For Export Data**

- Database On Indian Economy, RBI's Data Warehouse (https://dbie.rbi.org.in/DBIE/dbie.rbi?site=home) – **For WPI Values**

- Office of the Economic Advisor, Govt. of India, Ministry of Commerce & Industry (http://www.eaindustry.nic.in/home.asp) – **For Yearly WPI Values**

- Dummies (http://www.dummies.com) – **For Regression Process**