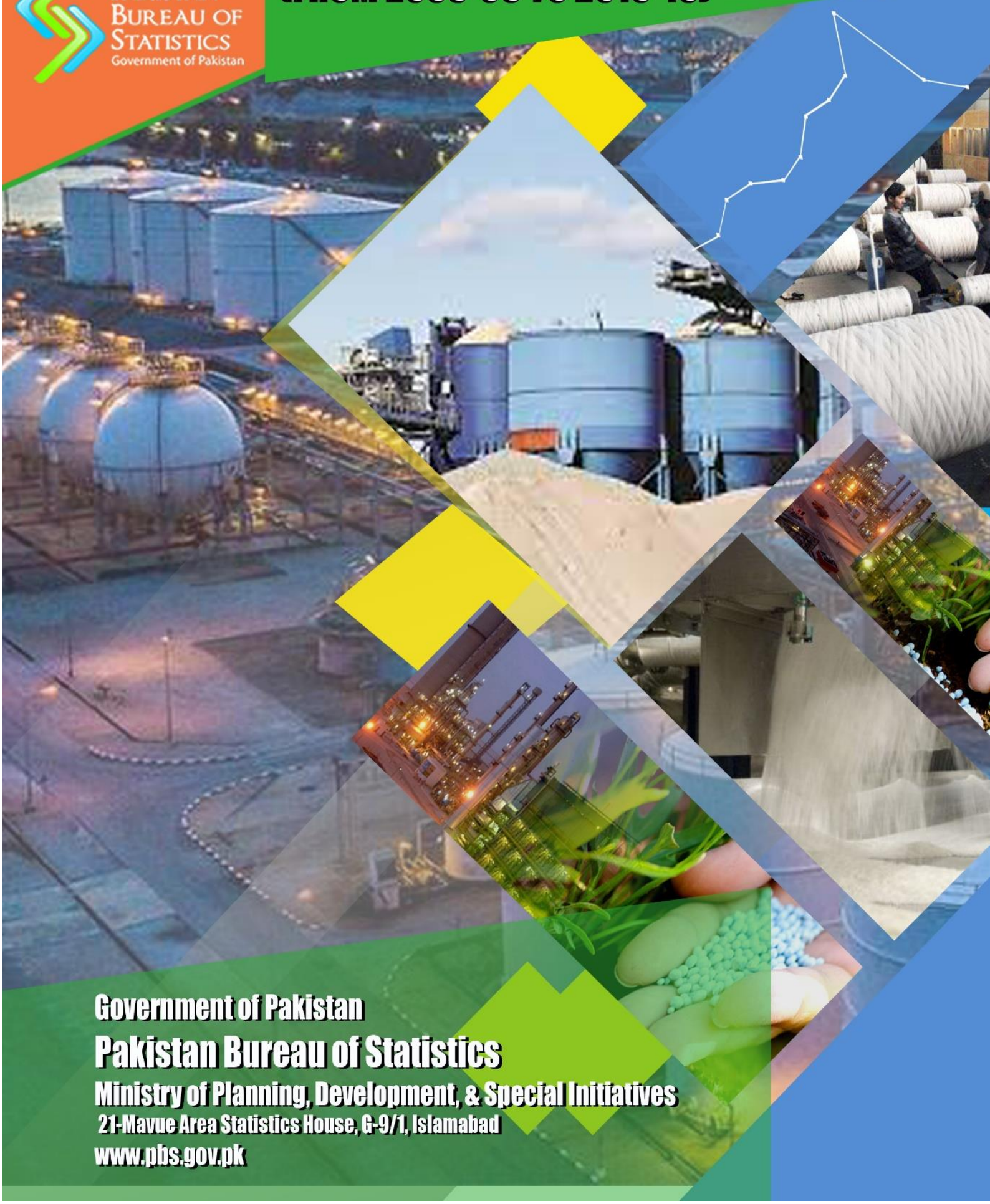
PAKISTAN BUREAU OF STATISTICS
Government of Pakistan

REBASING OF QUANTUM INDEX OF LARGE SCALE MANUFACTURING INDUSTRIES (FROM 2005-06 TO 2015-16)



Government of Pakistan
Pakistan Bureau of Statistics
Ministry of Planning, Development, & Special Initiatives
21-Mavue Area Statistics House, G-9/1, Islamabad
www.pbs.gov.pk

GENESIS OF REPORT

This report of rebased QIM 2015-16 is produced by the efforts of the following officers of PBS.

Compilation of Report

- Dr. Bahrawar Jan, Deputy Director General (Team Leader).
- Syed Abdul Qader Shah, Director.
- Mr. Rizwan Bashir, Director.
- Mr. Muhammad Anwar, Chief Statistical Officer.
- Syed Shahzad Ahmad, Statistical Officer.
- Ms. Ayesha Ashfaq, Statistical Officer

Assisted by

- Malik Muhammad Azhar, Statistical Assistant.
- Mr. Tanveer Aslam Abbasi, Statistical Assistant.
- Mr. Zeeshan Arsahd, Statistical Assistant.
- Mr. Muhammad Adil, Statistical Assistant.
- Ms. Raheela Shahzad, Statistical Assistant.
- Ms. Neelum Siddique, Statistical Assistant.
- Ms. Saima Nazli, Statistical Assistant.

PREFACE

Pakistan Bureau of Statistics (PBS), being prime statistical office, is mandated to collect, compile and disseminate reliable and timely data on socio-economic indicators of the country. Manufacturing, one of the main components of Industry sector, bears a significant importance by contributing 13.4 percent to the GDP during the financial year 2015-16. The Large Scale Manufacturing (LSM) Sector, being major contributor in Manufacturing Sector, plays vital role in the National Economy which contributes 10.7 percent to the GDP.

Census of Manufacturing Industries (CMI) is conducted with aim to measure the structural changes in Large Scale Manufacturing Industries and provides data on Fixed Assets, Inventories, Employment and Employment Cost, Industrial Taxes and Census & Gross Value Added etc. It also provides weights for the Quantum Index of Manufacturing Industries which is used as a proxy indicator for LSM to measure growth on monthly basis.

Quantum Index of Large Scale Manufacturing Industries (QIM) measures the changes in production over time on monthly as well as cumulative basis. The weights presently used for the QIM were derived from the Census of Manufacturing Industries (CMI) 2005-2006. Total 112 items with cumulative weight of 70.3 percent are being used for computation of QIM. The production data is collected from Oil Companies Advisory Council (OCAC), Ministry of Industries & Production (MOIP) and Provincial Bureaus of Statistics (BOS). Moreover, to keep QIM more reliable, update and to overcome the challenges, the current QIM is rebased on the basis of results of CMI 2015-16. The rebased QIM has been computed with 123 items having total weight of 78.4 percent derived from CMI 2015-16 with all existing data sources with addition of PBS internal data source.

This report contains a brief description of the CMI 2015-16 along with the procedures adopted to derive the weights for the rebased QIM. The detailed information can be observed in the annexed documents as well as the CMI 2015-16 report which has already been published by the PBS and available on website www.pbs.gov.pk.

We are making all out efforts to improve the Industrial Statistics and suggestions in this respect from the users will always be welcomed and appreciated. I owe special gratitude to the all stakeholders for their diligent support rendered in this regard.

Dr. Naeem uz Zafar
Chief Statistician

Pakistan Bureau of Statistics
M/o Planning Development & Special Initiatives
Government of Pakistan
Islamabad
January, 2022

EXECUTIVE SUMMARY

Manufacturing is a key part of the economy. It is traditionally decomposed into Large-Scale Manufacturing, Small-Scale Manufacturing and Slaughtering Industries. It is a fact that with the passage of time and advancement in technology new items get introduced in the market and some become obsolete. To capture these changes Census of Large Scale Manufacturing Industries (CMI) is imperative on regular basis. It takes into account the new developments in the industrial field, capture new industrial products and establishments and develop new weights for Quantum Index of Manufacturing.

Quantum Index of Large Scale Manufacturing Industries (QIM) measures the changes in production over time on monthly as well as cumulative basis. The weights presently used for the QIM were derived from the Census of Manufacturing Industries (CMI) 2005-2006. Total 112 items with cumulative weight of 70.3% are being used for computation of QIM. The production data is collected from Oil Companies Advisory Council (OCAC), Ministry of Industries & Production (MOIP) and Provincial Bureaus of Statistics (BOS).

The rebased QIM has been computed for the years 2016-17 to 2020-21 with 123 items having total weight of 78.4 %. The data collected from all the existing sources with addition of Pakistan Bureau of Statistics (PBS) internal source for wearing apparel, towel, furniture and football have been used for the computation of new QIM. The source wise composition is given below

Table-1: Source wise composition of weights

Sources	QIM 2005-06		QIM 2015-16	
	No of Items	**Weight (%)**	**No of Items**	Weight (%)
Ministry of Industries & Production	36	49.556	36	**40.54**
Oil Companies Advisory Council	11	5.410	11	**6.66**
Provincial Bureaus of Statistics/PBS	65	15.366	76	**31.17**
All	112	70.332	123	**78.37**

The annual QIM with base year 2005-06 and 2015-16 along with growth rates (%) are presented in the following table.

Table-2: Annual Quantum Indices with base year 2005-06 and 2015-16

Period	Base year 2005-06		Base year 2015-16	
	Indices	**Growth Rate**	**Indices**	Growth Rate
2015-16	**131.9**	**3.1**	**100**	-
2016-17	**139.5**	**5.8**	**104.2**	**4.2**
2017-18	**146.9**	**5.3**	**111.5**	**7.0**
2018-19	**143.5**	**-2.3**	**115.3**	**3.4**
2019-20	**129.5**	**-9.8**	**102.4**	**-11.1**
2020-21	**148.7**	**14.9**	**114.1**	**11.3**

LIST OF ABBREVIATIONS

BOS	Bureaus of Statistics
CMI	Census of Manufacturing Industries
CVA	Census Value Added
EOBI	Employees Old-Age Benefits Institution
FBR	Federal Board of Revenue
GDP	Gross Domestic Product
GVA	Gross Value Added
ICT	Islamabad Capital Territory
ISIC	International Standard Industrial Classification
LSMI	Large Scale of Manufacturing Industries
MOIP	Ministry of Industries & Production
OCAC	Oil Companies Advisory Council
PBS	Pakistan Bureau of Statistics
PSE	Pakistan Stock Exchange
PSIC	Pakistan Standard Industrial Classification
QIM	Quantum of Index of Large Scale Manufacturing
SECP	Securities Exchange Commission of Pakistan
WAPDA	Water and Power Development Authority

TABLE OF CONTENTS

CENSUS OF MANUFACTURING INDUSTRIES

1.1 Introduction

Manufacturing is one of the major important sectors of the economy which promotes economic growth and employments generation in the country. It bears significant importance by contributing 12.8 percent to the GDP during the financial year 2020-21. Manufacturing is traditionally divided into large-scale manufacturing and small & household manufacturing industries. The Census of Manufacturing Industries (CMI) focuses on the production and investment behavior of Large Scale Manufacturing Industries (LSMI) cover establishments with 10 or more employees, whereas the Survey of Small and Household Manufacturing Industries (SHMI) focuses on small scale industries having less than 10 employees. CMI provides the measure of manufacturing industry outputs, inputs, and operating status, and is the primary source for updating the Business Register (BR). It also provides weights for compilation of Quantum Index of Manufacturing Industries (QIM).

1.11 Manufacturing Activity

Manufacturing activity is defined as the mechanical or chemical transformation of inorganic and organic substances into new compounds whether the work is carried out by hand or through driven machine in a factory or in the worker's house. Manufacturing activities include treating, processing, assembling, repairing and services.

1.12 Scope and Coverage

The Census of Large-Scale Manufacturing Industries is conducted after every five years with manufacturing establishments classified under (10 to 33 division) Pakistan Standard Industrial Classification (PSIC-2010) based on UN-ISIC.Rev.4. However, currently it is linked with rebasing of National Accounts after 10 years. The last CMI of the series was conducted for the year 2005-06. Previous censuses were conducted on the frame of Labour and Industries departments which had low coverage due to incomplete frames and lack of resources.

To improve coverage, Business Register (BR) of PBS was utilized for the current census, which is based on different administrative sources like SECP, FBR, EOBI, Pakistan Stock Exchange, Distribution companies of WAPDA, Provincial Labour and Industries departments etc. As a result, number of establishments covered under current census is approximately 390% higher than CMI 2005-06, as shown at Table-1

Table-1: Number of Manufacturing Establishments covered in CMIs

Region	1990-91	1995-96	2000-01	2005-06	2015-16
Pakistan	**4,792**	**4,474**	**4,528**	**8,680**	**42,578**
Punjab	2,452	2,364	2,357	5,187	32,256
Sindh	1,751	1,528	1,768	2,163	6,299
KP	425	468	236	749	3,357
Balochistan	110	69	93	256	342
Islamabad	54	45	74	325	324

1.13 Industrial Classification

Pakistan Standard Industrial Classification (PSIC) 2010, derived from UN International Standard Industrial Classification ISIC Rev-4, has been used to classify manufacturing activities. The PSIC 2010 is an extension of ISIC Rev.4 from 4 digit to 5-digit level.

1.14 Frame for CMI 2015-16

In the Census of Large-Scale Manufacturing Industries (CMI-2015-16), the total frame of LSMI stands at 42578. PBS got quality response of 23712 establishments during conduct of CMI while the remaining 11473 establishments consist of non-responded, poor quality response and 7393 bricks establishments in Punjab, were imputed for raising to complete frame.

Table-1.A: Number of Establishment and raising frame of 2015-16

Division	Industry Major Groups	Pakistan	Covered	Raising frame					
				Pakistan	Punjab	Sindh	KP	Balo-chistan	Islamabad
	ALL INDUSTRIES	**42578**	**23712**	**18866**	**14425**	**3782**	**473**	**123**	**63**
10	Food products	5597	3638	1959	1061	714	127	44	13
11	Beverages	131	80	51	21	24	4	1	1
12	Tobacco products	28	14	14	3	8	3	0	0
13	Textiles	7503	4887	2616	1452	1148	9	7	0
14	Wearing apparel	2371	1571	800	285	514	0	0	1
15	Leather and related products	1150	655	495	421	67	7	0	0
16	Wood and wood products	642	362	280	259	14	5	2	0
17	Paper and paper products	787	492	295	126	156	10	2	1
18	Printing and recorded media	422	275	147	70	72	4	0	1
19	Coke and refined petroleum products	69	44	25	6	18	0	1	0
20	Chemicals and chemical products	947	590	357	165	172	15	3	2
21	Pharmaceuticals products	608	409	199	53	112	8	9	17
22	Rubber and plastics products	1201	801	400	221	156	13	6	4
23	Other non-metallic mineral products	12866	3949	8917	8467	179	238	27	6
24	Basic metals	943	656	287	186	76	8	9	8

25	Fabricated metal products	1775	1245	530	496	25	5	2	2
26	Computer, electronic & optical products	38	28	10	8	1	1	0	0
27	Electric equipment	768	498	270	211	46	6	3	4
28	Machinery and equipment n.e.c.	875	624	251	177	72	1	1	0
29	Motor vehicles, trailers etc.	784	517	267	119	143	0	5	0
30	Other transport equipment	181	136	45	36	9	0	0	0
31	Furniture	1462	1154	308	278	17	9	1	3
32	Other manufacturing	1430	1087	343	304	39	0	0	0

Province wise frame comprising for CMI 2005-06 and CMI 2015-16 is given in table below

Table-1.B: CMI 2015-16 frame

Region	CMI 2005-06			CMI 2015-16		
	Frame	Response	%age	Frame	Response	%age
	1	2	3	4	5	6
Pakistan	**13,146**	**6,417**	**49**	**34,875**	**23,712**	**68**
Punjab	8,239	3,590	44	24,863	17,831	72
Sindh	3,288	1,825	56	6,299	2,517	40
KP	972	673	69	3,357	2,884	86
Balochistan	309	212	69	342	219	64
Islamabad	338	117	35	324	261	81
Bricks Industries other than sample in Punjab				7,393		

Note: * The contribution of 7393 units of bricks, excluded from CMI 2015-16 exercise due to similar nature of activity, were estimated on the basis of a sample of 1000 units covered in CMI 2015-16. Therefore, the total frame of CMI 2015-16 stands at 42262 industrial units.

1.2 RESULTS OF CMI

Brief outlines of main results of the census including production value, census value added contribution to GDP and capital stock are given in the following paragraphs.

1.21 Production Value

CMI-2015-16 shows value of production/total output at producer prices Rs 11,181 billion depicting an increase of 244.76% over Rs 3,243 billion in CMI 2005-06. The values of production at producers' prices recorded at national and provincial levels in five CMIs are given at Table-2. It may be noted that these values include all indirect taxes (net of subsidies) except general sales tax.

Table-2: Value of Production at producers' prices in CMIs **Million Rs**

Region	1990-91	1995-96	2000-01	2005-06	2015-16
Pakistan	**369,664**	**678,196**	**1,104,185**	**3,243,446**	**11,181,973**
Punjab	162,052	321,623	497,708	1,538,490	5,212,867
Sindh	179,736	280,662	522,617	1,340,431	4,998,512
KP	14,993	60,689	46,439	182,578	545,643
Balochistan	9,822	8,843	23,828	155,876	269,154
Islamabad	3,061	6,379	13,593	26,071	155,797

1.22 Census Value Added

Value of production (inclusive of sales tax) minus industrial cost gives Census Value Added (CVA) at market prices, which is Rs 4,367 billion in 2015-16 as compared to Rs 1350 billion in 2005-06 showing an increase of 223.47%. Detailed description of Census Value Added calculated at market prices, producer prices, basic prices and factor cost for the last four Censuses and current census of Manufacturing Industries is given at Table-3.

Table-3: Census Value Added (CVA) in CMIs **Million Rs**

S #	Aggregate	1990-91	1995-96	2000-01	2005-06	2015-16
1	Census Value Added (*market prices*)	111,006	212,559	365,989	1,350,186	4,367,452
2	Minus Sales Tax	5,195	14,815	40,879	111,787	644,461
3	Census Value Added (*producers' prices*) (1-2)	105,812	197,744	325,110	1,238,400	3,722,992
4	Minus Import/excise duties & other taxes less subsidies on products	12,677	19,654	16,279	71,507	148,387
5	Census Value Added (*basic prices*) (3-4)	93,135	178,090	308,831	1,166,893	3,574,605
6	Minus Provincial /District Taxes (Net)2	955	1,559	1,259	13,138	98,277
7	Census Value Added (*factor cost*) (5-6)	92,179	176,531	307,572	1,153,755	3,476,327

1.23 Contribution to GDP (GVA) at Producer Prices

Addition of non-industrial receipts less non-industrial payments into Census Value Added results in value added as measured by National Accounts and termed as contribution to GDP (also termed as Gross Value Added). CMI 2015-16 witnessed an increase of 203.8 % Contribution to GDP at producers' prices (exclusive of sales tax) at Rs 3,095 billion as compared to the CMI 2005-06 with Rs 1018 billion as shown in Table-4.

Table-4 Contribution to GDP at producer's prices in CMIs **Million Rs**

Region	1990-91	1995-96	2000-01	2005-06	2015-16
Pakistan	**87,851**	**169,207**	**279,821**	**1,018,840**	**3,095,031**
Punjab	38,230	67,403	105,093	466,319	1,501,340
Sindh	42,323	74,736	147,131	412,188	1,268,638
KP	4,430	23,747	20,600	79,020	227,390
Balochistan	2,445	1,652	5,724	54,374	66,179
Islamabad	423	1,669	1,273	6,938	31,485

1.24 Contribution to GDP (GVA) at Basic Prices

Contribution to GDP at basic prices is obtained by deducting import/excise duties and other taxes net of subsidies on products from contribution to GDP at producers' prices. CMI 2015-16 depicts an increase of 211.05 % in Contribution to GDP at basic prices at Rs 2946 billion as compared to previous Census 2005-06 at Rs 947 billion as shown in Table-5.

Table-5 : Contribution to GDP (GVA) at basic prices in CMIs **Million Rs**

Region	1990-91	1995-96	2000-01	2005-06	2015-16
Pakistan	**75,174**	**149,554**	**263,541**	**947,333**	**2,946,644**
Punjab	30,753	56,847	97,790	441,685	1,430,996
Sindh	38,499	69,802	143,903	391,475	1,255,895
KP	3,567	20,313	15,523	55,199	166,912
Balochistan	2,148	1,511	5,591	52,874	63,160
Islamabad	207	1,081	734	6,101	29,683

1.25 Capital Stock (Fixed Assets)

Capital stock or value of fixed assets at the end of fiscal year 2015-16 has been calculated adding the value of fixed assets at the beginning of fiscal year and investment during the fiscal year 2015-16 (purchases less sales of fixed assets plus additions to fixed assets out of own production). It amounted to Rs 3,916 billion at the end of fiscal year 2015-16 as compared to Rs 1,147 billion at the end of fiscal year 2005-06, showing 241.33% increase. Values of fixed assets calculated during last five CMIs are given in Table-6.

Table-6: Value of fixed assets at the end of fiscal year in CMIs **Million Rs**

Region	1990-91	1995-96	2000-01	2005-06	2015-16
Pakistan	**125,618**	**235,774**	**427,670**	**1,147,318**	**3,916,195**
Punjab	52,915	123,683	201,105	648,435	2,122,198
Sindh	57,863	81,034	168,816	351,637	1,517,260
KP	5,773	22,785	41,836	97,494	172,630
Balochistan	6,726	6,414	12,976	39,101	71,985
Islamabad	2,341	1,858	2,937	10,651	32,121

1.26 Structural Changes (weights)

An important objective of the manufacturing censuses is to inform about structural changes within manufacturing sector. These changes can best be measured by weights of selected industries of Large-Scale Manufacturing Industries. Weights have been developed activity wise according to PSIC -2010. Major changes have been observed in the weights of following activities.

Table-7: Major changes in weight by activity as % of contribution to GDP(BP)

Industry		Weights in % of total large scale manufacturing		
Division	Short description	CMI 2005-06	CMI 2015-16	CMI adjusted for non-response 2015-16
10	Food products	14.25	17.45	16.80
11	Beverages	0.96	2.46	1.99
12	Tobacco products	2.13	2.39	2.08
13	Textiles	27.28	19.30	19.96
14	Wearing apparel	5.45	6.24	8.09
19	Coke and refined petroleum products	5.41	7.11	6.30
20	Chemicals and chemical products	9.88	9.56	8.68
21	Pharmaceuticals products	3.62	5.73	5.39
22	Rubber and plastics products	1.12	2.01	1.99
23	Other non-metallic mineral products	6.58	9.48	10.78
24	Basic metals	5.74	3.73	3.64
27	Electric equipment	2.54	1.75	1.84
29	Motor vehicles, trailers etc.	4.41	3.64	3.12

For detail weights, please see Repot CMI 2015-16-Weights at page No 670.

1.27 Contribution to GDP (adjusted)

The total number of establishments as per CMI 2015-16 frame are 42,578 and total employed persons in these establishment are 2,340,966. The total contribution to GDP at basic prices stands at Rs 2,946 billion. The total of 23712 establishments were covered in CMI 2015-16 while 18,866 establishments (Raising frame see table 1.A) either did not respond, or could not qualify to be included in CMI 2015-16 due to low data quality. The raising frame include 14425 units in Punjab, 3782 in Sindh, 473 units in KP, 123 in Balochistan and 63 units in Islamabad.

The raising methodology is based on employment, GVA per employee at 5 digit level of activity under PSIC-2010. The overall employment of 2,340,966 was observed in the frame comprising of 42,578 industrial units. Ratios of GDP per employee were computed for 23,712 reported establishments in CMI 2015-2016 at five digit level activity under each province. These ratios at five digit level were used to raise the defaulting non-response units in CMI 2015-16 in order to work out their contribution to GDP at basic prices at each province. After summing up the result of each province, the large-scale manufacturing sector contribution to GDP (BP) stands at Rs 2946 billion during 2015-16. The details of unadjusted and adjusted contribution to GDP at basic prices at activity and provincial level is given at Table 8.A and Table 8.B below.

Table 8.A Contribution to GDP(GVA) at Basic Prices adjusted for non-response in CMI 2015-16

Industry		Census of Manufacturing Industries			Ratio of unadjusted to adjusted figures in 2015-16 (%)
Division	Description	2005-06	2015-16		
			unadjusted	adjusted	
		'000' Rs			
	All industries	**947,333**	**2,064,144**	**2,946,644**	**70.05**
10	Food Products	135002	360,124	494,905	72.77
11	Beverages	9066	50,757	58,708	86.46
12	Tobacco Products	20146	49,335	61,158	80.67
13	Textiles	258386	398,278	588,234	67.71
14	Wearing Apparel	51664	128,894	238,412	54.06
15	Leather and Related Products	9015	28,720	40,706	70.55
16	Wood and wood products	5726	6,273	9,360	67.02
17	Paper and Paper Products	27745	35,796	53,604	66.78
18	Printing and recorded media	3085	15,212	20,251	75.12
19	Coke and Refined Petroleum Products	51260	146,682	185,500	79.07
20	Chemicals and Chemical Products	93631	197,391	255,708	77.19
21	Pharmaceuticals products	34306	118,249	158,783	74.47
22	Rubber and Plastics Products	10642	41,580	58,713	70.82
23	Other Non-Metallic Mineral Products	62367	195,712	317,760	61.59
24	Basic Metals	54395	77,073	107,294	71.83
25	Fabricated metal products	7953	26,064	34,683	75.15
26	Computer, electronic&optical products	3546	4,298	5,352	80.31
27	Electric Equipment	24108	36,138	54,342	66.50
28	Machinery and Equipment N.E.C.	14072	20,263	29,223	69.34
29	Motor vehicles, trailers etc.	41811	75,036	91,996	81.56
30	Other Transport Equipment	11152	15,689	22,052	71.15
31	Furniture	491	11,377	19,991	56.91
32	Other Manufacturing	17766	25,202	39,910	63.15

Table 8.B : Contribution to GDP (GVA) at basic prices in CMIs

Region	Census of Manufacturing Industries		
	2005-06	2015-16	
		unadjusted	adjusted
	'000' Rs		
Pakistan	**947,333**	**2,064,144**	**2,946,644**
Punjab	441,685	1,035,154	1,430,996
Sindh	391,475	802,494	1,255,895
KP	55,199	146,948	166,912
Balochistan	52,874	55,167	63,160
Islamabad	6,101	24,380	29,683
	%age distribution		
Pakistan	**100.00**	**100.00**	**100.00**
Punjab	46.62	50.08	48.33
Sindh	41.32	38.85	42.82
KP	5.83	7.11	5.60
Balochistan	5.58	2.67	2.15
Islamabad	0.64	1.29	1.09

REBASING OF QUANTUM INDEX OF MANUFACTURING INDUSTRIES

2.1 Introduction

Quantum Index of Manufacturing (QIM) measures the changes in production of Large Scale Manufacturing Industries (LSMI) over time on monthly as well as cumulative basis. The weights presently used for the QIM were derived from the Census of Manufacturing Industries (CMI) 2005-06. 112 items with total weight of 70.332% of value added are being used for computation of QIM. The production data is collected from Oil Companies Advisory Council (OCAC), Ministry of Industries & Production and Provincial Bureaus of Statistics.

2.21 Derivation of Weights

A panel on industrial statistics constituted for the purpose of conducting Census of Manufacturing Industries (CMI) 2015-16 consisting of all stakeholders they, *interalia* approved CMI results and thereafter weights are developed/derived for rebased QIM. The rebased QIM has been computed with 123 items having total weight of 78.4%.

New weights have been derived at two stages, the weight at industry level have been derived on the basis of gross value added (GVA) of Large Scale Manufacturing Industries (LSMI) at the basic prices. The total GVA for the LSMI is taken as 100 and percentage contribution of each industry has been considered as the weight of that industry. At the second stage, the weights have been derived at product level on the following lines:-

a) In case, there was only one item to be selected from a manufacturing activity, the total weight of that activity has been assigned to the selected item.

b) If more than one items have been selected from a manufacturing activity, then weights of the activity have been distributed among the selected items according to relative production value of the selected items in that activity.

2.22 Sample size and its allocation

UN recommendation was used to drive sample size of 2865 establishments for Pakistan. Province-wise sample was selected by Business Register Section and shared with provincial BoS for collection of data (see Table 2). For the first time, data will be collected from Balochistan as well as from ICT based industries. PBS regional office Rawalpindi will collect data from ICT whereas Provincial Bureau of Statistics, Balochistan

and Regional Office Karachi PBS will collect data from Balochistan. It is worth mentioning here that data of the wearing apparel, towel, furniture and football will be collected by PBS external trade section as the data of the mentioned items is not collected by provincial data sources so far, therefore, the export production data of the afore mentioned items has been taken and whenever the data source agencies collected the production data of these items will be replaced in QIM as well.

Table 2. Province-wise sample design

Province/ICT	Frame	Existing Sample	proposed Sample
PUNJAB	32258	1412	1684
SINDH	6298	206	685
KP	3356	28	339
BALOCHISTAN	342	1	79
ISLAMABAD	324	1	78
Grand Total	42578	1648	2865

Due to the implementation of ISIC Rev 4.1, the changes occurring in the composition of Major Industrial Groups and comparison of weights for 2005-06 and 2015-16 have been prepared as below table 2.1. The detailed comparison is at Annex A.

Table-2.1: Comparison of weights of Major Industrial Groups for 2005-06 and 2015-16

Major Groups	No of items		Weight	
	2005-06	2015-16	2005-06	2015-16
10-Food products	12	10	12.37	10.70
11-Beverages*		6		3.84
12-Tobacco products		1		2.10
13-Textiles	11	12	20.91	18.20
14-Wearing apparel	-	1	-	6.10
15-Leather and related products	3	3	0.86	1.20
16-Wood and wood products	2	2	0.59	0.20
17-Paper and paper products	4	5	2.31	1.60
19-Coke and refined petroleum products	12	12	5.51	6.70
20-Chemicals and chemical products		19	6.16	6.50
Chemicals	12	12	1.72	2.50

Fertilizers	7	7	4.44	3.90
21-Pharmaceuticals products	6	6	3.62	5.20
22-Rubber and plastics products	4	4	0.26	0.20
23-Other non-metallic mineral products	2	2	5.36	5.00
24-Basic metals	5	5	5.39	3.40
25-Fabricated metal products	-	3	-	0.40
26-Computer, electronic & optical products	-	1	-	0.00
27-Electric equipment	13	12	1.96	2.00
28-Machinery and equipment n.e.c.	12	9	0.40	0.40
29-Motor vehicles, trailers etc.	7	6	4.61	3.10
30-Other transport equipment	-	2	-	0.70
31-Furniture	-	1	-	0.50
32-Other manufacturing	-	1	-	0.30
Total	**112**	**123**	**70.3**	**78.40**

*** As per discussion with National Accounts wing, Fruit juices & syrups and persevered milk were adjusted in Beverages groups.**

2.23 Items included in the rebased QIM.

Items in the following table 2.2 have been added to the new product list used for computation of QIM based on CMI 2015-16 weights. Whereas Group Wise Comparison of Growth with Base Year 2005-06 and 2015-16 is at Annex-B

Table 2.2: Items included in rebased QIM

S.No	Name of Item	Weight
01	Bakery products and Chocolate & sugar confectionery	Weight has been added to sugar.
02	Rice Milling	Weight has been added to wheat milling.
03	Mineral waters	Weight has been added to soft drinks.
04	Preserved Milk	Weight has been added to Juices, syrups & squashes
05	Towels	0.5925
06	Garments	6.0778
07	Corrugated paper/ paperboard containers	Weight has been added to paper & paper board.
08	Pesticides	Weight has been distributed to fertilizers.
09	Insulated wire & cable	Weight has been added to electric motors.
10	Parts & accessories for motor vehicles	Weight has been distributed to automobiles.
11	Furniture	0.5112
12	**Foot balls**	0.3160

2.24 *Computation of Rebased QIM.*

The rebased QIM has been computed with 123 items having total weight of 78.4 % of value added. The production data would continue to be collected from Oil Companies Advisory Council (OCAC), Ministry of Industries & Production and Provincial Bureaus of Statistics and PBS internal data source.

Laspeyre's formula has been used for computation of QIM.

$$QIM = \frac{\sum (Q_n/Q_o) \times W_i}{\sum W_i} \times 100$$

Where
Q_n = Quantity Data for Current Year.
Q_o = Quantity Data for Base Year.
W_i = Weight of the Item.
$\sum W_i$ = **Total Weight of All Items.**

Table 2.3 shows the comparison of coverage and weights by different sources for Quantum Index of Large Scale Manufacturing (QIM)

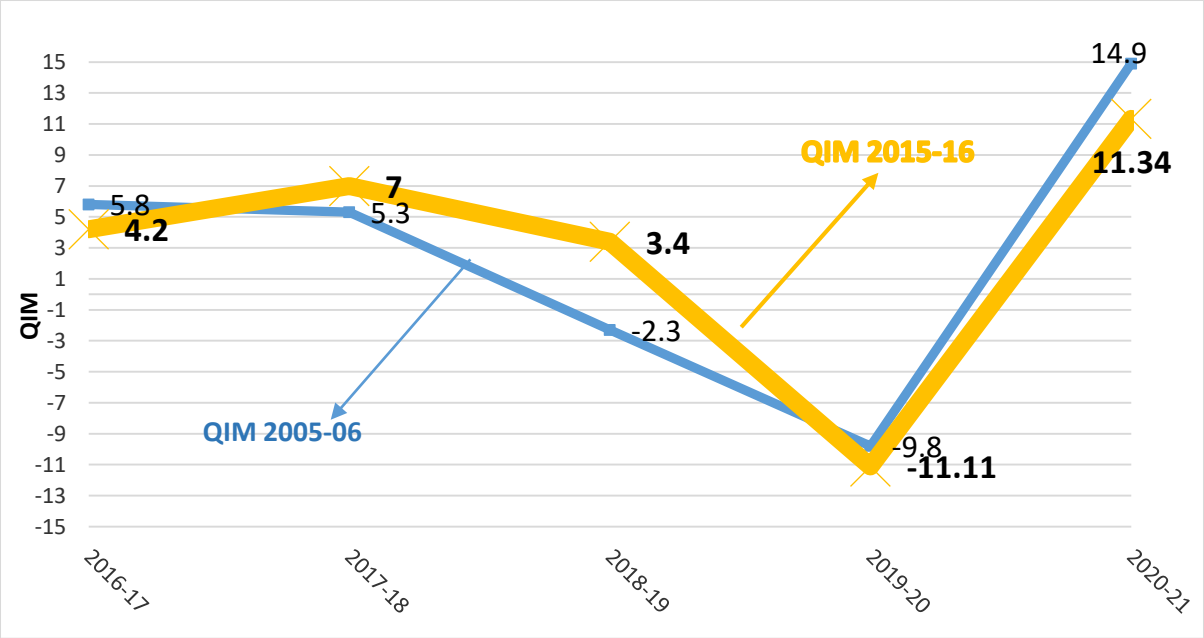
Sources	CMI 2005-06		CMI 2015-16	
	No of Items	Weight (%)	No of Items	Weight (%)
Ministry of Industries & Production	36	49.55	36	**40.54**
Oil Companies Advisory Council	11	5.41	11	**6.66**
Provincial Bureaus of Statistics/PBS	65	15.36	76	**31.17**
All	**112**	**70.33**	**123**	**78.37**

The annual QIM with base year 2005-06 and 2015-16 along with growth rates (%) are presented in the following table with month wise details at Annex C.

Table 2.4: Annual Quantum Indices with base year 2005-06 and 2015-16

Period	Base year 2005-06		Base year 2015-16	
	Indices	Growth Rate	Indices	Growth Rate
2015-16	131.9	3.1	100	-
2016-17	139.5	5.8	104.2	4.2
2017-18	146.9	5.3	111.5	7.0
2018-19	143.5	-2.3	115.3	3.4
2019-20	129.5	-9.8	102.4	-11.1
2020-21	**148.7**	**14.9**	**114.1**	**11.3**

Figure: Comparison of yearly trend of Quantum Index of Manufacturing for 2005- 06 and 2015-16



ANNEXURES

3.1 ANNEX-A Comparison of Weights

Groups with Items Description	Weights		Difference	Source
	2005-06	2015-16		
10-Food products	**11.19**	**10.69**	**-0.5**	
Sugar, Bakery Products and Chocolate & sugar confectionery	3.54	3.43	-0.12	BOS/MOI
Cooking oil	2.23	1.48	-0.75	BOS/MOI
Vegetable ghee	1.14	1.38	0.24	BOS/MOI
Wheat & Rice milling	1.01	3.66	2.65	BOS
Starch & its products	0.79	0.27	-0.52	BOS
Starch			0.00	BOS
Glucose			0.00	BOS
Tea blended	0.38	0.48	0.10	BOS
11-Beverages	**0.94**	**3.84**	**2.9**	
Soft drinks and Mineral waters/bottled waters	0.90	1.63	0.73	BOS
Juices, syrup & squashes and Preserved Milk	0.20	2.21	2.01	BOS
Alcoholic beverages/distilled spirits	0.04	0.00	-0.04	BOS
12-Tobacco products	**2.13**	**2.07**	**-0.06**	
Cigarettes	2.13	2.07	-0.06	MOI
13-Textiles	**20.91**	**18.16**	**-2.76**	
Yarn	12.96	8.88	-4.08	MOI
Cloth	7.19	7.29	0.11	MOI
JUTE GOODS (TOTAL)	0.33	0.33	0.00	MOI
Hessian			0.00	MOI
Sacking			0.00	MOI
Others			0.00	MOI
Terry Towels & Bath Robes		0.59	0.59	BOS/PBS
Woolen & carpet yarn	0.33	0.05	-0.28	BOS
Woolen & worsted cloth	0.09	0.09	0.00	BOS
Knitting wool	0.01	0.01	0.00	BOS
Woolen blankets	0.00	0.91	0.91	BOS
14-Wearing apparel	**0.00**	**6.08**	**6.08**	
Garments	0.00	6.08	6.08	BOS/PBS
15-Leather and related products	**0.86**	**1.23**	**0.37**	
Upper leather	0.39	0.40	0.01	BOS
Sole leather	0.00	0.00	0.00	BOS
Footwear	0.47	0.83	0.36	BOS
16-Wood and wood products	**0.59**	**0.18**	**-0.41**	

Plywood	0.00	0.09	0.08	BOS
Chip Board/Particle Board	0.58	0.09	-0.49	BOS
17-Paper and paper products	**2.31**	**1.63**	**-0.69**	
Paper			0.00	MOI
Paper Board			0.00	MOI
Corrugated paper/Paperboard Containers			0.00	MOI
19-Coke and refined petroleum products	**5.51**	**6.66**	**1.16**	
Coke	0.10	0.00	-0.10	OCAC
Petroleum Products	5.41	6.66	1.25	OCAC
Jet fuel oil		0.47	0.47	OCAC
Kerosene oil		0.08	0.08	OCAC
Motor spirits		1.08	1.08	OCAC
High speed diesel		2.51	2.51	OCAC
Diesel oil n.o.s.		0.02	0.02	OCAC
Furnace oil		0.96	0.96	OCAC
Lubricating oil		0.18	0.18	OCAC
Jute batching oil		0.00	0.00	OCAC
Solvent Naphtha		0.95	0.95	OCAC
LPG		0.22	0.22	OCAC
Petroleum prods: n.o.s.		0.18	0.18	OCAC
20-Chemicals and chemical products	**6.25**	**6.48**	**0.23**	
Chemicals	**1.81**	**2.55**	**0.74**	
Caustic soda	0.44	0.23	-0.21	BOS
Toilet soaps	0.36	0.73	0.37	BOS
Soaps & detergents	0.19	0.26	0.07	BOS
Paints & varnishes(L)	0.29	0.54	0.26	BOS
Paints & varnishes(S)	0.10	0.18	0.09	BOS
Soda ash	0.15	0.08	-0.07	BOS
Sulphuric acid	0.09	0.41	0.32	BOS
Synthetic fibers	0.04	0.01	-0.03	BOS
Matches	0.03	0.03	0.00	BOS
Hydrochloric acid	0.01	0.06	0.04	BOS
Polishes & creams	0.10	0.01	-0.09	BOS
Chlorine	0.01	0.00	0.00	BOS
Fertilizers	**4.44**	**3.93**	**-0.51**	
Phos. fertilizers	0.4	0.50	-3.94	BOS
Nit. fertilizers	4.04	3.43	3.43	BOS
21-Pharmaceuticals products	**3.62**	**5.15**	**1.53**	
Tablets	1.91	2.73	0.81	BOS

Liquids/syrups	1.14	1.62	0.48	BOS
Injections	0.33	0.47	0.14	BOS
Capsules	0.16	0.23	0.07	BOS
Galenicals (tincture)	0.01	0.01	0.00	BOS
Ointments	0.07	0.10	0.03	BOS
22-Rubber and plastics products	**0.26**	**0.24**	**-0.02**	
Cycle tyres	0.01	0.01	0.00	BOS
Cycle tubes	0.00	0.00	0.00	BOS
Motor tyres	0.25	0.24	-0.02	BOS
Motor tubes	0.00	0.00	0.00	BOS
23-Other non-metallic mineral products	**5.36**	**5.01**	**-0.35**	
Glass plates & sheets	0.07	0.36	0.29	MOI
Cement	5.30	4.65	-0.65	MOI
24-Basic metals	**5.39**	**3.45**	**-1.95**	
Pig iron	1.58	0.00	-1.58	MOI
Billets/Ingots	1.52	0.92	-0.60	MOI
H/C.R.Sheets/Strips/Coils/plates etc	2.28	2.52	0.24	MOI
25-Fabricated metal products	**0.07**	**0.42**	**0.35**	
Metal drums	0.04	0.06	0.02	BOS
Safety razor blades and Cutlery	0.04	0.36	0.33	BOS
26-Computer, electronic & optical products	**0.16**	**0.03**	**-0.14**	
T.V. sets	0.16	0.03	-0.14	BOS
27-Electric equipment	**1.80**	**2.05**	**0.25**	
Refrigerators	0.24	0.25	0.01	BOS
Electric transformers	0.17	0.35	0.18	BOS
Deepfreezes	0.16	0.17	0.00	BOS
Switch gears	0.00	0.00	0.00	BOS
Electric fans	0.07	0.08	0.00	BOS
Electric meters	0.16	0.16	0.00	BOS
Air conditioners	0.08	0.09	0.00	BOS
Electric bulbs	0.06	0.02	-0.04	BOS
Electric motors (including insulated wire & cable)	0.71	0.43	-0.28	BOS
Electric tubes	0.00	0.00	0.00	BOS
Storage batteries	0.14	0.51	0.38	BOS
Generating sets	0.00	0.00	0.00	BOS
28-Machinery and equipment n.e.c.	**0.67**	**0.39**	**-0.2831**	
Tractors	0.47	0.34	-0.13	MOI
Heavy machinery & equipment	0.07	0.03	-0.04	MOI

Sewing machines	0.08	0.00	-0.08	MOI
Power looms	0.00	0.00	0.00	MOI
Bobbins & Shuttles	0.00	0.00	0.00	MOI
Sugarcane machines	0.01	0.00	-0.01	MOI
Wheat thrashers	0.02	0.01	-0.01	MOI
Chaff cutters	0.01	0.00	-0.01	MOI
29-Motor vehicles, trailers etc.	**3.57**	**3.10**	**-0.4684**	
Jeeps & Cars	2.82	2.71	-0.10	MOI
Jeeps			0.00	MOI
Cars			0.00	MOI
Trucks	0.21	0.19	-0.02	MOI
Buses	0.16	0.15	-0.02	MOI
L.C.V.'s	0.33	0.04	-0.29	MOI
Diesel engines	0.04	0.00	-0.04	BOS
30-Other transport equipment	**0.70**	**0.69**	**-0.0076**	
Motor cycles	0.61	0.68	0.07	MOI
Bicycles	0.09	0.01	-0.08	BOS
Furniture	**0.00**	**0.51**	**0.51**	
Furniture		0.51	0.51	BOS/PBS
32-Other manufacturing	**0.00**	**0.32**	**0.316**	
Footballs		0.32	0.32	BOS/PBS
Total	**70.33**	**78.37**	**8.04**	

3.2 ANNEX-B Group Wise Comparison of Growth

Group Wise Comparison of Growth with Base Year 2005-06 and 2015-16

Major Groups	No of items		Weight		2016-17		2017-18		2018-19		2019-20		2020-21	
	2005-06	2015-16	2005-06	2015-16	Base 2005-06	Base 2015-16	Base 2005-06	Base 2015-16	Base 2005-06	Base 2015-16	Base 2005-06	Base 2015-16	Base 2005-06	Base 2015-16
10-Food,	12	10	12.37	10.7	11.7	11.8	1.5	-1.7	-5.6	-5.6	-1.8	13.4	11.1	21.9
11-Beverages		6		3.8		13.4		1.5		3.3		-8.2		3.6
12-Tobacco		1		2.1		-35.8		72.0		2.8		-24.1		11.9
13-Textile	11	12	20.91	18.2	0.8	-0.9	0.4	0.8	-0.1	3.1	-10.4	-13.8	15.3	18.3
14-wearing apparel	-	1	-	6.1	-	7.3	-	13.9	-	39.1	-	-12.7	-	-23.3
15-Leather Products	3	3	0.86	1.2	-16.5	-15.2	-6.5	-5.9	-2.4	-2.2	-9.1	-9.9	-26.4	-25.6
16-Wood Products	2	2	0.59	0.2	-93.7	-50.8	-27.9	-27.9	18.6	18.6	-39.3	-39.3	-39.4	-39.4
17-Paper & Board	4	5	2.31	1.6	9.6	9.6	9.4	9.4	-3.7	-3.7	0.4	0.4	3.4	3.4
19-Coke & Petroleum Products	12	12	5.51	6.7	2.8	2.2	13.2	13.3	-8.4	-8.5	-20.1	-20.2	18.1	17.9
20-Chemicals		19	6.16	6.5	-	-1.4	-	-8.0	3.6	3.4	-	1.8	-	12.2
Chemicals	12	12	1.72	2.5	-2.3	-6.3	-0.1	-5.0	-4.1	-3.2	4.9	-2.7	19.4	- 21.4
Fertilizers	7	7	4.44	3.9	1.7	1.7	-9.9	-9.9	7.7	7.6	4.4	4.3	7.2	7.4
21-Pharmaceuticals	6	6	3.62	5.2	9.1	9.5	2.0	1.0	-8.3	-7.6	-2.7	-2.3	12.0	9.9
22-Rubber Products	4	4	0.26	0.2	-0.3	-0.4	6.8	6.7	4.2	4.4	2.8	2.8	-15.0	-15.1
23-Non Metallic Mineral Products	2	2	5.36	5.0	4.4	4.1	11.0	10.2	-2.4	1.9	-2.2	-3.3	26.7	22.1
24-Iron & Steel Products	5	5	5.39	3.4	20.5	17.8	21.8	20.0	-11.2	-5.7	-17.4	-17.1	15.6	4.9
25-Fabricated Metal	-	3	-	0.4	-	7.0	-	4.2	-	13.7	-	-23.6	-	9.0
26-Computer, electronics	-	1	-	0.0	-	-3.2	-	-8.8	-	-4.9	-	-25.9	-	-25.7
27-Electronics	13	12	1.96	2.0	21.6	19.4	49.9	43.1	59.4	46.2	-33.3	-30.1	-4.2	-2.5
28-Machinery and Equipment n.e.c	12	9	0.40	0.4	4.7	45.6	9.7	31.6	8.9	-30.8	-18.7	-34.1	-15.4	49.0
29-Automobiles	7	6	4.61	3.1	11.2	7.0	17.8	18.6	-11.8	-7.9	-44.6	-54.0	51.1	61.5
30-other transport Equipment	-	2	-	0.7	-	20.5	-	12.9	-	-12.9	-	-26.2	-	35.8
31-Furniture	-	1	-	0.5	-	-38.5	-	-17.5	-	24.5	-	-38.0	-	171.0
32-Other manufacturing	-	1	-	0.3	-	-13.9	-	7.6	-	4.4	-	-9.2	-	-17.1
Total	**112**	**123**	**70.3**	**78.4**	**5.8**	**4.2**	**5.3**	**7.0**	**-2.3**	**3.4**	**-9.8**	**-11.1**	**14.9**	**11.3**

3.3 ANNEX-C Yearly and Monthly Comparison

Yearly and Monthly Comparison of QIM & G. Rates Computed on the basis of 2005-06 and 2015-16

PERIOD	BASE 2005-06		BASE 2015-16	
	112 items with Weight 70.332		123 items with Weight 78.37	
	QIM	GROWTH RATE	QIM	GROWTH RATE
2016-17	**139.6**	**5.8**	**104.2**	**4.2**
JULY	117.8	1.8	91.8	-4.6
AUGUST	127.1	2.5	97.0	5.8
SEPTEMBER	124.1	1.5	93.8	-3.4
OCTOBER	127.5	2.7	98.2	4.7
NOVEMBER	132.9	7.7	100.2	2.0
DECEMBER	150.5	7.4	108.4	8.2
JANUARY	155.3	1.5	110.7	2.1
FEBRUARY	158.8	9.5	113.4	2.4
MARCH	174.7	11.7	123.4	8.9
APRIL	143.8	10.6	107.1	-13.2
MAY	135.7	7.4	104.6	-2.4
JUNE	126.4	3.4	101.8	-2.7
2017-18	**146.9**	**5.3**	**111.5**	**7.0**
JULY	134.6	14.2	105.8	15.3
AUGUST	139.8	10.0	108.3	11.6
SEPTEMBER	130.8	5.4	103.1	10.0
OCTOBER	139.6	9.4	107.7	9.7
NOVEMBER	133.0	0.0	101.6	1.5
DECEMBER	153.6	2.1	113.7	4.9
JANUARY	171.8	10.6	124.5	12.5
FEBRUARY	163.1	2.7	118.2	4.3
MARCH	175.2	0.2	126.7	2.6
APRIL	157.3	9.4	118.0	10.2
MAY	138.3	1.9	109.1	4.3
JUNE	126.3	(0.1)	100.6	-1.2
2018-19	**143.5**	**-2.3**	**115.3**	**3.4**
JULY	135.5	0.7	107.5	1.6
AUGUST	132.9	-4.9	105.8	-2.4
SEPTEMBER	134.5	2.9	106.3	3.1
OCTOBER	143.3	2.7	117.5	9.0
NOVEMBER	134.5	1.2	108.7	6.9
DECEMBER	135.9	-11.5	108.1	-4.9
JANUARY	170.2	-0.9	130.4	4.7
FEBRUARY	160.6	-1.5	120.2	1.7
MARCH	162.3	-7.3	126.5	-0.1
APRIL	146.5	-6.9	122.2	3.5

MAY	136.8	-1.0	121.9	11.8
JUNE	129.1	2.2	108.3	7.7
2019-20	**129.5**	**-9.8**	**102.4**	**-11.11**
JULY	127.7	-5.7	109.0	1.4
AUGUST	124.8	-6.1	105.4	-0.3
SEPTEMBER	128.2	-4.7	102.9	-3.2
OCTOBER	135.4	-5.6	109.8	-6.5
NOVEMBER	128.7	-4.3	104.5	-3.9
DECEMBER	150.1	10.4	113.4	4.9
JANUARY	160.5	-5.7	121.5	-6.8
FEBRUARY	160.4	-0.1	121.2	0.8
MARCH	127.1	-21.7	99.1	-21.7
APRIL	86.2	-41.1	66.5	-45.6
MAY	102.0	-25.5	81.0	-33.5
JUNE	122.6	-5.0	94.9	-12.4
2020-21	**148.7**	**14.9**	**114.1**	**11.34**
JULY	135.0	5.7	106.9	-1.9
AUGUST	124.9	0.1	95.5	-9.4
SEPTEMBER	138.1	7.7	106.5	3.4
OCTOBER	144.6	6.8	111.1	1.2
NOVEMBER	146.5	13.8	111.7	6.9
DECEMBER	166.2	10.7	122.6	8.1
JANUARY	175.5	9.3	125.9	3.6
FEBRUARY	168.5	5.0	126.7	4.5
MARCH	155.8	22.5	121.4	22.5
APRIL	145.2	68.4	114.9	72.9
MAY	139.1	36.4	107.8	33.0
JUNE	145.3	18.5	117.7	24.0