

## WEB RELEASE

# Supply and Use Table (SUT), and

# Symmetric Input Output Table (SIOT); 2010

### DEPARTMENT OF CENSUS AND STATISTICS MINISTRY OF NATIONAL POLICY AND ECONOMIC AFFAIRS

SRI LANKA

## Foreword

Revising the base year is a crucial and compulsory task in National Accounting as it leads to improve Volume measures of Gross Domestic Product (constant price estimates. During rebasing conceptual and Methodological recommendations are adopted. Till the year 2015, the year 2002 was the base year in National Accounts computing. The base year was changed 2010 and parallel to changing base year number of improvements were also introduced. These improvements included adoption of System of National Accounts 2008, increasing coverage of economic activities etc. The technical assistance for this massive exercise was given by the International monetary Fund (IMF) and the Asian Development Bank (ADB).

SNA recommends prepare Supply and Use Table (SUT) at the time of revising base year. The main advantages of preparing this SUT are to reconcile the separately calculated supply and demand into one framework and identify inconsistencies between different source data.

The 2010 SUT was transformed into industry by industry Symmetric Input Output Table (SIOT) following Leontief equations and it is a powerful tool for economic policy planning activities. This report presents the information of current Sri Lankan System of National Accounts (SLSNA), experience on preparing the SUT and the Symmetric Input Output Table SIOT) for the year 2010.

I hope that the information given in this report and the SUT and SIOT for the year 2010 which are in excel formats would be useful for the planners, policy makers, Researches, Academics, International Organizations and others who are interested with the SUT and SIOT related analysis.

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#### **1** Abstract

The previous base year (2002) of National Accounts Estimates of Sri Lanka has recently revised to 2010 by the Department of Census and Statistics (DCS) which is responsible for (in) compilation of national accounts estimates for Sri Lanka. In this attempt Sri Lanka has migrated to the recommendations of 1993/2008 System of National Accounts (SNA) in the compiling National Accounts Estimates including Gross Domestic Product<sup>1</sup> (GDP) for the county. The revised estimates from the year 2010 has released since the year 2015. One of the key recommendations of both 1993 SNA and 2008 SNA is the Use of the Supply and Use Tables in preparing a coherent set of accounts and identify the data gaps and limitations of the source data. This can be done by reconciling production (Supply) and expenditure (Demand) systems by using SUT. This report discusses the main features of the new system and highlights the steps and the procedures of preparing Supply and Use Table (SUT) and the Symmetric Input Output Table (SIOT) for 2010 and some of its applications. It also presents the issues and limitations in relation to prepare the SUT and some of the suggestions which can be used to improve the future Supply and Use Tables.

**Keywords and phrases**; System of National Accounts (SNA), Supply & Use Table (SIOT), Symmetric Input Output Table (SIOT), The Gross Domestic Product (GDP)

#### 2 Introduction

The System of National Accounts (SNA) is a powerful and complete framework that can be used to monitor and assess economies. It also provides recommendations, concepts, boundaries and compilation methodologies of estimating National Accounts Estimates. From the 1953 SNA which was the first complete framework for National Accounting, the SNA has been updated in 1968, 1993 and 2008.

Sri Lanka started compiling National Accounts Estimates from 1947 and five revisions were made during this period. The first revision was made in 1963 with the shift in the base year from 1958 to 1963. The other revisions were made by changing the base year from 1963 to 1975, 1975 to 1990, 1990 to 1998 and 1998 to 2002. The latest revision is the changing the base year from 2002 to 2010. A mixture the recommendations of 1993 SNA and 2008 SNA were used to prepare National Accounts Estimates with the new base year of 2010.

<sup>&</sup>lt;sup>1</sup>Monetary value of newly produced goods and supplied services by the resident units within the economic territory during a specific period

The main features of the new Sri Lankan System of National Accounts are discussed in this paper. At the same time, this report explains the background of SUT, SIOT for the year 2010 and some applications of these tables.

#### 3 The Current System of National Accounts in Sri Lanka

The DCS has published a new series of National Accounts Estimates using the new base year. Several other improvements were also made while changing the base year from 2002 to 2010. The major improvements made in the new series are listed below.

- I. Shifting the base year from 2002 to 2010
- II. Adaptation of the new concepts, definitions given in 2008 SNA by fallowing the international guidelines for the compilation of national Accounts Estimates
- III. Some of the conceptual and methodological changes were also made;
  - a) The concept of Financial Intermediation Services Indirectly Measured (FISIM) is implemented as recommended by the 1993/2008 SNA
  - b) Inclusion of work-in -progress in the measuring the output of the agricultural activities
  - c) Expansion of the Gross Fixed Capital Formation value to include the expenses on Research and development (R & D)
- IV. Adoption of the latest international Classifications

The 2008 SNA recommends to use the latest versions of international classifications which are used in the compilation of National Accounts, so as to comparable with other countries by removing omissions, and duplications. In the estimation procedure of the new series, the following latest classifications were used.

- a) Sri Lanka Standard Industrial Classification (SLSIC) for economic activities which is the local version of the International Standard Industrial Classification (ISIC); revision 4
- b) Central Product Classification(CPC), Revision 2 for products or commodities
- c) Classification Of the functions of the Government (COFOG) for government expenditure
- d) Classification Of Individual Consumption by Purpose (COICOP) for private consumption expenditure
- V. Use of much accurate data

Use of revised, updated and finalized data provided from various stakeholder agencies such as Central Bank of Sri Lanka, Department of Inland Revenue.

VI. Change the terminologies

With the adoption of 2008 SNA, some of the terminologies were changed and implemented with the new series

- a) Gross National Product (GNP) was changed to Gross National Income<sup>2</sup> (GNI)
- b) Depreciation was changed to Consumption of Fixed capital(CFC)

#### 4 The Supply and Use Table Framework

#### 4.1 Basic Concepts

In the national accounts, the first set of tables used in globally is known as the "supply-and-use tables" (SUTs).

The SUT applies the product balance of each product, and this can be presented in an equation as follows.

# Output + Imports [Supply] = [Uses] Intermediate consumption + Final consumption + GFCF + Changes in inventories + Exports

The Supply and Use Table (SUT) describes, in a collection of matrices, how the supply of different kinds of goods and services originate from various domestic industries and from Rest of the world (imports) and how supply allocated in between various intermediate and/or final uses including exports. It provides a solid framework to balance the total supply and the total use in the economy as well. Therefore, the DCS decided to prepare the SUT for the new base year 2010, to achieve the objectives mentioned above.

The Supply and Use Table broadly shows:

- 1. The structure of the cost of production and income generated in the production process
- 2. Flows of goods and services produced within the national economy
- 3. Flows of goods and services with the rest of the world

The Supply table consists of seven main elements such as:

<sup>&</sup>lt;sup>2</sup> Gross domestic Product(GDP) adjusted with net primary income from rest of the world

- a) Domestic output by industry
- b) Imports of goods and services
- c) Trade margins
- d) Transport margins
- e) Taxes on products
- f) Subsidies on products
- g) Total supply at purchaser prices

The main elements of the use table are;

- a) Intermediate Consumption by industry
- b) Exports of goods and services
- c) Household Final Consumption Expenditure
- d) Government Final Consumption expenditure
- e) Gross Capital Formation
- f) Total use at purchaser prices

In the Supply and Use Table, the total supply of a product should be equal to the total use of the same product. This is only valid when both the supply and the use are estimated at the same price category (Purchaser's price).

#### Table 1: Supply Table

Industries	Industries industries					
Products	Agriculture	Industry	services	imports	Total supply	
Agricultural products				Imports		
Industrial products	Output by product and by industry			by	Total supply by products	
Services			products			
Total	Total output	by industry	Total imports	Total Supply		

Tabl	le 2:	Use	Table

Industries	Industries			Final uses			
Products	Agriculture	Industry	services	Final consumption Formation			Total
Agricultural products Industrial products Services	Intermediate product and	e Consum by industry	iption by Y	Final uses b category	by product	and by	Total use by product
Value Added	Value Added by component and by industry						Value Added
Total	Total output	by industr	ý	Total Final use	s by category		

#### 4.2 The Size of the SUT for 2010

176 productive economic activities were identified by using SLSIC for the Sri Lankan economy. 296 product categories that comes from above industries identified by using CPC version two. Accordingly the size of original Sri Lankan SUT for the year 2010 is 296 by 176.

#### 4.3 The Data sources

The New System of National Accounts uses a wide range of new data sources for the compilation of National Accounts Estimates such as Census of Population and Housing 2011/12, Annual Survey of Industries (ASI) for the years from 2010 to 2013, Household Income and Expenditure Survey (HIES)

2012/13 and Annual Labor Force Surveys for the years after the new base year. In addition to the surveys and Censuses conducted by the Department of Census and Statistics several other data sources were used to compile national accounts estimates in this new series. Some of the other source data are listed out as follows:

- 1. Revised external trade statistics from Sri Lanka Customs and Central Bank of Sri Lanka
- 2. Finalized financial data from respective financial institutions
- 3. Revised Balance of Payment statistics
- 4. Revised Government Finance statistics
- 5. Other administrative data

The SUT has been prepared only for the new base year, as a wide range of source data is needed to prepare it. Detailed data sources used for the preparation of SUT can be summarized in Table 3.

Section of the SUT	Item	Data sources
Quadrant of Domestic production by industry (Supply table)	Agriculture, forestry and Fishing	Census of Agriculture, Crop Production Surveys, administrative data from respective institutions,
	Industry	Census of industries, Annual Survey of Industries (ASI), Industrial Production Volume Index, administrative data
	Services	Administrative data, employment data and VAT data
Imports of Goods and Services	Imports of goods	Sri Lanka Customs
	Imports and Services	Central Bank of Sri Lanka, Sri

#### Table 3: Data sources used for the preparation of Supply and Use Table

		Lanka Customs
Quadrant of Intermediate Consumption by industry (Use Table)	Agriculture, Forestry & Fishing, Industry and Services	cost of production surveys, research and ad-hoc survey results, 2006 SUT ratios
Quadrant of Final Demand (Use Table)	Household Final Consumption Expenditure (HFCE)	2009/10 Household Income and Expenditure Survey (HIES)
	General Government Final Consumption Expenditure(GFCE)	Government Finance Statistics from Ministry of Finance
	Gross Capital Formation	Administrative data, Annual Survey of Industries, imports data
	Exports of goods	Sri Lanka Customs
	Exports of services	Central Bank of Sri Lanka
	Direct purchasers of residents abroad	Central bank of Sri Lanka
	Direct purchasers of non- residents in domestic territory	Central bank of Sri Lanka
Quadrant of Value Added (Use Table)	Compensation of Employees, Net Operating Surplus, Consumption of Fixed Capital and Other taxes less subsidies on production	Administrative data, Annual Survey of Industries (ASI) and 2006 SUT ratios
	Employment by industries	Labor Force Survey

#### 4.4 Balancing of SUT

The method of manual balancing was done by using spreadsheets for balancing the SUT for 2010. The following general steps were used in balancing the SUT.

- 1. Find large inconsistencies in the product balances
- 2. Compare values with those in previous periods
- 3. Validate estimates by comparing values with data from other sources. Find limitations.
- 4. Identify the weak points of the estimates
- 5. In the use table, check the partitioning of source data in to product groups
- 6. Re-visit any assumptions made in deriving the estimates. Occasionally, specific changes from one year to another need to be taken in to account based on the computed parameters that are derived from the Census/Survey result and other relevant data sources for the period concerned.
- 7. Revisit the data sources as the need arises

#### 5 Input-Output Framework

Transformation of Supply table and the Use table into a single table where row and column totals are equal brings some of advantages in policy making and this table is called as Input- Output Table (IOT). Essentially, an Input-Output Table is derived from a Use table with some matrix transformation by applying the domestic production dimension. This replacing process is based on one of the several possible models which are listed below. According to the selected assumptions, these models are used in the process of arranging both Supply table and Use table at basic prices to prepare the Symmetric Input Output Table (SIOT). The four possible models of Symmetric Input Output Tables (SIOT) which can be prepared under the four assumptions have been summarized in Table 4.

Major assumption	Assumption in detail	Model of SIOT
Technology assumption	Product technology assumption	Model A (Product by Product SIOT)
	Industry technology assumption	Model B (Product by Product SIOT)
Sales structure	Fixed industry sales structure assumption	<b>Model C</b> (Industry by industry SIOT)
assumption	Fixed product sales structure assumption	Model D (Industry by Industry SIOT)

#### Table 4: Main models and underlined assumptions of SIOT

After the in-depth analysis of the structure of Sri Lankan economy the "*fixed product sales structure assumption*" was selected to prepare the Model D Industry by industry Input Output table. This assumption states that "*each product has its own specific sales structure irrespective of the industry where it is produced*". By using industry technology assumption, Model B product by product Input Output table is also prepared for the use of researches, policy makers and other academics. Model A and C input output tables are not prepared due to possibility of having negative values in the input output table. The Supply table at basic prices and the Use table at basic prices were prepared as industries equal to products (symmetric) by using the above assumptions. Excel was used to matrix transformation with Leontief inverse to transform the Use table to SIOT with the size of 127 by 127.

The Supply table and the Use table at basic price is aggregated to 17 product categories and 17 industry categories to transform to SIOT by 17 by 17.

		Products Final Use		Final Uses						
		Agriculture	Industry	Services	Final	Consumption	Gross capital	Formation	Exports	Total Output
	Agriculture	Inter	mediate	consumption	Final	dem	and			
Industry អ្		at ba	isic prices							
Services										
Compen	Compensation of Employees									
Other net taxes on production		Value Added								
Consumption of Fixed capital										
Operating Surplus										
Total Inj	put									

#### Table 5: Product by Product Input Output Table

#### 5.1 Competitive and non-competitive type Input-Output tables

There may be two types of imports in an economy.

- 1. Imports of commodities that are also domestically produced (Competitive Imports) and
- 2. Imports of commodities that are not domestically produced (Non-Competitive Imports).

In the first model, competitive imports are included into the use table at basic prices. Some of the industries use largely imported goods in the production process as the intermediate uses. In the Sri Lankan economy, share of imported intermediate uses is about 67 percent for "Manufacture of coke and refined petroleum products" industry. Due to higher demand, if it is needed to increase the output of this industry, imports should essentially be increased. For this kind of analysis, non-competitive

imports and non-competitive type Input output table is much important. Import matrix at basic prices is required to prepare non-competitive type input Output table. The key feature of non-competitive type Input Output table is intermediate uses of imports in domestic industries and final uses of imports by resident units are extracted and presented separately.

Accordingly, DCS already published 8 types of Symmetric Input Output Tables for the different users. They are summarized in Table 6:

Type of SIOT	Model	Detail type of SIOT	Size of SIOT
Product by	Model B	Model B Competitive type product by product IOT derived using Industry technology assumption	127 by 127 & 17 by 17
Product		Model B Non Competitive type product by product IOT derived using industry technology assumption	127 by 127 & 17 by 17
Industry by	Model D	Model D Competitive type industry by industry IOT derived using Fixed product sales structure assumption	127 by 127 & 17 by 17
Industry		Model D Non Competitive type industry by industry IOT derived using Fixed product sales structure assumption	127 by 127 & 17 by 17

#### Table 6: Types of published Input Output Table by the DCS for the year 2010

Apart from the above eight Input Output tables, the Supply table and use table at basic price are also uploaded to the Department website in separate files with the objective of the convenience of the data users.

Multipliers and some other indicators that can be derived by using SIOT are calculated and disseminated along with the tables and those indices are listed out below.

- 1. Imports by commodities (By CPC)
- 2. Exports by Commodities (By CPC)
- 3. Output multipliers (Direct and total)

- 4. Employment multipliers
- 5. Backward linkage multipliers (Direct and total)
- 6. Forward linkage multipliers (Direct and total)
- 7. Value Added multipliers
- 8. Investment multipliers
- 9. Nominal Rate of Protection (NRP)
- 10. Effective Rate of Protection (ERP)

#### 5.2 The Uses of SUT and SIOT

Input Output analysis was found by Wassily Leontief in the thirties of 20<sup>th</sup> Century. He became the first Nobel laureate and is the founding father of new field for empirical research in (at the border) between Microeconomics and Macroeconomics. He stated that "in practical terms, the economic system of which input Output analysis is applied may be as large as a nation or even the entire world economy or as small as the economy of a metropolitan areas or even a single enterprise. In all instances this approach is essentially the same". (Leontief 1986)

According to the above statement, input output analysis can be applied to an economy to study and assess the structure of this economy, to identify the linkages between sectors and also calculate different types of multipliers, to form appropriate economic policies which lead to economic development of the country. At the same time for the success of Import Substitution policies, trade policies and investment policies also can be measured using Input Output analysis.

The names of widely used multipliers in input output analysis and their interpretations can be summarized as Table 7.

Name of the multiplier	Interpretation
Output multiplier	The total value of production in all sectors of the economy that is necessary in order to satisfy a rupee's worth of final demand for sector j's output is called as output multiplier for sector j
Household income Multiplier	Income multiplier captures the impacts of final demand spending changes into changes in income received by households
Employment Multiplier	measures the impact on employment due to the change of final demand of one unit of output for a sector

#### Table 7: Main types of multipliers and their interpretations

The multipliers calculated using the SIOT for 2010 for the industries which has highest multiplier values for output, Household income and Employment are presented in Table 8,9 and 10.

Table 8: Economic activities which has the highest output multipliers

Activity		Outp	ut Multipli	er
code in	Industry			
ISIC		Multiplier	Index	Rank
38	Manufacture of macaroni, noodles, couscous and si	2.02	1.41	1
35	Manufacture of bakery products	1.93	1.35	2
19	Egg Production	1.89	1.33	3
36	Manufacture of sugar	1.86	1.30	4
116	Rental and leasing activities	1.84	1.29	5
29	Processing and preserving of fish, crustaceans and r	1.82	1.27	6
30	Processing and preserving of fruit and vegetables	1.81	1.27	7
28	Processing and preserving of meat	1.80	1.26	8
32	Manufacture of dairy products	1.78	1.25	9
68	Manufacture of refractory products	1.77	1.24	10
Source: D	epartment of Census & Statistics			

Table 9: Economic activities	which has	the highest	Household	income	multipliers

Activity		Household Income Multiplier			
code in	Industry			Deal	
ISIC		wuitiplier	Index	капк	
5	Growing of other perennial crops	1.00	3.06	1	
20	Agriculture Supporting Activities	1.00	3.06	1	
23	NWFP	1.00	3.06	1	
123	Education	0.90	2.76	4	
122	Public administration and defense; com	0.87	2.67	5	
124	Human health and social work activities	0.87	2.66	6	
22	Firewood	0.81	2.49	7	
17	Livestock	0.75	2.31	8	
111	Postal and courier activities	0.69	2.11	9	
21	Forestry and logging	0.68	2.07	10	
Source: Department of Census & Statistics					

### Table 10: Economic activities which has the highest Employment multipliers

Activity			Employment Multiplier			
code in	Industry	Multiplier	Indox	Donk		
ISIC		wurupner	index	капк		
2	Growing of rice	9.21	5.45	1		
1	Growing of cereals (except rice), leguminous crops and oil seeds	8.85	5.24	2		
8	Growing of Grapes, other tree, bush fruits and nuts	6.80	4.02	3		
47	Manufacture of cordage, rope, twine and netting	6.48	3.84	4		
46	Manufacture of carpets and rugs	6.39	3.79	5		
3	Growing of vegetables and melons, roots and tubers	5.04	2.99	6		
33	Manufacture of grain mill products	4.95	2.93	7		
14	Growing of Rubber	4.01	2.37	8		
9	Growing of oleaginous fruits	4.00	2.37	9		
11	Growing of beverage crops Tea	3.95	2.34	10		
Source: Department of Census & Statistics						

The change of the total output for the whole economy throughout the linkages, in order to satisfy a change of final demand for the output of the specific sector can be estimated using these total output multipliers. If additional domestic demand for construction worth of 100 million rupees generated, the total effect can be calculated using output multipliers of input output analysis. The steps can be listed out as:

- Calculate the import share of construction activity and the domestic production to total domestic use. Eg. for construction value of import share and domestic production share are 0.007 and 0.993 respectively
- Allocate above 100 Million rupees value to imports and domestic production by using above calculated ratios. It means that to fulfill this additional demand 0.68 Rupees million value construction services need to be imported and other 99.32 Million rupees construction services should be domestically supplied.
- 3. This should be multiplied by Leontief inverse to capture the effects of backward and forward linkages of construction activity with other activities. Change in Output and imports of all activities is presented in the Table 11
- 4. The summation of "change of domestic output due to change in final demand for construction" is the total domestic output change due to increase of final demand for construction service.

Table 11: Output change by activities as result of final demand increase for the construction activity worth of 100 Million rupees

Industry	Change in domestic output due to change in final demand to construction	Change in imports due to change in final demand to construction
Agriculture	1.5	0.1
Mining and quarrying	10.3	2.2
Electricity & water	1.5	0.0
Food manufacturing	1.0	0.1
Other manufacturing	23.9	11.6
Construction	99.5	0.7
wholesale and retail trade	8.7	0.2
Accomodation	0.1	0.0
Transport and Postal	5.9	0.1
Banking & Insurance	6.2	0.1
Real estate & professional	0.9	0.2
Telecomunication & Broadcasting	0.4	0.0
Employment and Travel	0.2	0.0
Public administration	0.0	0.0
Education	0.0	0.0
Health	0.0	0.0
Other services	0.7	0.0
total	160.7	15.4
Source: Department of Census & St	tatistics	

5. It means that if the domestic final demand for construction activity increases by 100 Million rupees, the total output of the economy increases by 160.7 Million rupees, due to round by effects throughout the linkages between sectors.

#### 6 Impact analysis tool

The Department of Census and Statistics (DCS) has developed a tool which can be measured all the above induced effects of change in final demand component to the total economy and it is more convenience for the users of this Input Output Table. A large number of worksheets, including Input Output table, Leontief inverse, different multipliers, change in final demand and etc. have linked together with this tool and can be used as a framework to find out the leading economic activities and highly linked economic activities in the process of policy making. Users first need to decide whether the

change of the final demand is a domestic or a external shock and then need to type the value in the appropriate cell. Then the framework will automatically generate all the required changes linked to that change of final demand. Detailed instruction are given in the web page along with the tool.

#### 7 Effective Rate of Protection

Measuring neutrality and bias in trade regimes is much important to access the net effect on resource allocation of a country.

One way of measuring bias starts with the Nominal Rate of Protection (NRP). NRP can be defined as the difference between domestic price and the world price of a tradable product expressed as the percentage of the world price. In other words, it measures the percentage increase in domestic price of an imported product relative to the 'free trade' border price. This Nominal Rate of Protection can be calculated for imports as well as exports. The overall bias of trade regime can then be estimated as the ratio of the average rate of nominal protection for importables to the average nominal rate of protection for exportables.

# **Overall trade bias** = $\frac{\text{Average nominal rate of protection for importables}}{\text{Average nominal rate of protection for exportables}}$

- 1. If the ratio is greater than one it implies that importables have a higher nominal rate of protection than exportables
- 2. If the ratio is equal to one, it reveals that there is a neutrality of the trade regime

If the tariff structure is unique and no other para tariff type taxes for tradable goods, NRP is good tool to measure trade bias. But if there is a cascading tariff structure, NRP does not provide an accurate picture of the resource allocation effects of the overall tariff system. A tariff structure in which tariff rates are generally higher on final goods compared to inputs to the production process (intermediate and investment goods) is called as a cascading tariff structure. Therefore, In a cascading tariff structure, there are different tariff rates for different products. The resource allocation effect of the tariff structure depends not only on the tariff rates applicable to final products but also on tariffs on all other products which are used as inputs in the domestic production. Hence a different indicator need to be

calculated to measure the trade bias and net effects of resource allocation of a trade regime. The indicator which meets this requirement is called as *Effective Rate of Protection (ERP)*.

The effective rate of protection is designed to capture the protection accorded to value added in production rather than to the finished product. It is defines as the difference between value added (per unit of output) in domestic prices and value added in world prices, expressed as a percentage of the latter.

Effective Rate of Protection 
$$=$$
  $\frac{V' - V}{V}$ 

V' = Value Added at domestic prices

V = Value Added at world prices

The result can be positive or negative, depending upon whether V' is greater of less than V.

As an example consider the effects of price on the shirt industry of Sri Lanka. Suppose a shirt sells for 10 dollars in the absence of import restrictions and that the material inputs (cloth, wool, buttons and etc) cost 6 dollars in world prices. Then the Value Added at world price is equal to 4 dollars. If a tariff of 20 percent is levied on shirts, raising their imported price to 12 Dollars. If the tariff on shirt production is combined with a tariff of 10 percent on inputs, the domestic cost of inputs rises to 6.6 dollars. Perunit value added at tariff distorted price is then 5.4 Dollars [12-6.6]. Then the effective rate of protection can be calculated as:

Effective Rate of Protection 
$$=$$
  $\frac{5.4-4}{4} = 35 \%$ 

This means that value added of one unit of domestically produced product is increased by 35 percent due to entire tariff system. But the Nominal Rate of Protection for the shirt in the above example is only 20 percent. The implication is domestic shirt industry is highly protected by the government tariff regime.

In a practical economy, we have a large number of industries and commodities. Therefore, calculation of Effective Rate of Protection is not straight forward as an above simple example. After rearranging the above formula, ERP for a specific sector can be compiled as:

$$ERP_j = \frac{t_j - \sum_{i=1}^n a_{ij}t_i}{1 - \sum_{i=1}^n a_{ij}}$$

Where

tj; nominal tariff on j,

ti ; nominal tariff on i and

*a*ij; the share of final value of j accounted for by input i.

Effective Rate of Production for the product of shirt can be compiled by using this formula as follows and answer is same.

$$\mathrm{ERP} = \frac{20 - [0.6 * 10]}{1 - 0.6} = 35 \%$$

The required data such as nominal tariff rates for wide range of industries, input shares of industries are only derived from input output framework. With the SUT and SIOT framework of Sri Lanka for 2010 DCS calculated Nominal and effective rates of protection for 127 industries.

SIOT Industry code	Industry	Total Import tax rate (%) on final	Rank, NRP	ERP rate (%)	Rank, ERP
38	Manufacture of macaroni, noodles, couscous and similar farinaceou	67.2	7	188.9	1
40	Distilling, rectifying and blending of spirits & Manufacture of wines	137.6	1	183.1	2
68	Manufacture of refractory products	72.6	3	165.9	3
67	Manufacture of other porcelain and ceramic products	66.4	8	163.0	4
30	Processing and preserving of fruit and vegetables	45.0	24	158.9	5
37	Manufacture of cocoa, chocolate and sugar confectionery	59.5	11	154.6	6
70	Manufacture of articles of concrete, cement and plaster	69.6	6	146.3	7
71	Cutting, shaping and finishing of stone	70.5	5	144.9	8
35	Manufacture of bakery products	55.3	15	144.0	9
63	Manufacture of rubber tires and tubes; retreading and rebuilding of r	71.9	4	143.8	10
29	Processing and preserving of fish, crustaceans and mollusks	47.0	21	111.0	11
102	Manufacture of motor vehicles, trailers and semi-trailers	75.3	2	110.1	12
31	Manufacture of vegetable and animal oils and fats	54.0	17	107.8	13
69	Manufacture of cement, lime and plaster	52.3	19	104.8	14
28	Processing and preserving of meat	47.6	20	100.7	15
66	Manufacture of glass and glass products	63.6	9	98.2	16
93	Manufacture of domestic appliances	57.9	12	94.3	17
41	Manufacture of soft drinks; production of mineral waters and other	55.6	14	90.5	18
51	Manufacture of footwear	56.5	13	89.4	19
73	Manufacture of furniture	63.5	10	86.9	20
98	Manufacture of batteries and accumulators	53.1	18	84.5	21
77	Manufacture of games and toys	54.9	16	83.3	22
64	Manufacture of other rubber products	32.1	36	82.5	23
46	Manufacture of carpets and rugs	39.6	30	75.2	24
72	Manufacture of other non-metallic mineral products i.e	36.3	32	74.2	25
61	Manufacture of soap and detergents, cleaning and polishing prepara	43.2	27	65.7	26
45	Manufacture of made-up textile articles, except apparel	31.8	39	65.3	27
39	Manufacture of other food products i.e	33.2	34	63.6	28
104	Building of pleasure and sporting boats	39.8	29	59.4	29
99	manufacture of electric lighting equipment & wiring and wiring device	40.1	28	57.7	30
3	Growing of vegetables and melons, roots and tubers	43.5	26	53.6	31
4	Growing of other non-perennial crops	45.4	23	53.2	32
12	Growing of spices, aromatic, drug and pharmaceutical crops	46.4	22	52.6	33
52	Manufacture of wood and of products of wood and cork, except fur	31.0	42	51.1	34
78	Manufacture of imitation jeweler, related articles & other manufactu	36.3	31	50.1	35
22	Firewood	43.8	25	48.5	36
47	Manufacture of cordage, rope, twine and netting	25.0	50	46.4	37
83	Manufacture of tanks, reservoirs and containers of metal	32.1	37	45.4	38
80	Casting of iron and steel	27.7	49	45.1	39
84	Manufacture of cutlery, hand tools, general hardware & other fabric	31.4	40	44.5	40
82	Manufacture of structural metal products	30.2	45	43.1	41
87	Manufacture of other general-purpose machinery	30.6	43	42.8	42
75	Manufacture of musical instruments	31.0	41	41.0	43
9	Growing of oleaginous truits	35.6	33	40.4	44
100	Manufacture of communication equipment & consumer electronics	32.5	35	40.1	45
65	Manufacture of plastics products	32.0	38	39.6	46
58	Manufacture of plastics and synthetic rubber in primary forms	30.6	44	39.2	47
59	Manufacture of paints, varnishes and similar coatings, printing ink ar	28.1	48	35.7	48
55	Manufacture of refined petroleum products	13.1	71	35.6	49
8	Growing of Grapes, other tree, bush fruits and nuts	30.1	46	34.2	50

### Table 12: Comparison of NRP and ERP calculated with all import related taxes

66         Manufacture of refractory products         34.3         2         27.5         1           40         Distilling, rectifying and blending of spirits & Manufacture of wines         47.7         1         25.6         3           31         Manufacture of macaroni, noodles, couscous and similar farinaceous pro         21.0         2         58.6         3           30         Processing and preserving of fruit and vegetables         17.3         12         56.8         5           63         Manufacture of rubber tires and tubes; retreading and rebuilding of rubbe         21.1         6         42.8         6           70         Manufacture of tother service, cement and plaster         19.1         0         41.4         7           35         Manufacture of other porcelain and ceramic products         13.6         22.3         33.5         10           21         Freewood         26.9         3         29.9         12         35.1         30.5         11         27.5         14         40.5         11         27.5         14         71.5         12.7         14         71.5         12.2         13.7         11         27.5         13.2         13.3         13.1         27.5         13.5         13.5         13.5         13.5<	SIOT Industry code	Industry	NRP: Tariff rate (%) on final products	Rank, NRP	ERP rate (%)	Rank, ERP
40         Distilling, rectifying and blending of spitts & Manufacture of wines         47,7         1         63.1         2           38         Manufacture of macroni, noedles, couscous and similar farinaceous pro         21.0         7         58.6         3           37         Manufacture of cocoa, chocolate and sugar confectionery         22.1         4         58.8         44           30         Processing and preserving of fruit and vegetables         7.3         12         56.8         56           51         Manufacture of anticles of concrete, cement and plaster         39.1         10         41.4         7           55         Manufacture of other porcelian and ceramic products         13.6         22         33.5         10           39         Manufacture of othere porcelian and ceramic products         13.6         22         33.5         11           20         Firewood         26.9         3         29.9         12         51         Manufacture of otherear         13.6         12         23.3         13         14         Manufacture of otherear         13.6         14         27.9         14           11         Cutting, shaping and finishing of stone         13.6         14         27.9         15         18         16         14 <td>68</td> <td>Manufacture of refractory products</td> <td>34.3</td> <td>2</td> <td>87.5</td> <td>1</td>	68	Manufacture of refractory products	34.3	2	87.5	1
38       Manufacture of coco, chocolate and sugar confectionery       21.0       7       39.1       Anufacture of coco, chocolate and sugar confectionery       22.1       4       88.1       6         30       Processing and preserving of fruit and vegetables       17.3       12       56.8       5         63       Manufacture of rubber threes and tubes; retreading and rebuilding of rubbs       21.1       6       42.8       6         70       Manufacture of takery products       16.0       16       88.2       8         29       Processing and preserving of fish, crustaceans and mollusks       14.7       20       36.6       9         31       Manufacture of domeskic applances       17.1       14       30.5       11       22.1       Firewood       26.9       3       29.9       12         21       Firewood       26.9       3       29.9       12       13       31.1       27.9       14.4       30.5       11       27.9       14.4       30.5       11       27.9       13.2       27.9       14.4       30.5       11       27.9       14.2       31.3       31.1       27.1       14.2       30.5       11.5       27.5       18.8       10.5       13.6       20.0       22.1	40	Distilling, rectifying and blending of spirits & Manufacture of wines	47.7	1	63.1	2
37       Manufacture of cocca, chocolate and sugar confectionery       22.1       4       9.31       4         30       Processing and preserving of fruit and vegetables       17.3       12       56.8       5         53       Manufacture of rubber tires and tubes, retreading and rebuilding of rubbe       11.1       6       42.8       6         70       Manufacture of Abserv products       16.0       16       38.2       8         29       Processing and preserving of fish, crustaceans and mollusks       14.7       20       36.6       9         31       Manufacture of toher porcelian and ceramic products       13.6       22       33.5       10         32       Manufacture of toher porcelian and ceramic products       13.6       22       33.5       10         32       Manufacture of otomesar       17.3       11       27.9       14       40.5       11       11       27.9       14         41       Manufacture of otot drinks; production of mineral waters and other bott       15.9       17       5.5       17       9       17       25.3       17       9       17       27.9       14       28.6       20       27.9       15         41       Manufacture of otof drinks; production of mineral waters and other	38	Manufacture of macaroni, noodles, couscous and similar farinaceous pro	21.0	7	59.6	3
30         Processing and preserving of fruit and vegetables         17.3         12         96.8         5           63         Manufacture of rubber tires and tubes; retreading and rebuilding of rubbe         21.1         6         42.8         6           70         Manufacture of articles of concrete, cement and plaster         19.1         10         41.4         7           35         Manufacture of bakery products         16.6         16         38.2         8           29         Processing and preserving of fish, crustaceans and mollusks         14.7         20.6         9           31         Manufacture of other porcelain and ceramic products         13.6         22         33.5         10           21         Frewood         26.9         3         9.9         12         13         Manufacture of footwear         17.3         11         27.9         14           71         Cutting, shaping and finishing of stone         13.6         24         27.9         15           84         Manufacture of soft drinks; production of mineral waters and other bott         15.9         17         25.3         17           9         Growing of vegetables and melons, roots and tubers         19.1         9         24.5         19           102	37	Manufacture of cocoa, chocolate and sugar confectionery	22.1	4	58.1	4
63       Manufacture of nubber tires and tubes; retreading and rebuilding of nubbe       21.1       6       42.8       6         70       Manufacture of articles of concrete, cement and plaster       19.1       10       41.4       7         35       Manufacture of bakery products       16.0       16       38.2       8         29       Processing and preserving of fish, crustaceans and mollusks       14.7       20       36.6       9         67       Manufacture of other porcelain and ceramic products       11.6       22.33.5       100         93       Manufacture of other porcelain and ceramic products       11.6       23.3       11       20.5       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11       20.3       11.3       11       27.5       15       16       44.4       27.5       15       15       11.6       24.2       25.9       15       16       11.5       23.6       21.7       5       25.2       18       3       12.7       5	30	Processing and preserving of fruit and vegetables	17.3	12	56.8	5
70       Manufacture of atticles of concrete, cement and plaster       191       10       41.4       7         35       Manufacture of bakery products       160       16       38.2       18         29       Processing and preserving of fish, crustaceans and mollusks       14.7       20       36.6       9         67       Manufacture of other porcelain and ceramic products       11.6       22       23.5       10         93       Manufacture of other porcelain and ceramic products       12.6       23       23.5       11         21       Firewood       26.9       3       29.9       12         51       Manufacture of footwear       17.2       11       27.9       14         71       Cutting, shaping and fishing of stone       13.6       24       27.9       15         96       Manufacture of batteries and accumulators       14.8       19       25       18         3       Growing of vegetables and melons, roots and tubers       19.1       9       24.5       19         102       Manufacture of fumiture       16.1       15       23.6       20         73       Manufacture of due non-metallic mineral products le       8.3       27       16.6       22.5       23	63	Manufacture of rubber tires and tubes; retreading and rebuilding of rubbe	21.1	6	42.8	6
35       Manufacture of bakery products       16.0       16       38.2       8         29       Processing and preserving of fish, crustaceans and mollusks       14.7       20       36.6       9         37       Manufacture of other porcelain and ceramic products       13.6       22       33.5       10         37       Manufacture of other porcelain and ceramic products       13.6       22       33.5       10         31       Manufacture of other porcelain and ceramic products       26.9       32.99       12         31       Manufacture of footwear       17.2       13       23.3       13         31       Manufacture of batteries and accumulators       14.4       19       25.9       16         41       Manufacture of ost drinks; production of mineral waters and other bott       15.9       12       27.8       17         9       Growing of vegetables and melons, roots and tubers       19.1       24.5       19       10.2       Manufacture of furmiture       16.1       15       24.6       20       21       23       23.0       22       12       22       23.0       22       12       23.0       22       12       22       23.0       22       12       12       13.6       20       <	70	Manufacture of articles of concrete, cement and plaster	19.1	10	41.4	7
29       Processing and preserving of fish, crustaceans and mollusks       14.7       20       36.6       9         67       Manufacture of other porcelain and ceramic products       13.6       22       33.5       10         93       Manufacture of domestic appliances       17.1       14       30.5       11         21       Firewood       26.9       3       29.9       12         51       Manufacture of otowear       17.2       12       23.3       13         31       Manufacture of vegetable and animal oils and fats       17.3       11       27.9       14         71       Cutting, shaping and finishing of stone       13.6       24       27.9       15         98       Manufacture of batteries and accumulators       14.8       19       25.5       16         41       Manufacture of notor vehicles, trailers and semi-trailers       15.7       18       23.6       20         70       Manufacture of fumiture       16.1       15.2       28       20       22         717       Manufacture of games and toys       14.2       21.2       23.0       22       22       23.0       22       23.0       22       23.2       23.0       22       24.12       23.0	35	Manufacture of bakery products	16.0	16	38.2	8
67       Manufacture of other porcelain and ceramic products       13.6       22       33.5       10         93       Manufacture of domestic appliances       17.1       14       30.5       11         12       Firewood       26.9       32.9       12         51       Manufacture of footwear       17.2       13       23.3       13         31       Manufacture of vegetable and animal ois and fats       17.3       12.9       14         71       Cutting, shaping and finishing of stone       13.6       24       27.9       15         98       Manufacture of soft drinks; producton of mineral waters and other bott       15.9       17       5       23.3       17         9       Growing of oleaginous fruits       21.7       5       23.6       20       23       17         9       Growing of onegatables and melons, roots and tubers       19.1       24.5       19       10.2       24.6       20.2       22       21.7       5       23.6       20       24       21.2       23.0       22       22       22       22       22       22       22       22       22       22       22       22       22       23.0       22       22       22       22 <td>29</td> <td>Processing and preserving of fish, crustaceans and mollusks</td> <td>14.7</td> <td>20</td> <td>36.6</td> <td>9</td>	29	Processing and preserving of fish, crustaceans and mollusks	14.7	20	36.6	9
93       Manufacture of domestic appliances       17.1       14       30.5       11         22       Firewood       26.9       3       29.9       12         51       Manufacture of vegetable and animal oils and fats       17.2       13       28.3       13         31       Manufacture of vegetable and animal oils and fats       17.3       11       27.9       14         71       Cutting, shaping and finishing of stone       13.6       24       27.9       15         98       Manufacture of batteries and accumulators       14.8       19       25.9       16         41       Manufacture of soft drinks; production of mineral waters and other bott       15.9       17       25.3       17         9       Growing of vegetables and melons, noots and tubers       19.1       9       44.5       19         102       Manufacture of motor vehicles, trailers and semi-trailers       15.7       18       23.6       20         73       Manufacture of games and toys       14.2       21       23.0       22.5       23         12       Growing of yegetables and glass products       9.5       27       16.4       26         74       Manufacture of aprets and rugs       9.5       27       16.4	67	Manufacture of other porcelain and ceramic products	13.6	22	33.5	10
221       Firewood       26.9       3       29.9       11         311       Manufacture of footwear       17.2       13       29.3       13         311       Manufacture of vegetable and animal oils and fats       17.3       111       27.9       14         711       Cutting, shaping and finishing of stone       13.6       24       27.9       15         98       Manufacture of soft drinks; production of mineral waters and other bott       15.9       17       25.3       17         9       Growing of oleaginous fruits       10.1       9       24.5       19       10.2       Manufacture of motor vehicles, trailers and semi-trailers       15.7       18       23.6       20         73       Manufacture of games and toys       14.2       12       21.2       22.0       22       12.3       0.22       12.2       12.2       0.22       12.0       22       12.2       12.2       0.22       12.0       22.2       12.2       12.2       0.22       12.2       0.22       12.2       0.22       12.2       0.22       12.2       12.2       0.22       12.2       12.2       0.22       12.2       12.2       12.2       12.2       12.2       12.2       14.2       12.2	93	Manufacture of domestic appliances	17.1	14	30.5	11
51       Manufacture of footwear       17.2       13       29.3       13         31       Manufacture of vegetable and animal oils and fats       17.3       11       27.9       14         71       Cutting, shaping and finishing of stone       13.6       24       27.9       15         98       Manufacture of batteries and accumulators       14.8       19       25.9       16         41       Manufacture of dinks; production of mineral waters and other bott       15.9       17       5       25.2       18         3       Growing of olegatious fruits       21.7       5       25.2       18       36       21       23.6       20         73       Manufacture of motor vehicles, trailers and semi-trailers       15.7       18       23.6       20       24       21       23.0       22       22       22       23.6       20       24       22       23.0       22       23.0       22       23.0       22       23.0       22       24       23.0       23.0       24       24       23.0       24       24       23.0       24       24       24.0       24       24.0       24       24.0       24       24.0       24       24.0       24       24.0 <td>22</td> <td>Firewood</td> <td>26.9</td> <td>3</td> <td>29.9</td> <td>12</td>	22	Firewood	26.9	3	29.9	12
31Manufacture of vegetable and animal oils and fats17.31127.91471Cutting, shaping and finishing of stone13.62427.91598Manufacture of batteries and accumulators14.81925.91641Manufacture of soft drinks; production of mineral waters and other bottt15.91725.2183Growing of okaginous fruits21.7525.2183Growing of vegetables and melons, roots and tubers19.1924.519102Manufacture of motor vehicles, trailers and semi-trailers15.71823.62077Manufacture of games and toys14.22123.0222212Growing of spices, aromatic, drug and pharmaceutical crops19.6822.52366Manufacture of glass and glass products13.62320.92472Manufacture of oglass and glass products13.62320.92472Manufacture of other non-metallic mineral products i.e8.32917.225104Building of pleasure and sporting boats9.52716.42647Manufacture of imitation jeweler, related articles & other manufacturing9.53514.9299Manufacture of other non-perennial crops8.23016.2277514.9299Manufacture of soap and detregents, cleaning and wining devices8.231.13331.1 <t< td=""><td>51</td><td>Manufacture of footwear</td><td>17.2</td><td>13</td><td>29.3</td><td>13</td></t<>	51	Manufacture of footwear	17.2	13	29.3	13
71       Cutting, shaping and finishing of stone       13.6       24       27.9       15         98       Manufacture of batteries and accumulators       14.8       19       25.9       16         41       Manufacture of soft drinks; production of mineral waters and other botti       15.9       17       25.3       17         9       Growing of oleaginous fruits       21.7       5       25.2       18         3       Growing of vegetables and melons, roots and tubers       19.1       9       24.5       19         102       Manufacture of motor vehicles, trailers and semi-trailers       15.7       18       23.6       22         73       Manufacture of furniture       16.1       15       23.6       21         74       Manufacture of games and toys       14.2       21       23.0       22         212       Growing of spices, aromatic, drug and pharmaceutical crops       19.6       8       22.5       23         66       Manufacture of other non-metallic mineral products i.e       8.3       29       17.2       25         104       Building of pleasure and sporting boats       9.5       27       16.4       26         46       Manufacture of ordrage, rope, twine and netting       7.5       35	31	Manufacture of vegetable and animal oils and fats	17.3	11	27.9	14
98Manufacture of batteries and accumulators14.81925.91641Manufacture of soft drinks; production of mineral waters and other bott15.91725.3179Growing of olegainous fruits21.7525.2183Growing of olegainous fruits21.7525.2183Growing of olegainous fruits13.1924.519102Manufacture of motive vehicles, trailers and semi-trailers15.71823.62073Manufacture of furmiture16.11523.62074Manufacture of glass and toys14.22123.02212Growing of spices, aromatic, drug and pharmaceutical crops19.6822.52366Manufacture of glass and glass products13.62320.92472Manufacture of other non-metallic mineral products i.e8.32917.225104Building of pleasure and sporting boats9.52716.42646Manufacture of cordage, rope, twine and netting7.53514.92939Manufacture of other non-perennial crops8.23031.13245Manufacture of soap and detergents, cleaning and polishing preparations8.031.313246Growing of other non-perennial crops10.82512.93399manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.7 <t< td=""><td>71</td><td>Cutting, shaping and finishing of stone</td><td>13.6</td><td>24</td><td>27.9</td><td>15</td></t<>	71	Cutting, shaping and finishing of stone	13.6	24	27.9	15
41Manufacture of soft drinks; production of mineral waters and other bott15.91725.3179Growing of oleaginous fruits21.7525.2183Growing of vegetables and melons, roots and tubers19.1924.519102Manufacture of motor vehicles, trailers and semi-trailers15.71823.62073Manufacture of games and toys14.221.302222222366822.52366Manufacture of gates and glass products13.62320.924242420.92472Manufacture of other non-metallic mineral products i.e.8.32917.2251642646Manufacture of other non-metallic mineral products i.e.8.32917.2251642646Manufacture of cortage, rope, twine and netting9.52716.426262616.22314.92939Manufacture of motator in evelse, related articles & other manufacturing9.5251582828474043.43131313244Growing of electric lighting equipment & wiring and wiring devices8.23131.33333333333333333333333324Growing of other non-perennial crops10.82512.9344640404346464043	98	Manufacture of batteries and accumulators	14.8	19	25.9	16
9       Growing of oleaginous fruits       21.7       5       25.2       18         3       Growing of vegetables and melons, roots and tubers       19.1       9       24.5       19         102       Manufacture of motor vehicles, trailers and semi-trailers       15.7       18       23.6       20         73       Manufacture of furniture       16.1       15       23.6       21         77       Manufacture of games and toys       14.2       21       23.0       22         12       Growing of piese, aromatic, drug and pharmaceutical crops       19.6       8       22.5       23         66       Manufacture of gates and gass products       13.6       23       0.9       24         72       Manufacture of carpets and rugs       8.2       30       16.2       27         78       Manufacture of cortage, rope, twine and netting       7.5       35       14.9       29         93       Manufacture of other non-perential crops       10.8       23       13.4       31         61       Manufacture of moducts i.e.       8.2       31.4       31       32         94       Manufacture of other non-perential crops       10.8       25       12.9       33         94	41	Manufacture of soft drinks: production of mineral waters and other bott	15.9	17	25.3	17
3       Growing of vegetables and melons, roots and tubers       19.1       9       24.5       19         102       Manufacture of motor vehicles, trailers and semi-trailers       15.7       18       23.6       20         73       Manufacture of games and toys       14.2       21       23.0       22         12       Growing of spices, aromatic, drug and pharmaceutical crops       19.6       8       22.5       23         66       Manufacture of games and toys       13.6       23       20.9       24         72       Manufacture of other non-metallic mineral products i.e.       8.3       29       17.2       25         104       Building of pleasure and sporting boats       9.5       27       16.4       26         46       Manufacture of carpets and rugs       8.2       30       16.2       27         78       Manufacture of imitation jeweler, related articles & other manufacturing       9.5       27       16.4       26         47       Manufacture of other food products i.e.       8.2       32       14.3       30         45       Manufacture of soap and detergents, cleaning and polishing preparations       8.0       33       13.1       32         46       Manufacture of other rubber products       4.7	9	Growing of oleaginous fruits	21.7	5	25.2	18
102       Manufacture of motor vehicles, trailers and semi-trailers       157       18       23.6       20         73       Manufacture of fumture       16.1       15       23.6       21         77       Manufacture of games and toys       14.2       21       23.0       22         21       Growing of spices, aromatic, drug and pharmaceutical crops       19.6       8       22.5       23         66       Manufacture of other non-metallic mineral products i.e       8.3       29       17.2       25         104       Building of pleasure and sporting boats       9.5       27       16.4       26         46       Manufacture of cordage, rope, twine and netting       7.5       35       14.9       29         39       Manufacture of other food products i.e       8.2       30       16.2       27         77       Manufacture of other food products i.e       8.2       32       14.3       30         47       Manufacture of other food products i.e       8.2       32       14.3       31         47       Manufacture of soap and detergents, cleaning and polishing preparations       8.0       33       13.1       32         45       Manufacture of other non-perennial crops       10.8       25	3	Growing of vegetables and melons, roots and tubers	19.1	9	24.5	19
Total         Total <th< td=""><td>102</td><td>Manufacture of motor vehicles, trailers and semi-trailers</td><td>15.2</td><td>18</td><td>23.6</td><td>20</td></th<>	102	Manufacture of motor vehicles, trailers and semi-trailers	15.2	18	23.6	20
77       Manufacture of games and toys       14.2       21       23.0       22.1         12       Growing of spices, aromatic, drug and pharmaceutical crops       19.6       8       22.5       23.3         66       Manufacture of gass and glass products       13.6       23       20.0       24         72       Manufacture of other non-metallic mineral products i.e       8.3       29       17.2       25.5         104       Building of pleasure and sporting boats       9.5       27       16.4       26         46       Manufacture of carpets and rugs       8.2       30       16.2       27         78       Manufacture of cordage, rope, twine and netting       7.5       35       14.9       29         39       Manufacture of other food products i.e       8.2       32       14.3       30         45       Manufacture of soap and detergents, cleaning and polishing preparations       8.0       33       13.1       32         4       Growing of other non-perennial crops       10.8       25       12.9       33         99       manufacture of other rubber products       6.9       36       12.5       36         82       Manufacture of sugar       4.0       50       10.2       39 <td>73</td> <td>Manufacture of furniture</td> <td>16.1</td> <td>15</td> <td>23.6</td> <td>20</td>	73	Manufacture of furniture	16.1	15	23.6	20
1112121212121212121312131312131313131313131312131312131213131213121312131312131213131213131212121212121212121212141412121414 <td>77</td> <td>Manufacture of names and toys</td> <td>14.2</td> <td>21</td> <td>23.0</td> <td>22</td>	77	Manufacture of names and toys	14.2	21	23.0	22
12131413141413141413131313141413141413141414131414141314 <td>12</td> <td>Growing of spices, aromatic, drug and pharmaceutical crops</td> <td>19.6</td> <td>8</td> <td>23.0</td> <td>22</td>	12	Growing of spices, aromatic, drug and pharmaceutical crops	19.6	8	23.0	22
72Manufacture of other non-metallic mineral products i.e8.32917.225104Building of pleasure and sporting boats9.52716.42646Manufacture of carpets and rugs8.23016.22778Manufacture of carpets and rugs8.23016.22778Manufacture of cordage, rope, twine and netting7.53514.92939Manufacture of other food products i.e8.23214.33045Manufacture of soap and detergents, cleaning and polishing preparations8.03313.1324Growing of other non-perennial crops10.82512.93399manufacture of soap and detergents, cleaning and polishing preparations8.03313.1324Growing of other rubber products4.74812.53582Manufacture of structural metal products6.93612.53684Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of sugar4.05010.2393911.43836Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74245Manufacture of tanks, reservoirs and containers of metal5.5468.34537Manufacture of dairy products6.1	66	Manufacture of glass and glass products	13.0	23	22.5	23
104Building of pleasure and sporting boats2.52.71.6.42.646Manufacture of carpets and rugs8.23016.22778Manufacture of carpets and rugs8.23016.22778Manufacture of cordage, rope, twine and netting7.53514.92939Manufacture of the food products i.e.8.23214.33045Manufacture of soap and detergents, cleaning and polishing preparations8.03313.1324Growing of other non-perennial crops10.82512.93399manufacture of soap and detergents, cleaning and wiring devices8.23112.53464Manufacture of electric lighting equipment & wiring and wiring devices8.23112.53464Manufacture of structural metal products4.74812.53582Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of sugar4.05010.239391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of banks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74245Manufacture of dairy products6.1408.54387Manufacture of dairy products6.141 <td>72</td> <td>Manufacture of other non-metallic mineral products i e</td> <td>83</td> <td>20</td> <td>17.2</td> <td>27</td>	72	Manufacture of other non-metallic mineral products i e	83	20	17.2	27
10110110110110110110110110146Manufacture of carpets and rugs8.23016.22778Manufacture of cordage, rope, twine and netting7.53514.92939Manufacture of other food products i.e.8.23214.33045Manufacture of soap and detergents, cleaning and polishing preparations8.03313.1324Growing of other non-perennial crops10.82512.93399manufacture of electric lighting equipment & wiring and wiring devices8.23112.53464Manufacture of other rubber products4.74812.53582Manufacture of structural metal products6.93612.53684Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of sugar4.05010.239391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of other general-purpose machinery5.8434536Manufacture of other general-purpose machinery5.8434537Manufacture of other general-purpose machinery5.8434538Manufacture of other general-purpose machinery5.8434539Manufacture of other general-purpose machinery5.84345 <t< td=""><td>104</td><td>Building of pleasure and sporting boats</td><td>0.5</td><td>23</td><td>16.4</td><td>25</td></t<>	104	Building of pleasure and sporting boats	0.5	23	16.4	25
10 <td>46</td> <td>Manufacture of carnets and rugs</td> <td>9.5</td> <td>30</td> <td>16.2</td> <td>20</td>	46	Manufacture of carnets and rugs	9.5	30	16.2	20
470Manufacture of cordage, rope, twine and netting5.52.01.01.0939Manufacture of ordage, rope, twine and netting7.53514.929939Manufacture of other food products i.e8.23214.33045Manufacture of soap and detergents, cleaning and polishing preparations8.03313.1324Growing of other non-perennial crops10.82512.93399manufacture of electric lighting equipment & wiring and wiring devices8.23112.53464Manufacture of other rubber products4.74812.53582Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.84345475Manufacture of other general-purpose machinery5.84345475Manufacture of cordinal subtropical fruits5.9427.348476Growing of circus fruits ,Pome fruits & stone fruits5.9427.348476Growing of circus fruits ,Pome fruit	78	Manufacture of imitation jeweler, related articles & other manufacturing i	0.2	26	10.2	27
1111131314.51539Manufacture of other food products i.e8.23214.33045Manufacture of made-up textile articles, except apparel6.23913.43161Manufacture of soap and detergents, cleaning and polishing preparations8.03313.1324Growing of other non-perennial crops10.82512.93399manufacture of electric lighting equipment & wiring and wiring devices8.23112.53464Manufacture of other rubber products4.74812.53582Manufacture of structural metal products6.93612.53684Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of plastics products6.1408.54384Manufacture of plastics products6.1408.54385Manufacture of other general-purpose machinery5.8438.54475Manufacture of dairy products6.1408.54387Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits5.5468.34581Manufacture	/0	Manufacture of cordage, rope, twine and petting	J.J 7 5	20	11.0	20
35Manufacture of made-up textile articles, except apparel3.23.23.43.145Manufacture of made-up textile articles, except apparel6.23913.43161Manufacture of soap and detergents, cleaning and polishing preparations8.03313.1324Growing of other non-perennial crops10.82512.93399manufacture of electric lighting equipment & wiring and wiring devices8.23112.53464Manufacture of other rubber products4.74812.53582Manufacture of structural metal products6.93612.53684Manufacture of cement, lime and plaster6.33811.43836Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of distics products6.1408.54387Manufacture of diary products5.5468.34539Manufacture of diary products6.1418.2467Growing of citrus fruits, Pome fruits & stone fruits7.5348.1476Growing of citrus fruits, Pome fruits & stone fruits5.9427.3	30	Manufacture of other food products i e	7.5	33	1/1 3	20
475Inductor of mude of textue of textus o	45	Manufacture of made-up textile articles, except apparel	6.2	32	14.5	30
4Growing of other non-perennial crops10.82512.93399manufacture of electric lighting equipment & wiring and wiring devices8.23112.53464Manufacture of other rubber products4.74812.53582Manufacture of structural metal products6.93612.53684Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of cement, lime and plaster6.33811.43836Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits5.9427.34876Growing of tropical and subtropical fruits5.9427.34876Growing of tropical and subtropical fruits5.9446.54976Manufacture of communication equipment & consumer electronics5.6446.5 <td< td=""><td></td><td>Manufacture of soan and detergents, cleaning and polishing preparations</td><td>0.2</td><td>22</td><td>12.4</td><td>22</td></td<>		Manufacture of soan and detergents, cleaning and polishing preparations	0.2	22	12.4	22
99Interform performance (ops)10.82.312.53399manufacture of electric lighting equipment & wiring and wiring devices8.23112.53464Manufacture of other rubber products6.93612.53582Manufacture of structural metal products6.93612.53684Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of cement, lime and plaster6.33811.43836Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.34833Manufacture of paints, varnishes and similar coatings, printing ink and m4.8476.450 <td></td> <td>Growing of other non-nerennial crops</td> <td>10.9</td> <td>25</td> <td>12.1</td> <td>22</td>		Growing of other non-nerennial crops	10.9	25	12.1	22
55Manufacture of other rubber products4.74812.53564Manufacture of structural metal products6.93612.53682Manufacture of structural metal products6.93612.53684Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of cement, lime and plaster6.33811.43836Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.8438.54475Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits5.5468.34532Manufacture of communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and ma4.8476.450	90	manufacture of electric lighting equipment & wiring and wiring devices	8.2	2.5	12.5	33
10.414.74812.53382Manufacture of structural metal products6.93612.53684Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of cement, lime and plaster6.33811.43836Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of plastics products6.1408.54387Manufacture of musical instruments5.5468.34475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and mi4.8476.450	55	Manufacture of other rubber products	8.2	10	12.5	25
3012.33012.33084Manufacture of cutlery, hand tools, general hardware & other fabricated6.83711.73769Manufacture of cement, lime and plaster6.33811.43836Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of paints, varnishes and similar coatings, printing ink and m4.8476.450Source:Denattment of Communication equipment & coatings, printing ink and m4.8476.450	82	Manufacture of structural metal products	4.7	40	12.5	35
69Manufacture of cement, lime and plaster6.33711.73769Manufacture of cement, lime and plaster6.33811.43836Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of paints, varnishes and similar coatings, printing ink and m4.8476.450Source:Department of Communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and m4.8476.450	84	Manufacture of subleny, hand tools, general hardware & other fabricated	6.9	27	12.5	27
36Manufacture of extent and plaster3.33.611.43.636Manufacture of sugar4.05010.2391Growing of cereals (except rice), leguminous crops and oil seeds8.8289.94083Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of paints, varnishes and similar coatings, printing ink and m4.8476.450Source Department of CommunicationSource Department of Communication5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and m4.8476.450	69	Manufacture of cement, lime and plaster	6.3	32	11.7	32
111	36	Manufacture of sugar	0.5	50	10.2	30
83Manufacture of tanks, reservoirs and containers of metal5.5459.14128Processing and preserving of meat4.7498.74265Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34475Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of paints, varnishes and similar coatings, printing ink and m4.8476.450Source:Department of Concurr & Statistice5.6446.549	1	Growing of cereals (excent rice) leguminous crops and oil seeds	4.0	20	10.2	33
28Processing and preserving of meat3.3433.44128Processing and preserving of meat4.7498.74265Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of paints, varnishes and similar coatings, printing ink and m4.8476.450Source:Department of Concurr & Statistice5.6446.549	83	Manufacture of tanks, reservoirs and containers of metal	5.5	20	9.5	40
26Hotessning and preserving of meat4.74.98.74.265Manufacture of plastics products6.1408.54387Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and ma4.8476.450	28	Processing and preserving of meat	3.3	40	9.1	41
OS Manufacture of plastics products0.1408.34387Manufacture of other general-purpose machinery5.8438.54475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and matching4.8476.450Source: Department of Consumer & Statistics	65	Manufacture of plactics products	4.7	49	0.7	42
75Manufacture of outlet general purpose machinery3.8438.34475Manufacture of musical instruments5.5468.34532Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and mail4.8476.450Source: Department of Consure & Statistics	87	Manufacture of other general-purpose machinery	5.0	40	0.5	43
32Manufacture of musical instruments3.5408.54332Manufacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and matching4.8476.450Source: Department of Consure & Statistics	75	Manufacture of musical instruments	5.8	43	0.5	44
S2 infinitiacture of dairy products6.1418.2467Growing of citrus fruits ,Pome fruits & stone fruits7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and matching4.8476.450Source: Department of Consure & Statistics	20	Manufacture of musical instruments	5.5	40	0.3 0 1	45
A construction rules a storie rules7.5348.1476Growing of tropical and subtropical fruits5.9427.348100Manufacture of communication equipment & consumer electronics5.6446.54959Manufacture of paints, varnishes and similar coatings, printing ink and ma4.8476.450Source: Department of Consult & Statistics	<u>ح</u>	Growing of citrus fruits. Domo fruits & stopp fruits	0.1	41	ð.2	40
100       Manufacture of communication equipment & consumer electronics       5.6       44       6.5       49         59       Manufacture of paints, varnishes and similar coatings, printing ink and magnetic electronics       4.8       47       6.4       50	/ 	Growing of transcal and subtranical fruits	7.5	34	8.1	4/
100 manufacture of communication equipment & consumer electronics       5.6       44       6.5       49         59 Manufacture of paints, varnishes and similar coatings, printing ink and mail       4.8       47       6.4       50         Source: Department of Concur & Statistics	100	Manufacture of communication equipment % concurrent electronics	5.9	42	/.3	48
Source: Department of Concurs & Statistics	100	Manufacture of communication equipment & consumer electronics	5.6	44	6.5	49
	Source: D	enartment of Concus & Statistics	4.8	47	0.4	50

### Table 13: Comparison of NRP and ERP calculated with only import tariff

#### 8 Meeting the challenges

In preparing the Supply and Use Table for the year 2010, DCS was faced challenges and some of the main challenges are listed out below.

- 1. How to reconcile the production side (supply) estimates and the expenditure side (demand) estimates in the SUT
- 2. Unavailability of enough comprehensive data
- 3. Unavailability of Trade and other services related survey
- 4. Unavailability of Cost of Production Survey for some of agricultural crops
- 5. Mismatch of used classifications by data providing stakeholder agencies in collection, organization and dissemination of data

#### 9 The way forward

The Department of Census and Statistics utilized the SUT for the first time to reconcile supply and demand of the economy and to identify inconsistencies, gaps and limitations of source data in the process of Rebasing. As advantages of use of SUT in compiling national accounts, the SUT will be used in future when the base year is changed. In 2017, the current base year of 2010 going to be revised to 2015 with some of the conceptual and methodological improvements.

For your Comments and Ideas:

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