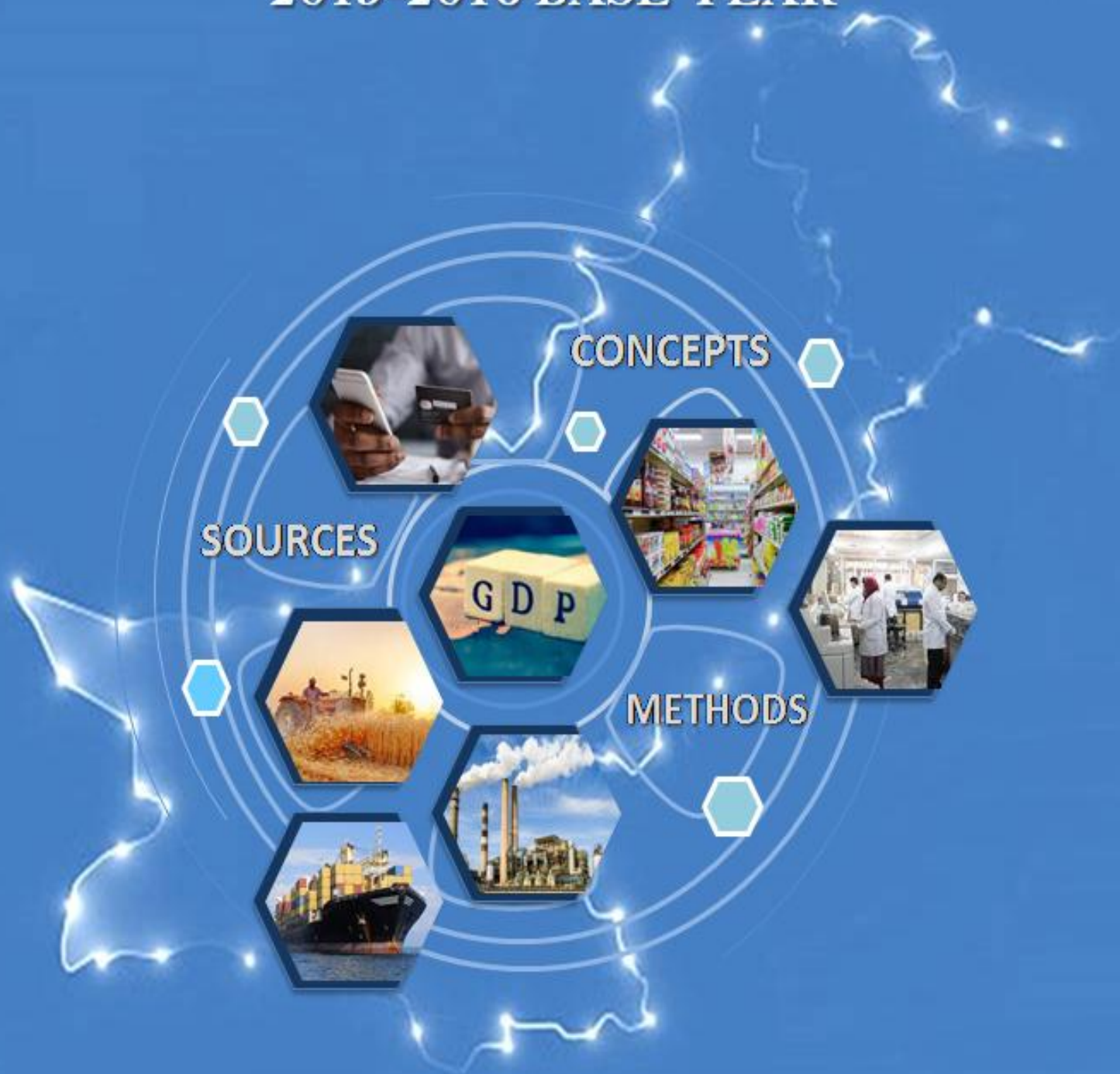




NATIONAL ACCOUNTS OF PAKISTAN

2015-2016 BASE YEAR



PAKISTAN BUREAU OF STATISTICS
MINISTRY OF PLANNING DEVELOPMENT & SPECIAL INITIATIVES
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Foreword

Pakistan Bureau of Statistics (PBS) compiles and publishes macroeconomic statistics such as Gross Domestic Product (GDP), Gross National Income (GNI), Per Capita Income, Gross Fixed Capital Formation (GFCF) and Expenditure on GDP on annual basis. These statistics play an important role in policy formulation and informed decision making. They are also often highlighted in print, electronic, and social media platforms. The base year/reference year for the compilation of national accounts is required to be changed for the incorporation of improvement in data sources and re-assessment of the contribution of various industries towards national GDP owing to structural changes in the economy as well as various macroeconomic dynamics in national and international horizons.

The history of change of base of national accounts of Pakistan is not so rich. It remained a rather neglected activity. In 1952 the national accounts estimates were prepared from 1949 onwards at current prices. In 1962-63 the base of 1959-60 was adopted. In 1987 the base of 1980-81 was adopted. Then in 2003, the base of 1999-2000 was adopted with classifications of the 1968 SNA. The 2005-06 base year was adopted in 2013 with the partial implementation of the 2008 SNA. The Governing Council of Pakistan Bureau of Statistics in its 5th meeting in 2013 issued a policy directive to rebase the National Accounts after every ten years. As a result, it was decided to change the base year for National Accounts from 2005-06 to 2015-16. The work on the next base year i.e. 2015-16 was started with the approval of a development scheme titled “**Change of Base of National Accounts 2005-06 to 2015-16**” costing Rs.279.95 Million in November 2014. Under the umbrella of rebasing, PBS conducted various censuses e.g. Census of Manufacturing Industries, Census of Electricity, Census of Exploration Companies, surveys e.g. Rent Survey, Household Integrated Income and Consumption Survey, Survey on Small & Household Manufacturing Industries, Survey on Other Private Services, as well as the number of other studies. Further, to ensure consistency among various macroeconomic aggregates, PBS has also changed the reference periods for the compilation of price and trade indices from 2007-08 and 1990-91 to 2015-16.

A technical committee comprising of experts from the Ministry of Planning, Development & Special Initiatives, M/O Finance, State Bank of Pakistan, Pakistan Institute of Development Economics, Quaid-e-Azam University and representatives from various public and private sector organizations have thoroughly reviewed the results of various censuses/surveys/studies conducted for rebasing purpose. Experts of the World Bank also reviewed the methodology of change of base of National Accounts and found it in accordance with the 2008 SNA.

At the PBS, the task of completing the rebasing of national accounts from 2005-06 to 2015-16 has been completed by the highly dedicated team of National Accounts professionals led by S. Ejaz Wasti, Member, National Accounts. I would like to request views and comments on this exercise to help PBS in further improvement of the macroeconomic aggregates.

Dr. Naeem uz Zafar
Chief Statistician
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April, 2022

Preface

While the change of base of national accounts is a gigantic and challenging task, it also provides an opportunity to enhance the coverage of economic activities and improve the estimation methodologies and sources of data. The Pakistan Bureau of Statistics has capitalized on this opportunity and has made all-out efforts to implement the recommendations of 2008 SNA, explore new sources of data, and enhance the coverage of economic activities described in the Pakistan Standard Industrial Classification (PSIC-2010) adopted from the International Standard Industrial Classifications (ISIC) Rev.4. Efforts have also been made to capture the products in each economic activity as described in the Central Product Classification (CPC) Version 2. The successful completion of rebasing of national accounts from 2005-06 to 2015-16 will provide a necessary benchmark for the compilation of Supply & Use Tables, Input/ Output Tables, Social Accounting Matrix, quarterly GDP, and institutional sector accounts.

The current publication incorporates the details of sources of output and input, deflation methods, and extrapolation methodologies by type of industry on the supply-side of the economy. The sources of data and estimation methodologies have also been documented for the estimation of various components of the aggregate demand i.e. household final consumption expenditure, general government final consumption expenditure, gross fixed capital formation, changes in inventories, exports and imports of goods and services. Further, the process of moving from GDP to Gross National Income (GNI) has also been described in detail. The use of double deflations, basic prices, and indicator-based growth rates are the major hallmarks of the 2015-16 rebasing. In the current report, all possible details have been documented to facilitate the users of the national accounts statistics and make the process of compilation of national accounts statistics more systematic, transparent and authentic.

The exercise took a long time due to resource constraints at the PBS and stoppage of rebasing activities owing to the conduct of the 6th Housing & Population Census. The completion of the task of rebasing national accounts is the result of coordinated efforts of staff in the National Accounts Wing, PSLM/HIES Section, Industry Section, Field Services Section, Sample Design and Data Processing Centre of the PBS. Specifically, this achievement is a result of the dedicated efforts of an inspired team of the National Accounts Wing. Senior and experienced national accountants like Mr. Fazil Mahmood Baig and Mr. Attiq-ur-Rehman have contributed heavily. Suggestions for improvement are welcome.

S. Ejaz Wasti
Member National Accounts
April, 2022

Acknowledgement

By the grace of Allah the mammoth exercise of Change of Base of National Accounts (CBNA) from 2005-06 to 2015-16 has been completed successfully and this report is a reflection of the tireless efforts of officers and officials of Pakistan Bureau of Statistics. I wish to extend my special gratitude to (late) Arif Mehmood Cheema, Ex-Member National Accounts for conceiving and initiating the project. The assistance provided by Mr. Asif Bajwa, Ex-Chief Chief Statistician PBS, not only in technical matters but also in timely release of funds from ministries, enabled us to complete data collection activities in time, also needs to be commemorated. Special thanks to Mr. Bernd Struck, Ex-Principal Advisor German International Cooperation (GIZ) for guidance in designing of construction survey and Mr. Sajjad Akhtar, Ex-Member PBS, Mr. Muhammad Ismaeel, DDG, PBS, Mr. Ghulam Muhammad Ex-DDG PBS, for completing the survey activities.

I appreciate the invaluable contribution of Dr. Bahrawar Jan, DDG PBS and his team, particularly Mr. Anwar Khan, CSO, for completing the Census of Manufacturing Industries (CMI) and Survey of Small Household Manufacturing Industries (SHMI). His contribution towards review of results of various surveys and studies is also commendable. I take this opportunity to thank Mr. Ayaz uddin, Member PBS and his team for conducting Household Integrated Income and Consumption Survey (HIICS) which was the basis of rebasing of price statistics from 2007-08 to 2015-16. My special praises for Mr. Sarwar Gondal, Member PBS for guidance and support in conducting field activities as well as data editing and analysis. I wish to show my appreciation for Mrs. Rabia Awan, DDG PBS and her team for facilitating in editing, coding and tabulation of results of survey of Other Private Services (OPS). Without their help it would not have been possible to complete the report in time. Also indebted to Mr. Munir Aslam, Ex-DDG PBS, Mr. Shoukat Ali Khan, Director PBS and his team for completing the Rent Survey. I am indebted to Mrs. Rizwana Siddiqui, Director PBS and her team for conducting SHMI and studies related to Mining Industry and also to Mr. Rizwan Bashir, Director PBS for his diligent efforts to complete the analysis and report of these surveys. Special thanks to Mr. Munawar Ali Ghangro, Director PBS for providing full support of field staff which resulted in quality data collection of various surveys and studies, Mr. Naveed Iqbal, Joint Agriculture Census Commissioner, PBS for his contribution towards finalization of results of agriculture industry.

The officers of national accounts, Mr. Fazil Baig, DDG, Mr. Waqar Aslam, CSO, Mr. Liaquat Ali, CSO, Mr. Younas Khattak, CSO, Dr. Jawad Ali Shah, CSO, Mr. Afzal Raza, CSO, Mr. Asif, CSO, Dr. Rashid, CSO, Mr. Ehsan ul Haq, CSO and Dr. Muhammad Adil, CSO worked dedicatedly to complete the assigned surveys and studies alongwith their routine work. In fact these officers and their staff were the real team to complete the gigantic task of change of base of national accounts.

I would like to thank Mr. Moritz, Senior Economist, World Bank, and his team for facilitating in review of methodology of rebasing of National Accounts from World Bank experts Mr. Eric and Mr. Jose. Bothe the not only reviewed the methodology of change of base of national accounts but also guided industry by industry to bring the results in line with 2008 System of National Accounts (SNA). Representatives of Ministry of Planning, Ministry of Finance, Pakistan Institute of Development Economics (PIDE), State Bank of Pakistan (SBP), Quaid –e-Azam University and various industry experts also need to be appreciated for their valuable contribution during review of results of various surveys and studied.

The project management team, which helped in smooth running of financial matters during the project life needs special recognition. Mr. Khalid Farooq, Chief Statistical Officer/DDO of the project, Mr. Tahir ul Islam, Statistical Officer, Mr. Badshah Hayat, Statistical Officer and Mr. Aamir Bilal, Statistical Assistant PBS worked day in and day out to manage the financial matters of the project.

The patronage of Dr. Naeem uz Zafar, Chief Statistician PBS and Syed Ejaz Wasti, Member National Accounts PBS, kept our spirits high during the finalization of results of the change of base. Able guidance of Syed Ejaz Wasti enabled the national accounts staff to work as a team and bring out their best. In the end I would like to confess that all positive attributes are because of National Accounts officers and staff and all shortcomings attributable to me.

(Attiq-ur-Rehman)
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Abbreviations and Acronyms

| Abbreviations | Acronyms |
|---------------|---|
| AJK | Azad Jammu & Kashmir |
| AMIS | Agriculture Marketing Information Services |
| API | Agriculture Policy Institute |
| APL | Attock Petroleum limited |
| BMR | Balancing, Modernizing And Replacement |
| CAA | Civil Aviation Authority |
| CAAD | Capital Administration and Development Division |
| CDWP | Central Development Working Party |
| CMI | Census of Manufacturing Industries |
| CPC | Central Product Classification |
| CPI | Consumer Price Index |
| CRS | Crop Reporting Services |
| CSO | Central Statistical Office |
| DFI's | Development Financing Institutions |
| EPZA | Export Processing Zones Authority |
| FATA | The Federally Administered Tribal Areas |
| FBS | Federal Bureau of Statistics |
| FISIM | Financial Intermediation Services Indirectly Measured |
| FOTCO | Fauji Oil Terminal And Distribution Company Ltd |
| GDP | Gross Domestic Product |
| GFCF | Gross Fixed Capital Formation |
| GNI | Gross National Income |
| GPA | Gawadar Port Authority |
| GVA | Gross Value Added |
| HDIP | Hydrocarbon Development Institute of Pakistan |
| HIES | Household Integrated Economic Survey |
| HIICS | Household Integrated Income and Consumption Survey |
| IATA | International Air Transport Association |
| IBRD | International Bank for Reconstruction and Development |
| ICPF | Insurance Corporations And Pension Funds |
| IPPS | Independent Power Producers |
| ISIC | International Standard Industrial Classifications |
| ISPs | Internet Service Providers |
| KIBOR | Karachi Interbank Offer Rate |
| KICT | Karachi International Container Terminal |
| KPT | Karachi Port Trust (Pakistan) |
| LNG | Liquefied Natural Gas |
| LSMI | Large Scale Manufacturing Industries |
| MMF | Money market funds |
| MNFSR | Ministry of National Food Security and Research |
| NAC | National Accounts Committee |
| NAC | National Accounts Committee |
| NEC | National Economic Council |
| NEPRA | National Electric Power Regulatory Authority |
| NIC | National Income Commission |
| NPI | Net Primary Income |
| NPISH | Non-Profit Institutions Serving Households |
| NTDC | National Transmission and Distribution Company |

| Abbreviations | Acronyms |
|----------------------|---|
| NTRC | National Transportation Research Center |
| OPS | Other Private Services |
| P@SHA | Pakistan Software House Association |
| PARACS | Pakistan Railways Advisory and Consultancy Services |
| PARCO | Pak-Arab Refinery Company Limited |
| PASHA | Pakistan Software Houses Association for IT |
| PBS | Pakistan Bureau of Statistics |
| PCI | Per Capita Income |
| PEC | Pakistan Engineering Council |
| PEMRA | Pakistan Electronic Media Authority |
| PEPCO | Pakistan Electric Power Company |
| PHA | Pakistan Hotels Association |
| PIA | Pakistan International Airlines |
| PICT | Pakistan International Container Terminal |
| PNSC | Pakistan National Shipping Corporation |
| PPS | Probability Proportional to size |
| PQA | Port Qasim Authority (Pakistan) |
| PSEB | Pakistan Software Export Board |
| PSIC | Pakistan Standard Industrial Classification |
| PSLM | Pakistan Social and Living Standards Measurement |
| PSX | Pakistan Stock Exchange |
| PTDC | Pakistan Tourism Development Corporation |
| QICT | Qasim International Container Terminal |
| QIM | Quantum Index of Large Scale Manufacturing |
| RNA | Rebasing of National Accounts |
| SBP | State Bank of Pakistan |
| SECP | Securities and Exchange Commission of Pakistan |
| SHMI | Small and Household Manufacturing Industries Survey |
| SNA | System of National Account |
| SNGPL | Sui Northern Gas Pipeline |
| SPI | Sensitive Price Index |
| SRC | Self-Representative Cities |
| SSGC | Sui Southern Gas Company |
| WAPDA | Water and Power Development Authority |
| WPI | Wholesale Price Index |
| WRT | Wholesale and retail trade |

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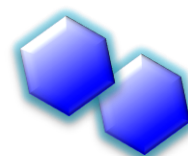
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CHAPTER 1

Overview of Systems for Calculating Gross Domestic Product



SYSTEM FOR CALCULATING GROSS DOMESTIC PRODUCT**1.1 Introduction**

There are various aspects of economic activities e.g. production, income, consumption or capital formation, which are treated as key factors in national accounts. The purpose of national accounts is to provide the most comprehensive, well-structured, arranged, and quantified picture of a country's entire economy. The raw data on different economic activities is required to be condensed and grouped to provide the basis for informed decision-making and policy formulation aimed at the achievement and maintenance of sustainable economic growth. The aggregation of economic transactions results in meaningful macroeconomic aggregates such as gross domestic product (GDP), gross national income (GNI), per capita income, gross capital formation and expenditure on GDP. The following document describes the sources and methods for the compilation of GDP by industries, expenditure on GDP, and GNI.

In Pakistan, GDP is compiled through production and expenditure approaches. The GDP by income approach is not calculated mainly due to the absence of entrepreneurial income. Although estimation of compensation of employees, consumption of fixed capital and taxes less subsidies on production is possible, the compilation of operating surplus and mixed income is not possible.

The system of national accounts provides the conceptual framework for the compilation of GDP. The first United Nations System of National Accounts (SNA) was published in 1953. The UN recommended countries compile their economic accounts within the SNA framework to achieve consistency and facilitate international economic comparison. SNA has been revised several times to take account of changing economic concerns. The latest version of the system was completed in 2008 and provides measures of production, income, consumption, savings, capital formation and financing for individual sectors and the economy as a whole. It also provides linkages with various monetary and quantitative databases relating to different types of activities through Satellite Accounts. SNA is a powerful and flexible tool to provide the detailed economic information required to meet analytical and policy needs. It should be noted that in the SNA the term “sector” has another meaning than in the common language in Pakistan. The six so-called institutional sectors in the SNA are Non-Financial Corporations, Financial Corporations, General Government, Households, Non-Profit Institutions Serving Households and the Rest of the World.

1.2 The Quality of the National Account's Calculations

The quality of the national account's calculations is ensured continuously during the calculation process. Efforts are made to detect and eliminate possible short comings and errors as soon as possible. The main elements of this quality assurance procedure are outlined below:-

- i. The quality of source data, which are produced as part of official statistics by the PBS e.g. price, labour, trade statistics, etc. are checked in respective sections. Before the use of baseline statistics in national accounts, their plausibility is checked again. The national accounts staff constantly shares the information and experiences with all the major suppliers of data.
- ii. The national accounts estimates are approved by a technical committee having representation from all the major suppliers of the data in both

private and public sectors. The data providers authenticate and validate their data before the final approval of the GDP estimates by the National Accounts Committee (NAC). The meeting of the NAC is held in May every year to approve the annual estimate of the GDP.

1.3 Revisions Policy, History of National Accounts Compilation and Major Revisions in Pakistan

The national accounts aggregates are subject to two types of revisions i.e. i) regular revisions ii) comprehensive or major revisions. The objective of these revisions is to include new data, new statistics, new definitions and/or new methods in the system of national accounts. The *regular revisions* are made on annual basis. The GDP estimates are published in May every year by incorporating data for six to nine months but projected for the whole financial year i.e. 1st July to 30th June on a provisional basis. The provisional estimates are revised next (second) year and are finalized in the subsequent third year.

In contrast to regular revisions, *comprehensive or major revisions* take place less frequently. The major revisions entail a fundamental review of the entire system of national accounts and serve to introduce new definitions, concepts and data sources into the national accounts system. An overview of the major revisions of national accounts in Pakistan is presented in the following:

- i. The first estimates of national accounts of Pakistan were prepared by the Economic Advisor's Office in 1949. On the setting up of the Central Statistical Office (CSO) in 1950, the job was transferred to CSO, the then Federal Bureau of Statistics (FBS) and now the Pakistan Bureau of Statistics (PBS). Since then the PBS has been preparing different series of national accounts at current and constant prices.
- ii. For improvement of national accounts, several groups and committees were set up from time to time, the prominent being the National Income Commission-1963 (NIC) and IBRD Statistical Mission-1969. As a result, the national accounts of Pakistan have undergone modifications and improvements at various stages concerning timeliness, data availability, coverage and statistical techniques involved in their computation.
- iii. In 1972-73, FBS undertook an exercise for switching over the base from 1959-60 to 1969-70. These estimates were presented before the National Accounts Committee (NAC) but could not be adopted due to inconsistencies in the estimates of the manufacturing sector. The Committee directed the FBS to prepare estimates with 1975-76 as a base. A comprehensive work plan was prepared for improving the existing data series and plugging the statistical gaps. Some surveys such as wholesale and retail trade, small and household manufacturing industries were conducted for this purpose. The estimates with base 1975-76, on improved data availability, concepts and methodology were prepared for the year 1975-76 through 1983-84 and presented before the Committee but could not be adopted due to persistent inconsistencies.
- iv. While considering the Annual Plan for the year 1984-85 certain shortcomings in the compilation of National Accounts were brought to the notice of the National Economic Council (NEC). The Council decided to constitute a Committee under the chairmanship of Mr A.G.N. Kazi, the then Governor, State Bank of Pakistan (SBP), to look into the matter. Accordingly, a Committee on National Accounts was constituted to review the present methodology for the preparation of National

Accounts and to propose necessary improvements. The results were completed in 1988 for the base year 1980-81.

- v. Efforts were made from time to time to shift the base from 1980-81 but due to one reason or the other, the work was postponed. Several internal meetings and the meetings of the NAC were held under the chairmanship of the Secretary Statistics Division to change the base from 1980-81 to 1999-2000. Ultimately the NAC approved the rebased estimates in the meeting held on 22nd December 2003.
- vi. The year 2005-06 was selected as the next base year and the CDWP approved a project named “Rebasing of National Accounts (RNA) from 1999-2000 to 2005-06”. The project continued up to June 2010. Surveys were conducted for the major sectors and studies were designed to fill the small gaps and to capture emerging fields. The Governing Council of the PBS approved the change of base of national accounts from 1999-2000 to 2005-06 in its fourth meeting held on April 29, 2013.

1.4 Change of Base of National Accounts for 2015-16

National accounts aggregates at constant prices provide important indicators for measuring growth in the activity or economy. All countries are compiling national accounts aggregates at current and constant prices. They also update the base year periodically. Constant price estimates use the price relatives of a particular year to weight together with the volume components. Each base year gives a different perspective resulting from those weights. Over time the pattern of relative prices in the base period tends to become progressively less relevant. Therefore, it is necessary to update the base period to adopt weights that are more consistent with current conditions.

Observing the performance of the economy and its main macro-economic variables requires a fairly long time series of data that are comparable to those of other countries. Therefore, National Accounts must keep the methods, concepts and definitions of the respective figures constant over time and space. All necessary changes are to be stalled and then implemented as a bundled exercise called “rebasing” or “comprehensive/major revision”. According to international recommendations, such a revision should be undertaken every five to seven years. Pakistan has now completed its rebasing for the year 2015-16 (“base year”) and the succeeding years. The new base year replaces the existing one of 2005-06 which includes:

- i. New censuses, surveys, studies
- ii. New price basis for the year 2015-16
- iii. Enhanced implementation of 2008 SNA
- iv. Enhanced coverage of economic activities as per PSIC

1.5 New Censuses, Surveys, Studies

Many censuses, surveys and studies were launched to generate an updated database for National Accounts under the umbrella of rebasing of national accounts from 2005-06 to 2015-16. The most relevant of them were:

- i. Household Integrated Income and Consumption Survey (HIICS), which has been used to change the base of the Consumer Price Index (CPI), Wholesale Price Index (WPI) and Sensitive Price Index (SPI) from 2007-08 to 2015-16
- ii. Census of Large Scale Manufacturing (which also provided the base for the revision of the Quantum Index of Manufacturing (QIM))
- iii. Small and Household Manufacturing Industries (SHMI) Survey
- iv. Census of Electricity Establishments
- v. Census of Exploration Companies (Oil and Gas)
- vi. Construction Survey
- vii. Rent Survey
- viii. Survey of Non-Governmental Organizations (NGO's)
- ix. Survey on Other Private Services
- x. Various studies for updating prices and input-output structure of crops, trade & transport margin, livestock and for estimating output and intermediate consumption of cotton ginning, forestry, inland fishing and marine fishing
- xi. Studies of mining industries and stone crushing
- xii. Study on slaughtering
- xiii. Study on accommodation and food service activities (Hotels and restaurants)
- xiv. Various studies on a component of transport, warehousing, storage and communication services
- xv. Studies on exchange companies and stock exchange brokers
- xvi. Study on autonomous bodies providing education, human health and social work services
- xvii. Studies on TV Channels, Computer Related Activities, Professional, Scientific and technical activities

The above-mentioned censuses, surveys and studies were conducted to update the output, intermediate consumption, gross value added, and gross fixed capital formation for various economic activities. In Pakistan, these censuses, surveys and studies cannot be carried out each year because of resource constraints. The input-output ratios developed through these sources are used for the extrapolation of base-year estimates. One common practice is to have proxies for extrapolating output (e.g. industrial production index-QIM for the extrapolation of the output of large scale manufacturing) and then to apply base year input-output ratios. As these ratios and proxies cannot be applied for a long time, therefore, rebasing is required to review them after every five or ten years.

1.6 New Price Basis

All the national accounts aggregates are compiled at both current (nominal) and constant (real) prices. The aggregates initially compiled at current prices are converted into constant prices by applying appropriate price deflators and vice versa. Therefore, the base year for national accounts and the base year for the price indices should coincide. Hence, HIICS was conducted under the umbrella of rebasing of national accounts to serve the purpose of the Family Budget Survey. The Governing Council of the PBS in its 18th meeting held on August

30, 2019, approved the rebasing of Price Statistics from 2007-08 to 2015-16. Under 2015-16 rebasing of prices statistics, CPI is being compiled separately for urban and rural areas through electronic data collection and improved methodology i.e. weighted geometric mean, consumption instead of income quintiles, updated weights based on 2017 population census etc. The new CPI and WPI are used as an updated source for deflation and inflation of figures compiled at current and constant prices respectively.

1.7 Enhanced Implementation of 2008 SNA

Another important component of this rebasing is to enhance the implementation, as far as possible, of the internationally agreed standards for national accounts e.g. 2008 SNA. SNA 2008 as well as its predecessor, SNA 1993, recommends the application of basic price valuation for output and value-added instead of factor cost (which is the 1953 SNA price concept). While “factor cost” means to value output without any indirect taxes but including subsidies, the basic price concept differs between (indirect) taxes on the products as such (e.g. varying with the output) and subsidies, respectively, and those taxes (less subsidies) which are levied on the production process as such (e.g. taxes on the production factors such as land or vehicles). The basic price is the price the producer gets on his output excluding any taxes on the products and including any subsidies on the products. It should be noted that according to the SNA subsidies on the products also cover payments of the government to its public corporations which are meant for compensating for persistent losses. For Pakistan, the adoption of the SNA’s price concept has a minor impact, only.

Factor cost

+ taxes (less subsidies) on production (e.g. on land, vehicles)

= basic prices

+ taxes (less subsidies) on products (e.g. excise duties)

= producer’s prices

+ trade and transport margins + non-deductible VAT

= purchaser’s prices

Other notable improvements in the compilation of national accounts aggregates in 2015-16 rebasing are:

- Replacing single deflation by double deflation i.e. deflating output and inputs separately by their respective deflators as far as possible.
- Salaries in kind are included in compensation of employees for government services
- Subsidies have to be enhanced by those given for coverage of persistent losses of public corporations (with upward consequences for GVA and GDP at basic prices or factor cost, neutral for valuation at market prices)
- Water supply and sanitation to be treated as non-market production (with upward consequences for GVA, GDP and collective consumption)
- Introduction of calculating bank service charge for financial intermediation
- State Bank to be treated as non-market producer (main activity) while its market production (secondary activity) is confined to services covered by commissions
- Introduction of insurance service charge
- Efforts have been made to capitalize the expenditure on R&D activities and cultivated biological assets. However, the capitalization of expenditure on weapons systems has been left as an area for further consideration keeping in view its sensitivity. The 2008 SNA extends the assets boundary and government gross capital formation to include expenditure on weapons systems comprising of vehicles and other equipment such as warships,

submarines, military aircraft, tanks, missile carriers and launchers, etc. as they are used continuously in the production of defence services. The 2008 SNA, therefore, recommends that military weapons systems should be classified as fixed assets and that the classification of military weapons systems as fixed assets should be based on the same criteria as for other fixed assets; that is, produced assets that are themselves used repeatedly, or continuously, in processes of production for more than one year (SNA, para A3.55).

1.8 Enhanced Coverage of Economic Activities as per PSIC

In 2015-16 rebasing of national accounts efforts have been made to compile and disseminate the estimates of GDP as per United Nations' International Standard Industrial Classification of all Activities" (ISIC), revision 4, adopted through "Pakistan Standard Industrial Classification" (PSIC 2010). Section E of the PSIC-2010 relating to water supply; sewerage, waste management and remediation activities, covered in Divisions 36-39, has been added to the GDP estimates. Although the contribution stemming from the public sector continues to be included in the general government services due to data limitations, the contribution of the private sector has been estimated separately. Particularly, the service industries have witnessed major changes. For example, accommodation and food services, commonly known as hotels and restaurants, which were used to be presented as a sub-component of the wholesale and retail activities, has been estimated separately under Section I, Divisions 55-56. Similarly, information and communication activities have been re-grouped as per Section J, Divisions 58-63. Previously, the information part i.e. the computer-related activities were used to be covered under other private services. The financial and insurance activities and real estate activities (Housing Services) have been covered on the pattern of 2005-06 rebasing. Public administration and defence; compulsory social security, Section O, Division 84, has been estimated separately excluding the education and human health and social work activities, which have been covered under Section P, Division 85 and Section Q, Divisions 86-88 respectively along with contributions from the private sectors and NGOs. Similarly, Professional, scientific and technical activities, Section M, Division 69-75, administrative and support service activities, Section N, Divisions 77-82, arts, entertainment and recreation activities, Section R, Division 90-93, other service activities, Section S, Division 94-96 and activities of households as employers, Section T, Division 97, have been re-grouped separately and are presented under Other Private Services. This disaggregation is expected to provide more insights for policymakers, researchers and academicians.

1.9 Extension of the System

The national accounts aggregates on 2015-16 base year will be extrapolated backwards to provide a longer time-series as the too short time-series hamper economic analysis and are not sufficient to apply modern techniques of time-series analysis and smoothing adjustments.

The current system of Pakistan's National Accounts is mainly restricted to the compilation of annual regular accounts. With the finalization of rebasing 2015-16, the annual time-series is being planned to be quartered to launch Quarterly National Accounts (QNAs). Similarly, Supply and Use Tables (SUTs), for the base year 2015-16 are also on the cards along with the compilation of Institutional Sector Accounts.

1.10 Gross Domestic Product Approaches

In international analyses and comparisons, the Gross Domestic Product (GDP) at market prices is the most important and most common macroeconomic indicator. As a measure of aggregated production, it is the sum of the gross value added of all resident producers plus any taxes on products not included in the value of their output minus any subsidies on

products included in the value of their output. For short: GDP at market prices represents the final results of the production activity of resident producers' units.

GDP at market prices is also equal to the market value of all final uses of goods and services during a year (which includes exports), less the value of imports. Finally, GDP at market prices is also equal to the sum of primary incomes (payables out of the value-added created by production) distributed by resident producers.

GDP may be measured in national (e.g. rupee) or foreign currency (e.g. US\$) or in Purchasing Power Parities (PPP). It may be measured in prices of the reference year ("current prices") or in prices of a foregone year ("constant prices").

In principle, GDP may be derived in three ways or a combination of them:

1.10.1 Production Approach

It measures the contribution to output made by each producer. It is obtained by deducting from the total value of its output the value of goods and services it has purchased from other producers and used up in producing its own output. Total value added by all producers, adjusting taxes and subsidies equals GDP.

Gross Value Added at basic prices = Output at basic prices - Intermediate consumption at purchasers' prices

GDP = Output – Intermediate consumption + Taxes on products – Subsidies on products

or

GDP = Gross value added + Taxes on products – Subsidies on products

1.10.2 Income Approach

In this approach, consideration is given to the costs incurred by the producer within his own operation, the income paid out to employees, taxes (less subsidies) on production, consumption of fixed capital, and the operating surplus. All these add up to GDP at market prices.

GDP = Compensation of employees + Consumption of fixed capital + Gross operating surplus / Mixed-income + Taxes less subsidies on production and imports

1.10.3 Expenditure Approach

This approach looks at the final uses of the output for private consumption, government consumption, capital formation and net of imports & exports.

GDP = Final consumption (Households, NPISH & Government) + Gross capital formation + Exports – Imports

GDP in Pakistan is estimated as per guidelines provided by the SNA. For GDP estimation by activities (current & constant prices), the production approach is applied. For some activities, especially for non-market activities, the output is measured as the sum of primary incomes (GVA) and intermediate consumption. This is commonly also subsumed under the “income approach” though for parts of GDP, only. The expenditure approach is rudimentary as only some of the summands (collective consumption, capital formation and export minus imports) are calculated independently while the biggest summand (private consumption) is calculated as residual vis-a-vis the GDP measured through the production approach.

It should be noted that practically the compilation of GVA (output minus intermediate consumption) uses a more detailed economic classification i.e. PSIC. GDP is computed by a combination of production, income and expenditure methods. The production method is applied to compute value-added in most of the industries e.g. agriculture, mining and quarrying, manufacturing, electricity & gas distribution, transport, storage & communication, wholesale & retail trade, finance & insurance, and ownership of dwellings whereas the income method is used to work out income accruing from general government and some components of services e.g. membership organization.

The coverage, nature and sources of data used and the methodology followed in the compilation of these estimates are explained under respective industries.

1.11 Presentation of the Estimates

There are various ways to sub-classify the economy. One of these is the structure of six institutional sectors of the SNA i.e. financial corporations, non-financial corporations, households, non-profit institutions serving households (NPISH), General Government and the Rest of the world. Others are formal versus informal economy or producing activities versus services and the like. In Pakistan, it has been common so far to divide the economy by using the term “sector”. However, SNA designates all economic activities as industries. The grouping of the industries for the presentation of estimates in 2015-16 rebasing is given below:

Agriculture, Forestry and Fishing (PSIC A 01-03)

Crops

- Important Crops

- Other Crops

- Cotton Ginning

Livestock

Forestry

Fishing

Producing Industries

- Mining and quarrying

Manufacturing

- Large-Scale Manufacturing

- Small-Scale Manufacturing

- Slaughtering

- Electricity, Gas and Water supply

Construction

Services

- Wholesale and retail trade (Inc. repair of motor vehicles and motorcycles)

- Transportation and storage

- Accommodation and food service activities

- Information and communication

- Financial and insurance activities

- Real estate activities (Housing Services)

- Public administration and social security

- Education

- Human health and social work activities

- Other Private Services

1.12 Expenditure on GDP

Final consumption expenditure of household and NPISH, collective consumption expenditure of the general government, gross fixed capital formation, changes in inventories and acquisition and disposal of valuables, exports and imports are the components of this approach. The final consumption expenditure of NPISH has been estimated for the first time. General government consumption expenditures are well documented and available from the budget documents. Gross fixed capital formation is calculated in full detail. The estimation is made according to the public and private sectors. The other dimension of estimation is by industry and by type of assets. The acquisition and disposal of valuables by households has been estimated through HIES. Export and import data of merchandise and services are available from the balance of payment statistics of SBP. Ratios are applied for the estimation of changes in inventories. Final household consumption expenditures are calculated as residual. Detailed estimation procedures are the subject of chapter 5.

Theoretical background, as well as the working of PBS, has been documented here. It serves as a ready reference and future guideline. Final consumption expenditures of government and GFCF have been covered in detail.

1.13 Gross National Income (GNI)

As mentioned above, GDP can be calculated and understood as the sum of all primary incomes stemming from domestic production. The taxes (*less subsidies*) on production then are interpreted as primary income distributed to the government. If GDP is enhanced by the balance of primary income from the rest of the world then the result is GNI. The primary

income from the rest of the world includes compensation of employees, cross-border property income i.e. interest, distributed income of corporations including rents, reinvested earnings on foreign direct investment, investment income attributable to insurance policyholders, income from investment certificates, taxes on production and imports and subsidies.

The rest of the document is organized as follows. Chapter 2 sheds light on the composition, sources, and methods of GVA compilation of agriculture, forestry and fishing whereas Chapter 3 documents the details relating to producing industries e.g. mining, manufacturing, water supply, electricity, gas and construction. Services industries are the subject of the 4th chapter. Chapter 5 discusses the expenditure on GDP.

**Table 1.1: Comparison of Gross Domestic Product in Base Years 2015-16 and 2005-06
(Rs. Million)**

| S. No | Sector/Industry | Base 2015-16 | Base 2005-06 | | % Change | | % Share | |
|------------|--|-------------------|-------------------|------------------|-------------|--------------|-------------|-------------|
| | | At 2015-16 Prices | Year 2005-06 | | Col (3/4) | Col (3/5) | 2015-16 | 2005-06 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| A | Agriculture, Forestry and Fishing (1 to 4) | 7,306,957 | 6,749,966 | 1,775,346 | 8.3 | 311.6 | 24 | 23 |
| | 1. Crops (i+ii+iii) | 2,497,153 | 2,620,390 | 766,274 | -4.7 | 225.9 | 8.2 | 9.9 |
| | i) Important Crops | 1,462,455 | 1,718,029 | 449,025 | -14.9 | 225.7 | 4.8 | 5.8 |
| | ii) Other Crops | 912,388 | 739,842 | 256,777 | 23.3 | 255.3 | 3 | 3.3 |
| | iii) Cotton Ginning | 122,310 | 162,519 | 60,472 | -24.7 | 102.3 | 0.4 | 0.8 |
| | 2. Livestock | 4,531,885 | 3,846,646 | 930,842 | 17.8 | 386.9 | 14.9 | 12.1 |
| | 3. Forestry | 161,737 | 170,706 | 35,067 | -5.3 | 361.2 | 0.5 | 0.5 |
| | 4. Fishing | 116,182 | 112,223 | 43,163 | 3.5 | 169.2 | 0.4 | 0.6 |
| B | Industrial Activities (1 to 4) | 5,939,635 | 5,308,368 | 1,616,157 | 11.9 | 267.5 | 19.5 | 20.9 |
| | 1. Mining and Quarrying | 691,258 | 652,814 | 254,345 | 5.9 | 171.8 | 2.3 | 3.3 |
| | 2. Manufacturing (i+ii+iii) | 3,668,778 | 3,512,556 | 1,065,323 | 4.4 | 244.4 | 12 | 13.8 |
| | i) Large Scale | 2,841,709 | 2,801,169 | 903,323 | 1.4 | 214.6 | 9.3 | 11.7 |
| | ii) Small Scale | 494,949 | 406,648 | 89,116 | 21.7 | 455.4 | 1.6 | 1.2 |
| | iii) Slaughtering | 332,121 | 304,739 | 72,884 | 9 | 355.7 | 1.1 | 0.9 |
| | 3. Electricity, Gas and Water supply | 681,030 | 541,909 | 110,109 | 25.7 | 518.5 | 2.2 | 1.4 |
| | 4. Construction | 898,569 | 601,089 | 186,380 | 49.5 | 382.1 | 2.9 | 2.4 |
| A+B | Commodity Producing Activities | 13,246,592 | 12,058,334 | 3,391,503 | 9.9 | 290.6 | 43.4 | 44 |
| C | Services (1 to 10) | 17,261,613 | 15,343,961 | 4,324,274 | 12.5 | 299.2 | 56.6 | 56 |
| | 1. Wholesale & Retail trade | 5,380,330 | 4,613,457 | 1,393,516 | 16.6 | 286.1 | 17.6 | 18.1 |
| | 2. Transportation & Storage | 3,448,607 | 3,208,729 | 830,209 | 7.5 | 315.4 | 11.3 | 10.8 |
| | 3. Accommodation and Food Services Activities (Hotels & Restaurants) | 425,666 | 491,396 | 129,551 | -13.4 | 228.6 | 1.4 | 1.7 |
| | 4. Information and Communication | 610,952 | 457,383 | 185,088 | 33.6 | 230.1 | 2 | 2.4 |
| | 5. Financial and Insurance Activities | 530,185 | 544,301 | 282,919 | -2.6 | 87.4 | 1.7 | 3.7 |
| | 6. Real Estate Activities (OD) | 1,735,453 | 1,506,385 | 504,743 | 15.2 | 243.8 | 5.7 | 6.5 |
| | 7. Public Administration and Social Security (General Government) | 1,458,465 | 1,420,962 | 305,658 | 2.6 | 377.2 | 4.8 | 4 |
| | 8. Education | 954,556 | 599,020 | 130,395 | 59.4 | 632 | 3.1 | 1.7 |
| | 9. Human Health and Social Work Activities | 419,645 | 373,880 | 83,696 | 12.2 | 401.4 | 1.4 | 1.1 |
| | 10. Other Private Services | 2,297,754 | 2,128,448 | 478,499 | 8 | 380.2 | 7.5 | 6.2 |
| D | GDP {Total of GVA (A+B+C)} | 30,508,205 | 27,402,295 | 7,715,777 | 11.3 | 295.4 | 100 | 100 |
| | Taxes | 2,442,880 | 1,901,743 | 573,718 | | | | |
| | Subsidies | 226,036 | 228,405 | 73,335 | | | | |
| | GDP at mp (GVA+T-S) | 32,725,049 | 29,075,633 | 8,216,160 | | | | |
| | Net Primary Income (NPI) | 1,492,194 | 1,782,860 | 149,901 | | | | |
| | Gross National Income | 34,217,243 | 30,858,493 | 8,366,061 | | | | |
| | Population (million no.) | 200.19 | 193.56 | 155.37 | | | | |
| | Per Capita Income | 170,924 | 159,426 | 53,846 | | | | |
| | Exchange Rate (1US \$ = Rs) | 104.24 | 104.24 | 59.86 | | | | |
| | Per capita GNI (MP) (US \$) | 1,640 | 1,529 | 900 | | | | |

Note: Industry-wise figures of gross value added reported above may differ from those given in text described under respective industries i.e. chapters 2, 3 and 4, due to FISIM adjustment.

Table 1.2: Comparison of Gross Domestic Product and Sectoral Shares, Base Year 2015-16 and 2005-06 (Rs. Million)

| S. No | Sector/Industry | 2005-06 | | 2015-16 | |
|------------|--|------------------|-------------|-------------------|-------------|
| | | Value | % Share | Value | % Share |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A | Agricultural Sector (1 to 4) | 1,775,346 | 23 | 7,306,957 | 24 |
| | 1. Crops (i+ii+iii) | 766,274 | 9.9 | 2,497,153 | 8.2 |
| | i) Important Crops | 449,025 | 5.8 | 1,462,455 | 4.8 |
| | ii) Other Crops | 256,777 | 3.3 | 912,388 | 3 |
| | iii) Cotton Ginning | 60,472 | 0.8 | 122,310 | 0.4 |
| | 2. Livestock | 930,842 | 12.1 | 4,531,885 | 14.9 |
| | 3. Forestry | 35,067 | 0.5 | 161,737 | 0.5 |
| | 4. Fishing | 43,163 | 0.6 | 116,182 | 0.4 |
| B | Industrial Sector (1 to 4) | 1,616,157 | 20.9 | 5,939,635 | 19.5 |
| | 1. Mining and Quarrying | 254,345 | 3.3 | 691,258 | 2.3 |
| | 2. Manufacturing (i+ii+iii) | 1,065,323 | 13.8 | 3,668,778 | 12 |
| | i) Large Scale | 903,323 | 11.7 | 2,841,709 | 9.3 |
| | ii) Small Scale | 89,116 | 1.2 | 494,949 | 1.6 |
| | iii) Slaughtering | 72,884 | 0.9 | 332,121 | 1.1 |
| | 3 Electricity, gas, and water supply | 110,109 | 1.4 | 681,030 | 2.2 |
| | 4. Construction | 186,380 | 2.4 | 898,569 | 2.9 |
| A+B | Commodity Producing Sectors (A+B) | 3,391,503 | 44 | 13,246,592 | 43.4 |
| C | Services Sectors (1 to 6) | 4,324,274 | 56 | 17,261,613 | 56.6 |
| | 1. Wholesale & Retail trade | 1,393,516 | 18.1 | 5,380,330 | 17.6 |
| | 2. Transportation & Storage | 830,209 | 10.8 | 3,448,607 | 11.3 |
| | 3. Accommodation and Food Services Activities (Hotels & Restaurants) | 129,551 | 1.7 | 425,666 | 1.4 |
| | 4. Information and Communication | 185,088 | 2.4 | 610,952 | 2 |
| | 5. Financial and Insurance Activities | 282,919 | 3.7 | 530,185 | 1.7 |
| | 6. Real Estate Activities (OD) | 504,743 | 6.5 | 1,735,453 | 5.7 |
| | 7. Public Administration and Social Security (General Government) | 305,658 | 4 | 1,458,465 | 4.8 |
| | 8. Education | 130,395 | 1.7 | 954,556 | 3.1 |
| | 9. Human Health and Social Work Activities | 83,696 | 1.1 | 419,645 | 1.4 |
| | 10. Other Private Services | 478,499 | 6.2 | 2,297,754 | 7.5 |
| D | GDP {Total of GVA (A+B+C)} | 7,715,777 | 100 | 30,508,205 | 100 |

Table 1.3: Comparison of Gross Domestic Product and within Sectoral Shares Base Year 2015-16 and 2005-06 (Rs. Million)

| | Sector/Industry | Base 2005-06 | | Base 2015-16 | |
|------------|--|------------------|--------------|-------------------|--------------|
| | | Estimate | % Share | Estimate | % Share |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A | Agricultural Sector (1 to 4) | 1,775,346 | 100.0 | 7,306,957 | 100.0 |
| | 1. Crops (i+ii+iii) | 766,274 | 43.16 | 2,497,153 | 34.18 |
| | i) Important Crops | 449,025 | 25.29 | 1,462,455 | 20.02 |
| | ii) Other Crops | 256,777 | 14.46 | 912,388 | 12.49 |
| | iii) Cotton Ginning | 60,472 | 3.41 | 122,310 | 1.67 |
| | 2. Livestock | 930,842 | 52.43 | 4,531,885 | 62.02 |
| | 3. Forestry | 35,067 | 1.98 | 161,737 | 2.21 |
| | 4. Fishing | 43,163 | 2.43 | 116,182 | 1.59 |
| B | Industrial Sector (1 to 4) | 1,616,157 | 100.0 | 5,939,635 | 100.0 |
| | 1. Mining and Quarrying | 254,345 | 15.74 | 691,258 | 11.64 |
| | 2. Manufacturing (i+ii+iii) | 1,065,323 | 65.92 | 3,668,778 | 61.77 |
| | i) Large Scale | 903,323 | 55.89 | 2,841,709 | 47.84 |
| | ii) Small Scale | 89,116 | 5.51 | 494,949 | 8.33 |
| | iii) Slaughtering | 72,884 | 4.51 | 332,121 | 5.59 |
| | 3 Electricity, gas, and water supply | 110,109 | 6.81 | 681,030 | 11.47 |
| | 4. Construction | 186,380 | 11.53 | 898,569 | 15.13 |
| A+B | Commodity Producing Sectors | 3,391,503 | | 13,246,592 | |
| C | Services Sectors (1 to 6) | 4,324,274 | 100.0 | 17,261,613 | 100.0 |
| | 1. Wholesale & Retail trade | 1,393,516 | 32.23 | 5,380,330 | 31.17 |
| | 2. Transportation & Storage | 830,209 | 19.20 | 3,448,607 | 19.98 |
| | 3. Accommodation and Food Services Activities (Hotels & Restaurants) | 129,551 | 3.00 | 425,666 | 2.47 |
| | 4. Information and Communication | 185,088 | 4.28 | 610,952 | 3.54 |
| | 5. Financial and Insurance Activities | 282,919 | 6.54 | 530,185 | 3.07 |
| | 6. Real Estate Activities (OD) | 504,743 | 11.67 | 1,735,453 | 10.05 |
| | 7. Public Administration and Social Security (General Government) | 305,658 | 7.07 | 1,458,465 | 8.45 |
| | 8. Education | 130,395 | 3.02 | 954,556 | 5.53 |
| | 9. Human Health and Social Work Activities | 83,696 | 1.94 | 419,645 | 2.43 |
| | 10. Other Private Services | 478,499 | 11.07 | 2,297,754 | 13.31 |
| D | GDP {Total of GVA (A+B+C)} | 7,715,777 | | 30,508,205 | |

Table 1.4: GFCF comparison, Private, Public and General Government Sectors Base Year 2015-16 & 2005-06 (Rs. Million)

| Sr. No. | Industries/ Sectors | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | Change (%) | |
|-----------|--|-------------------|------------------------------|----------------------|-----------------|-----------------|
| | | At 2015-16 prices | | At 2005-06 prices | Col. (3 / 4) | Col. (3 / 5) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Total GFCF (A+B+C) | 4,657,149 | 4,095,630 | 1,456,889 | 13.71 | 219.66 |
| A. | Private Sector | 3,537,220 | 2,995,889 | 1,109,205 | 18.07 | 218.9 |
| B. | Public Sector | 252,053 | 238,143 | 149,606 | 5.84 | 68.48 |
| C. | General Government | 867,876 | 861,598 | 198,078 | 0.73 | 338.15 |
| | Private & Public Sector (A+B) | 3,789,273 | 3,234,032 | 1,258,811 | 17.17 | 201.02 |
| 1 | Agriculture, forestry and fishing | 904,250 | 850,088 | 254,796 | 6.37 | 254.89 |
| 2 | Mining and quarrying | 122,166 | 105,418 | 28,962 | 15.89 | 321.81 |
| 3 | Manufacturing | 723,845 | 485,495 | 287,117 | 49.09 | 152.11 |
| | i. Large Scale | 633,494 | 456,222 | 281,328 | 38.86 | 125.18 |
| | ii. Small Scale (including Slaughtering) | 90,351 | 29,273 | 5,789 | 208.65 | 1,460.77 |
| 4 | Electricity, gas, and water supply | 201,651 | 178,264 | 54,765 | 13.12 | 268.21 |
| 5 | Construction | 64,882 | 49,009 | 20,972 | 32.39 | 209.37 |
| 6 | Wholesale and retail trade | 202,799 | 63,419 | 18,089 | 219.78 | 1,021.12 |
| 7 | Accommodation and food service activities (Hotels and restaurants) | 74,922 | 14,043 | 4,005 | 433.52 | 1,770.71 |
| 8 | Transportation and storage | 416,691 | 381,876 | 162,452 | 9.12 | 156.5 |
| 9 | Information and communication | 158,036 | 142,322 | 138,387 | 11.04 | 14.2 |
| 10 | Financial and insurance activities | 56,520 | 57,775 | 22,238 | -2.17 | 154.16 |
| 11 | Real estate activities (OD) | 523,819 | 577,278 | 190,127 | -9.26 | 175.51 |
| 12 | Public administration and social security | 750,084 | 750,084 | 174,829 | - | 329.04 |
| 13 | Education | 179,991 | 119,795 | 26,824 | 50.25 | 571.01 |
| 14 | Human health and social work activities | 92,531 | 115,548 | 27,734 | -19.92 | 233.64 |
| 15 | Other Private Services | 184,962 | 205,216 | 45,592 | -9.87 | 305.69 |

Table 1.5: GFCF comparison Private Sector Base Year 2015-16 & 2005-06 (Rs. Million)

| Sr. No. | Industries/ Sectors | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | Change (%) | |
|-----------|--|-------------------|------------------------------|-------------------|-----------------|-----------------|
| | | At 2015-16 prices | | At 2005-06 prices | Col. (3 / 4) | Col. (3 / 5) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| A. | Private Sector | 3,537,220 | 2,995,889 | 1,109,205 | 18.07 | 218.9 |
| 1 | Agriculture, forestry and fishing | 904,045 | 849,943 | 254,746 | 6.37 | 254.88 |
| | Crops | 176,622 | 172,352 | 84,348 | 2.48 | 109.4 |
| | Cotton Ginning | 1,042 | | | | |
| | Livestock | 689,165 | 673,954 | 168,657 | 2.26 | 308.62 |
| | Forestry | 1,392 | 687 | 252 | 102.57 | 452.38 |
| | Fishing | 35,824 | 2,950 | 1,489 | 1,114.52 | 2,305.91 |
| 2 | Mining and quarrying | 94,113 | 77,365 | 22,829 | 21.65 | 312.25 |
| 3 | Manufacturing | 722,512 | 483,781 | 283,508 | 49.35 | 154.85 |
| | i. Large Scale | 632,161 | 454,508 | 277,719 | 39.09 | 127.63 |
| | ii. Small Scale (including Slaughtering) | 90,351 | 29,273 | 5,789 | 208.65 | 1,460.77 |
| 4 | Electricity, gas, and water supply | 46,543 | 23,156 | 3,307 | 101 | 1,307.49 |
| 5 | Construction | 59,704 | 43,831 | 14,597 | 36.21 | 309.02 |
| 6 | Wholesale and retail trade | 202,799 | 63,419 | 18,089 | 219.78 | 1,021.12 |
| 7 | Accommodation and food service activities (Hotels and restaurants) | 74,922 | 14,043 | 4,005 | 433.52 | 1,770.71 |
| 8 | Transportation and storage | 389,786 | 354,972 | 110,281 | 9.81 | 253.45 |
| 9 | Information and communication | 129,729 | 128,245 | 110,456 | 1.16 | 17.45 |
| 10 | Financial and insurance activities | 49,556 | 50,811 | 20,360 | -2.47 | 143.4 |
| 11 | Real estate activities (OD) | 523,819 | 577,278 | 190,127 | -9.26 | 175.51 |
| 12 | Education | 99,588 | 39,542 | 10,144 | 151.86 | 881.77 |
| 13 | Human health and social work activities | 55,142 | 84,287 | 21,165 | -34.58 | 160.53 |
| 14 | Other Private Services | 184,962 | 205,216 | 45,592 | -9.87 | 305.69 |

Table 1.6: GFCF comparison Public and General Government Sectors Base Year 2015-16 & 2005-06 (Rs. Million)

| Sr. No. | Industries/ Sectors | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | Change (%) | |
|-----------|---|-------------------|------------------------------|-------------------|-----------------|-----------------|
| | | At 2015-16 prices | | At 2005-06 prices | Col. (3 / 4) | Col. (3 / 5) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Public & General Govt. (B+C) | 1,119,929 | 1,099,741 | 347,684 | 1.84 | 222.11 |
| B. | Public Sector (Autonomous & Semi-Autonomous Bodies) | 252,053 | 238,143 | 149,606 | 5.84 | 68.48 |
| 1 | Agriculture, forestry and fishing | 205 | 145 | 50 | 41.38 | 310 |
| 2 | Mining and quarrying | 28,053 | 28,053 | 6,133 | - | 357.41 |
| 3 | Manufacturing (Large scale) | 1,333 | 1,714 | 3,609 | -22.23 | -63.06 |
| 4 | Electricity, gas, and water supply | 155,108 | 155,108 | 51,458 | - | 201.43 |
| 5 | Construction | 5,178 | 5,178 | 6,375 | - | -18.78 |
| 6 | Transportation and storage | 26,905 | 26,904 | 52,171 | - | -48.43 |
| | a. Railways | 5,825 | 5,825 | 4,754 | - | 22.53 |
| | b. Post Offices & PTCL | - | 13,644 | 15,232 | -100 | -100 |
| | c. Others | 21,080 | 7,435 | 32,185 | 183.52 | -34.5 |
| 7 | Information and communication | 28,307 | 14,077 | 27,932 | 101.09 | 1.34 |
| 8 | Financial and insurance activities | 6,964 | 6,964 | 1,878 | - | 270.82 |
| C. | General Government | 867,876 | 861,598 | 198,078 | 0.73 | 338.15 |
| | i. Federal | 235,406 | 229,128 | 37,307 | 2.74 | 531 |
| | ii. Provincial | 527,461 | 527,461 | 122,774 | - | 329.62 |
| | iii. District Governments | 105,009 | 105,009 | 37,997 | - | 176.36 |
| | General Government (By industries) | 867,876 | 861,598 | 198,078 | 0.73 | 338.15 |
| | Public administration and defence; compulsory social security | 750,084 | 750,084 | 174,829 | - | 329.04 |
| | Education | 80,403 | 80,253 | 16,680 | 0.19 | 382.03 |
| | Human health and social work activities | 37,389 | 31,261 | 6,569 | 19.6 | 469.17 |

**Table 1.7: Comparison of Expenditure on GDP base 2015-16 and 2005-06 for the year
2015-16 and 2005-06 (Rs. Million)**

| Description | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | Change (%) | | Diff. Col. (2-3) |
|--|-------------------|------------------------------|----------------------|------------|------------|---------------------|
| | At 2015-16 prices | | At 2005-06 prices | Col. (2/3) | Col. (2/4) | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Household final consumption expenditure | 26,106,974 | 23,266,454 | 6,379,481 | 12.21 | 309.23 | 2,840,520 |
| NPISH final consumption expenditure | 296,722 | | | | | 296,722 |
| General government final consumption expenditure | 3,471,786 | 3,287,930 | 857,461 | 5.59 | 304.89 | 183,856 |
| Gross fixed capital formation | 4,657,149 | 4,095,630 | 1,456,889 | 13.71 | 219.66 | 561,519 |
| Changes in inventories | 523,601 | 465,210 | 131,459 | 12.55 | 298.3 | 58,391 |
| Valuables | 34,231 | | | | | 34,231 |
| Exports of goods and services | 2,859,095 | 2,659,178 | 1,161,269 | 7.52 | 146.2 | 199,917 |
| Less imports of goods and services | 5,224,509 | 4,698,769 | 1,770,399 | 11.19 | 195.1 | 525,740 |
| Expenditure on gross domestic product (at MP) | 32,725,049 | 29,075,633 | 8,216,160 | 12.55 | 298.3 | 3,649,416 |

**Table 1.8: Comparison of Expenditure on GDP base 2015-16 and 2005-06 for the year
2015-16 and 2005-06 (Rs. Million)**

| Description | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | % share | | |
|--|-------------------|---------------------------|----------------------|----------------------|------------------------|---------|
| | At 2015-16 prices | | At 2005-06 prices | 2015-16 (15-16 base) | 2015-16 (2005-06 base) | 2005-06 |
| 1 | 2 | 3 | 4 | 7 | 8 | 9 |
| Household final consumption expenditure | 26,106,974 | 23,266,454 | 6,379,481 | 79.78 | 80.02 | 77.65 |
| NPISH final consumption expenditure | 296,722 | | | 0.91 | - | - |
| General government final consumption expenditure | 3,471,786 | 3,287,930 | 857,461 | 10.61 | 11.31 | 10.44 |
| Gross fixed capital formation | 4,657,149 | 4,095,630 | 1,456,889 | 14.23 | 14.09 | 17.73 |
| Changes in inventories | 523,601 | 465,210 | 131,459 | 1.6 | 1.6 | 1.6 |
| Valuables | 34,231 | | | 0.1 | - | - |
| Exports of goods and services | 2,859,095 | 2,659,178 | 1,161,269 | 8.74 | 9.15 | 14.13 |
| Less imports of goods and services | 5,224,509 | 4,698,769 | 1,770,399 | 15.96 | 16.16 | 21.55 |
| Expenditure on gross domestic product (at MP) | 32,725,049 | 29,075,633 | 8,216,160 | 100 | 100 | 100 |

CHAPTER 2

Agriculture, Forestry and Fishing



AGRICULTURE, FORESTRY AND FISHING**2.1 Introduction**

Allah has bestowed Pakistan with four seasons: a cool, dry winter from December through February; a hot, dry spring from March through May; the summer rainy season, or southwest monsoon period, from June through September; and the retreating monsoon period of October and November. The onset and duration of these seasons vary somewhat according to location. Pakistan's agriculture sector comprises Crops, Livestock, Forestry and Fishing. Crops are further classified into Important Crops and Other Crops. Important Crops include Wheat, Rice, Cotton, Sugarcane and Maize. While, the "other crops" comprise of various pulses, vegetables and fruits. The agriculture industry in Pakistan not only plays a vital role in the development of the economy but also has a significant contribution to the country's Gross Domestic Product. It is also the main source of employment engaged directly or indirectly with agriculture. At the same time, it is the key source of supply of raw material to the industrial sector.

2.1.1 Conceptual Clarification Agriculture

In Pakistan, crops and livestock exclusively fall under the private households of the farmers. The sector is informal and the activities of crop production, as well as livestock production, are carried out simultaneously. Therefore, the establishment approach is not applied to crops and livestock. It is a great advantage that in Pakistan different kinds of inputs can easily and fully be assigned to either crop production or livestock as most of the farms have both kinds of activities. There are almost no inputs that may be considered as overhead costs.

2.2 Crops

To assess the latest changes in Agriculture during the base year 2005-06 to the base year 2015-16, the harvest prices (basic prices) are applied for the valuation of output and updating the ratios of inputs to outputs. The reason for updating the prices in the base year is that harvest prices are not available on annual basis. However, crop-wise production on annual basis is available from authentic, reliable provincial Crop Reporting Services (CRS). Secondly, the information on inputs of crops is also not available on annual basis. Hence, input-output ratios are updated in the base year and used in the subsequent years. For this purpose, a study on "Agricultural Input Output 2016-17" was conducted (detail in following paras). Production of plant nurseries has been estimated from the field survey conducted in 2016-17. Cotton ginning has also been estimated through Census conducted during 2016-17. Crops have been categorized into three groups namely, important crops (wheat, cotton, rice, sugarcane and maize), other crops (remaining crops such as fruits, vegetables, oilseeds etc. and Nurseries) and cotton ginning (including cotton ginning & own-account capital formation).

2.2.1 Coverage

The groups 011, 012 and 013 of Division 01 "Crop and animal production, hunting and related activities" mentioned in Pakistan Standard Industrial Classification 2010 have been covered in this sub-sector. Nurseries are covered under group 013 and cotton ginning under group 016 respectively. PBS has prepared PSIC 2010, rev. 4 to implement the internationally agreed latest version of the International Standard Industrial Classification (ISIC) which is now ISIC rev.4. According to the PSIC 2010, crop production is covered under codes 011, 012, 013 and partly 016.

2.2.2 Data

In general, the data situation of crop production in Pakistan is very good. Data on the volume of output of crops (except flowers) are provided by the Provincial Crop Reporting System. Data on the volume of inputs such as water, fertilizer and seeds are widely available from different sources. The data on the increase in prices are available from Price Statistics. The missing links are the prices of aforementioned outputs and inputs and prices as well as volumes of the remaining inputs such as lubricants, energy and the likes as well as output and input of flower production. The study and underlying survey have bridged the missing links. The overall idea is to have comprehensive data for the base year 2015-16 which allowed estimating overall production and value-added (output minus inputs) for subsequent years till another survey or study to update the underlying ratios and assumptions for the next rebasing / revision.

2.2.3 Agriculture Input-Output Study

To rebase Crops and Livestock, a Study “Agriculture Input-output 2016-17” has been conducted. Based on this study, prices of Crops, Livestock, Inputs of Crops and other Input-Output ratios have been updated.

From each district, five (05) villages were selected and from each village, six (06) farmers were selected as primary sampling units to get the information regarding Crops and Livestock by providing due representation for large, medium and small farmers. A questionnaire was developed by the Agriculture and Trade Section of the National Accounts Wing and the data was collected by the PBS’ Regional / Field Offices. Overall around 3,600 questionnaires were shared with the respondents. Data from 2,970 farmers were collected during the study. For all crops and each age category of animals, separate prices have been collected. Sales and purchases of animals for breeding and slaughtering were asked separately from a price perspective as both categories have different price mechanisms. Prices of livestock products have been collected for 2015-16 and 2016-17. To check the consistency of study results, data on monthly average wholesale and retail prices for the years 2015-16, regarding agricultural commodities, for important markets of Pakistan, were collected from Crop Reporting Services (CRS), Agriculture Departments, Agriculture Marketing Information Services (AMIS) Punjab, Agriculture Policy Institute (API) and Price Statistics Section of PBS. The prices of crops with insignificant production and for which prices were not reported in this survey have been imputed keeping in view the inflation of similar crops during the period 2005-06 to 2015-16.

2.2.4 Area and Production of Crops 2015-16

The crop area is being provided by Provincial Crop Reporting Services. They provide three estimates for important crops such as crop area (first estimate), crop area and provisional production (second estimate) and final estimate based on final area and production. The province-wise area and production for all crops, pulses, vegetables, fruits, condiments, oilseeds and other crops are available. However, this system does not cover the production of flowers. It has been adopted from the study conducted during 2008. The area and production of important crops are given below in Table 2.1. Detail is annexed at Annexures I & II.

Table 2.1: Area and Production of Important Crops 2015-16

| Important crops | Area (000 hectares) | | | Production (000 tonnes) | | |
|-----------------|---------------------|---------|----------|-------------------------|---------|----------|
| | 2005-06 | 2015-16 | % change | 2005-06 | 2015-16 | % change |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Wheat | 8,448 | 9,224 | 9.2 | 21,277 | 25,633 | 20.5 |
| Maize | 1,042 | 1,191 | 14.3 | 3,110 | 5,271 | 69.5 |
| Rice | 2,621 | 2,739 | 4.5 | 5,547 | 6,801 | 22.6 |
| Sugarcane | 907 | 1,131 | 24.7 | 44,666 | 65,482 | 46.6 |
| Cotton | 3,103 | 2,902 | -6.5 | 6,643 | 5,061 | -23.8 |

2.2.5 Production of Flowers

The volume of production of flowers and their value is not available. Pakistan Bureau of Statistics has estimated the output by utilizing the principle that supply matches use. Supply, in principle, is domestic production plus imports and use is consumption plus exports.

$$Production + Imports = Consumption + Exports$$

This approach decomposes the consumption of flowers into *Industrial Consumption* and *Consumption of Private Households*. Two separate surveys were carried out to cover both components in 2008. These surveys served as the basis for the 2015-16 valuation. In this regard, the *Net Exports* have been taken from the Trade Section of PBS while Household Use is derived from Household Integrated Income and Consumption Survey (HIICS) (2015-16) data. Inputs from horticultural experts were also sought. For an estimate, three groups have been formed. Export / Import of flowers, Industrial Consumption and Household Consumption were estimated separately. Summary results are given below in Table 2.2.

Table 2.2: Expenditure on flowers 2015-16 (Rs in Million)

| Kind of expenditure | 2005-06 | 2015-16 | % change |
|---------------------|-----------------|------------------|--------------|
| 1 | 2 | 3 | 4 |
| Net export | 3.4 | 31.9 | 838.2 |
| Industrial use | 133.6 | 738.7 | 452.9 |
| Household use | 1,883.30 | 9,677.30 | 413.8 |
| Total | 2,020.30 | 10,448.00 | 417.2 |

2.2.6 Output of Crops

The output of crops is the product of production and harvest prices. Harvest prices are available at the provincial level through the study results and crop-wise production is received from Provincial CRS (Details is at Annexure-III). The group-wise output value of crops for the year 2015-16 is given in table 2.3 below. By-products have been included in the crops to which these belong. The figures for the flowers have been taken from the study. Own-account capital formation, according to the SNA, is also an output. For the base year 2015-16, Rs.46, 626 million is included in the results. Details may be seen in chapter 5 which pertains to the GFCF component. The detail of output of crops is annexed at Annexure-IV.

Table 2.3: Group-wise output value of crops 2015-16 (Rs. in Million)

| Crop/Item | Punjab | Sindh | KPK | Baluchistan | Pakistan | Share (%) | |
|-----------------------------|------------------|----------------|----------------|----------------|------------------|------------|------------|
| | | | | | | 2015-16 | 2005-06 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Cereals | 1,068,978 | 203,246 | 102,222 | 58,287 | 1,432,733 | 44.3 | 42.9 |
| Leguminous (beans & pulses) | 30,012 | 2,451 | 1,905 | 4,492 | 38,860 | 1.2 | 1.9 |
| Oil seeds | 20,146 | 6,623 | 1,175 | 955 | 28,898 | 0.9 | 1.3 |
| Vegetables | 121,893 | 43,754 | 21,049 | 26,860 | 213,556 | 6.6 | 7.2 |
| Sugarcane | 227,078 | 88,449 | 30,714 | 392 | 346,633 | 10.7 | 7 |
| Tobacco | 3,676 | 30 | 12,434 | 183 | 16,323 | 0.5 | 0.4 |
| Cotton | 244,675 | 128,874 | 47 | 3,525 | 377,120 | 11.7 | 19.4 |
| Fodder | 427,786 | 31,934 | 16,997 | 12,359 | 489,076 | 15.1 | 8.6 |
| Flowers | 6,269 | 3,134 | 836 | 209 | 10,448 | 0.3 | 0.2 |
| Others | 1 | 0 | 104 | 0 | 104 | 0 | 0 |
| Fruits | 111,809 | 33,644 | 24,745 | 79,521 | 249,719 | 7.7 | 10.5 |
| Spices | 10,586 | 15,365 | 4,302 | 1,996 | 32,249 | 1 | 0.8 |
| TOTAL OUTPUT | 2,272,907 | 557,503 | 216,530 | 188,779 | 3,235,719 | 100 | 100 |
| Share (%) | 70.2 | 17.2 | 6.7 | 5.8 | 100 | | |

2.2.7 Intermediate Consumption

Intermediate consumption for crops consists of the value of seed, fertilizer, pesticides, irrigation water and ploughing & planking. Local transport charges on seed, fertilizer and pesticide have also been included in the inputs. Losses of crops during the transportation of output from fields to home or market have also been taken as intermediate consumption.

a. Valuation of Seed

The average use of seed per acre and its price varies from region to region due to soil fertility and climatic conditions. Data have been collected from farmers in selected areas of four provinces through the agriculture input-output study. The seed of perennial fruits has not been taken into account as it becomes mature for production after a few years. The rate of seed per unit (value) and quantity of seed per hectare (volume) is the indicator of the cost of seed used per hectare. The area of each crop is available from the Provincial Crop Reporting Systems. The value of the seed used has been estimated from these estimates. Detail is annexed at Annexure V & VI.

b. Valuation of off-take of Fertilizer

The data on the off-take of fertilizer and its value is collected from National Fertilizer Development Centre, Planning, Development and Special Initiative Division, Islamabad. The province-wise details of fertilizer off-take along with value are given below in Table 2.4.

Table 2.4: Province-wise Off-Take of Fertilizer during 2015-16

| Description | Punjab | Sindh | KPK | Baluchistan | Pakistan |
|--|---------|--------|--------|-------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Quantity (000' nutrients Tones) | 2,503 | 947 | 174 | 76 | 3,700 |
| Value (Million Rs.) | 229,580 | 86,861 | 15,960 | 6,971 | 339,371 |

c. Valuation of pesticides used

The data on the use of pesticides have been taken from the “Department of Plant Protection, Karachi” and the Economic Survey (2015-2016).

Table 2.5: Consumption of pesticides (Quantity = M. Tons, Value = Rs. Million)

| Value of Pesticides | | | | | Quantity in tons value Rs. in Million | |
|---------------------|------------------|--------|----------------|-------|--|--------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Year | Imports consumed | | Prod. consumed | | Total consumption | |
| | Quantity | value | Quantity | value | Quantity | value |
| 2015-16 | 22,187 | 20,385 | 124,481 | 7,318 | 146,668 | 27,703 |

d. Valuation of irrigation water

As no direct valuation is available, indirect estimates through the expenditure approach have been prepared. Three separate strata are formed for the purpose i.e., canal water, tube wells run by electricity and diesel.

i. Canal water

Different options were considered. The revenues collected by Provincial Boards of Revenues for irrigation water charges have been taken and used as the value of the water. For unit value pricing quantity received from IRSA was used.

ii. Tube well (Electrical)

The number of electrical tube wells running in the private sector has been taken from the annual publication “Agricultural Statistics of Pakistan” Ministry of food security and research. Electricity consumed by the agriculture sector has been taken from the Pakistan Energy Year Book 2017, published by the Hydrocarbon Development Institute of Pakistan. The rates of electricity for agriculture have been taken from the Economic Survey of Pakistan. (Total electricity consumed has been broken into public and private tube wells run by electricity, according to their numbers).

iii. Tube well (Diesel)

Consumption of light-speed diesel oil for agriculture has been taken from the Energy Year Book 2017 along with its price. The overall valuation of canal and tube well water for the year 2015-16 is shown in Table-2.6.

Table 2.6: Valuation of Canal and Tube Well Water 2015-16

| Description | Pakistan |
|--|---------------|
| 1 | 2 |
| 1. Canal Water (Million Acre Feet, MAF) | 89 |
| 2. Private tube well Water (MAF) | 44 |
| 3. Value of Canal Water (Million Rs.)* | 2,139 |
| 4. Value of tube well Water (Million Rs.) Electricity-driven | 81,081 |
| 5. Value of tube well Water (Million Rs.) Light diesel oil (LDO) | 1,143 |
| 6. Total value of Tube well Water (Million Rs) (4+5) | 82,224 |
| Total Value Million Rs. (3+4+5) | 84,363 |
| Unit Value of Canal Water (Rs. / AF) | 24 |
| Unit Value of Private tube well Water (Rs. / AF) | 2,233 |

*Source: Indus River System Authority (IRSA), Government of Pakistan, Islamabad.

e. Ploughing and Planking cost

The results used for ploughing and planking coefficients are based on the study. The results have been derived by multiplying the number of ploughs for each crop and the rate of ploughing/ acre for that province. To update the cost of ploughing and planking, some adjustments have been made in light of the studies conducted by the Agricultural Policy Institute (API) and Agriculture Marketing Information Service (AMIS) Punjab. The data for those crops which could not be covered in the survey have been imputed based on similar crops/ fruits/ vegetables for the base year 2015-16. Detail is annexed at Annexure VII & VIII.

f. Transport charges

The prices used for fertilizer, pesticides, and seeds do not include any cost of local transport. Thus, some transport charges have been estimated, separately. A uniform rate estimated from the Agriculture Input-Output Study has been applied on fertilizers, pesticides, and seed values to reach market prices.

g. Wastage charges

Earlier, a rate of 0.5% was applied to the gross output value of all crops. Efforts were made to compile crop-wise fresh wastage charges, however, it was not possible due to limited data availability. Therefore, the same rate has been applied in the base year 2015-16 on the advice of experts from the Agriculture Census Wing of PBS.

2.2.8 Effect of Rebasing of Crops

It is the difference between output and intermediate consumption, as outlined in the previous paras. The present official National Accounts figures of the Agriculture Sector are based on the study results and have been more accurately calculated for the base year 2015-16. Two comparisons of special interest are:

- What is the revised growth of production and value-added during the period between the two base years 2005-06 and 2015-16?
- What is the discrepancy between the extrapolated figures and the currently updated ones for the year 2015-16?

The final figures reflect an increase of 235% when compared with 2005-06 figures (question “a” above). It is observed that based on 2005-06, the value of GVA for the year 2015-16 is over-

estimated by about Rs.86 billion (question “b” above). The details are given in the following Table 2.7.

Table 2.7: Comparison of output and GVA of Crops only for 2005-06 and 2015-16 as per Base Years 2005-06 and 2015-16 (Rs.in Million)

| Description | Base 2005-06 | | Base 2015-16 | % Change | |
|--------------------------------------|-----------------|--------------------------------------|------------------|-----------------|-----------------|
| | Results 2005-06 | Results 2015-16 at prices of 2015-16 | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A. Output | 947,526 | 3,150,704 | 3,235,719 | 241.5 | 2.7 |
| B. Inputs & other charges | 237,169 | 683,312 | 854,710 | 260.4 | 25.1 |
| i. Seed | 49,664 | 161,605 | 178,225 | 258.9 | 10.3 |
| ii. Fertilizer | 98,796 | 322,807 | 339,371 | 243.5 | 5.1 |
| iii. Pesticides | 5,906 | 61,756 | 27,703 | 369.1 | -55.1 |
| iv. Water | 13,124 | 33,465 | 84,363 | 542.8 | 152.1 |
| v. Ploughing& Planking | 62,732 | 83,061 | 200,411 | 219.5 | 141.3 |
| vi. Transport charges | 1,805 | 3,370 | 6,371 | 252.9 | 89 |
| vii. Wastage | 4,738 | 15,754 | 16,177 | 241.5 | 2.7 |
| viii. Inputs for Flowers | 404 | 1,494 | 2,090 | 417.1 | 39.8 |
| C. GVA(A-B) | 710,357 | 2,467,393 | 2,381,009 | 235.2 | -3.5 |

Table 2.7 indicates an increase of 235% in the value added of crop production in 2015-16 as compared to 2005-06.. This change reflects change in volume as well as in prices (inflation).

2.2.9 Extrapolation and Deflators of Crops

The output of crops has been extrapolated at constant prices using data on crops’ area and production, which is provided by the provincial crop reporting services and aggregated at the Agricultural Statistics Section of the PBS. The current output is compiled using crop-specific WPI deflators while data on some inputs e.g. fertilizer off-take, pesticides, water, etc. are provided by the sources annually, the remaining inputs seeds, ploughing are estimated by using updated input-output ratios at constant prices in 2015-16 rebasing. The intermediate consumption at constant prices is converted into current prices by using relevant WPIs. The GVA is the difference between output at basic prices and intermediate consumption at the purchaser’s prices.

2.3 Nurseries

A nursery is a place where plants are grown for transplanting. According to PSIC 2010, it falls under class 0130. It was not part of previous estimates of agriculture. A study on the input/output structure of plant nurseries has been conducted for the base year 2015-16. This being an informal activity was estimated by developing a sampling frame of nurseries in urban areas of the country by deploying the field staff of the Regional and Field offices of PBS. A sample of 236 nurseries was selected out of 2,990 nurseries to estimate the output and intermediate consumption. Due to limited resources, it was not possible to conduct this survey on annual basis.

Table 2.8: Gross Value Added of Nurseries 2015-16 (Rs. Million)

| Description | REGION | | | | | |
|-------------|--------|-------|--------|-------|-------------|--------------|
| | ICT | KPK | PUNJAB | SINDH | BALUCHISTAN | PAKISTAN |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| OP | 814 | 2,436 | 3,378 | 1,144 | 171 | 7,944 |
| IC | 394 | 1,337 | 1,439 | 417 | 113 | 3,699 |
| GVA | 421 | 1,100 | 1,939 | 727 | 58 | 4,245 |

2.3.1 Extrapolation and Deflators

Keeping in view the informal nature of the activity (nurseries) and data limitations, the value-added is extrapolated by using the inter-census urban dwellings growth rate of 3.72%, which have a strong linkage with urban development. Constant prices are inflated by using WPI General to arrive at current estimates.

2.4 Cotton ginning

Cotton phutti is brought to cotton ginning factories for processing. The first mechanical process involved in the processing of cotton is ginning. Ginning is the process of separating lint from seed to cotton. The factories involved in ginning are mostly located in the cotton-growing areas. According to PSIC 2010, it falls under class 0163. The sampling frame of the cotton ginning factories was available from Cotton Ginners Association. A study on cotton ginning was conducted for the base year 2015-16 to estimate gross output, intermediate consumption, gross value addition and gross fixed capital formation. Table 2.9 below shows that Cotton Ginning activity in Pakistan has a value-addition of about Rs.77 billion in 2015-16. According to the old base of 2005-06, it was Rs.115.89 Billion at current prices of 2015-16.

Table 2.9: Value Added of Cotton Ginning 2015-16 (Rs. Million)

| Description | 2015-16 Study |
|--|---------------|
| 1 | 2 |
| Output | 3,543,20 |
| Taxes less subsidies on products(to producers) | 1,495 |
| Output (basic prices) | 352,825 |
| Intermediate consumption | 275,671 |
| GVA (Basic Prices) | 77,154 |

2.4.1 Extrapolation and Deflators

GVA of cotton ginning has been extrapolated by the growth of cotton output at constant basic prices for subsequent years. To arrive at current prices, WPI raw cotton has been applied to constant GVA of cotton ginning.

Table 2.10: Comparison of GVA of Crops 2015-16 based on 2005-06 with that based on 2015-16 (Rs. in Million)

| (Million) | | | |
|------------------------|----------------------|--------------|---------------|
| Description | 2005-06 Base | 2015-16 Base | % of revision |
| | at prices of 2015-16 | | |
| 1 | 2 | 3 | 4 |
| Output | 3,735,818 | 3,643,114 | -2.5 |
| Inputs & other charges | 1,105,906 | 1,134,081 | 2.5 |
| GVA | 2,629,912 | 2,509,033 | -4.6 |

Table 2.11: Final Results crops 2015-16 (Million Rs.)

| Description | Crops (Important & Others) | Cotton Ginning | Own account capital formation | Nurseries | Total |
|------------------------|----------------------------|----------------|-------------------------------|--------------|------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Output | 3,235,719 | 352,825 | 46,626 | 7,944 | 3,643,114 |
| Inputs & other charges | 854,711 | 275,671 | - | 3,699 | 1,134,081 |
| GVA | 2,381,008 | 77,154 | 46,626 | 4,245 | 2,509,033 |

2.5 Livestock

Livestock is raised and crops are grown by the Pakistani farmers simultaneously. Nevertheless, crops' contribution to Gross Domestic Product (GDP) has been evaluated separately. This part deals with the practice of raising livestock and hence its contribution to output and gross fixed capital formation (GFCF) as *cultivated biological assets*. Poultry and poultry products, animal husbandry, hunting and farm honey are also discussed in this part.

10.88. Cultivated biological resources cover animal resources yielding repeat products and trees, crops, and plant resources yielding repeat products whose natural growth and regeneration are under the direct control, responsibility, and management of institutional units.

10.89. In general, when the production of fixed assets takes a long time to complete, those assets whose production is not yet completed at the end of the accounting period are recorded as work-in-progress. However, when the assets are produced on their own account, they are treated as being acquired by their users at the same time they are produced and not as work-in-progress. These general principles also apply to the production of cultivated assets such as animals or trees that may take a long time to reach maturity. Two cases need to be distinguished from each other: the production of cultivated products by specialized producers, such as breeders or tree nurseries, and the own-account production of cultivated assets by their users.

10.91. However, when animals or trees intended to be used as fixed assets, are produced on their own account by farmers or others, incomplete assets in the form of immature animals, trees, etc. that are not ready to be used in production are treated not as work-in-progress but as gross fixed capital formation by the producing unit in its capacity as an eventual user.

2.5.1 Coverage

a. Buffaloes and Cattle

For the structural changes, *Figure 2.1* may be referred to. The newborn animals (having age less than one year) have been treated as output and may be assumed safely as own-account capital formation, acquired at the time of production. These have been valued at the average price for

this category and weighted average prices have been derived from “**Agriculture Input-output Survey 2016-17**”.

Old data based on the 2005-06 Livestock Census, were used for Livestock population to derive output of livestock. The reason to incorporate old population projection is the non-availability of fresh Census which was planned in 2016-17 with the name of ‘Integrated Agriculture Census. Integrated Agriculture Census was designed by merging three Censuses i.e., Crops, Livestock and Machinery Censuses but got delayed due to the 6th Population Census 2017.

The immature category consists of animals with age equal to or greater than 1 & less than 3 years. The weighted average prices (derived from the survey mentioned above) of this group is taken for valuation. The livestock between one to two years of age come forward from the new-born of the previous year excluding the dead and slaughtered animals during the period.

The animals between two to three years of age have come from the category of one to two years net of dead and slaughtered ones. It is assumed that the spread of animals within this group is even. The output of this group is the enhancement in their value from the previous category. It is measured by multiplying one-half of the animals of this group with the price differential of this category with the new-born category. The other half has no price differential and hence no marginal increase in value. The same output has been acquired as GFCF

The second half of immature animals enter into the mature category net of dead and slaughtered ones. This is a broad category and only the enhancement in the value of addition from the immature category is taken as output. The change in stock for this category is the indicator of an increase/decrease in the number in this group.

The contribution towards GFCF is to be recorded as output for own-account capital formation. This method has been applied to calculate the contribution of buffaloes and cattle. It is equivalent to calculating the changes in the value of the capital stock (livestock) between the end and the beginning of the year. Slaughtering is a separate industry that depends upon livestock and is dealt with in manufacturing; however, the major inputs are the livestock animals.

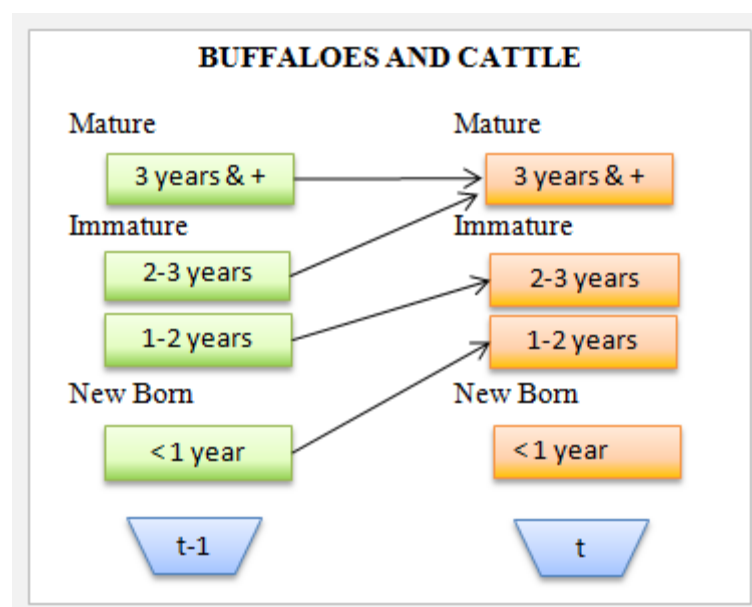


Figure 2.1: Classification of Buffaloes and Cattle Based on Age-Years

b. Sheep and Goats

The data for these animals are available for two age groups:

- i. The new-born animals having age less than one-year
- ii. The animals having age one year or above

The structural movements have been explained in **Figure 2.2**. Animals with age less than one year are treated like a new-born. Next year, these animal are included in the second age group (1-2 years). This group is replaced next year by the new-born ones. However, the animals previously in the second group, are now includes in a combination of “new-entrances from previous group” and the already existing ones. The changes are due to the death and slaughtering during the period.

Category “i” may be assumed safely as own-account capital formation as well as output.

The mature category consists of animals of age equal to or greater than 3 years. This is a broad category. The already existing ones of this group have no incremental value. However, the animals moved from category ‘i’ to ‘ii’ have got the marginal increase which is output. The change in stock for this category is the indicator of an increase/decrease in the number animals in this group. The contribution towards GFCF is the acquisition of this output.

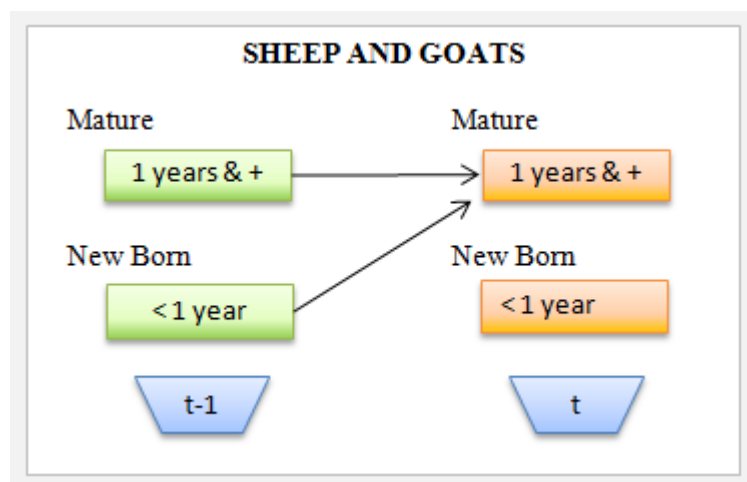


Figure 2.2: Classification of Sheep and Goat Based on Age-Years

c. Camels, Horses, Mules and Asses

The contribution towards output and GFCF of camels, horses, mules and asses has been worked out through the second approach. The structural movements have been explained in **Figure 2.3**. The second approach is the idea to make the change in stock for each age group and value it with the full price (derived from the survey) of that group. This is the net output/ net fixed capital formation. Valuing dead animals at the average price gives the consumption of fixed capital. Adding this figure to the net output/ net FCF gives the gross output/ GFCF.

Both methods give comparable results. The difference comes from the assumption of an average value for dead animals.

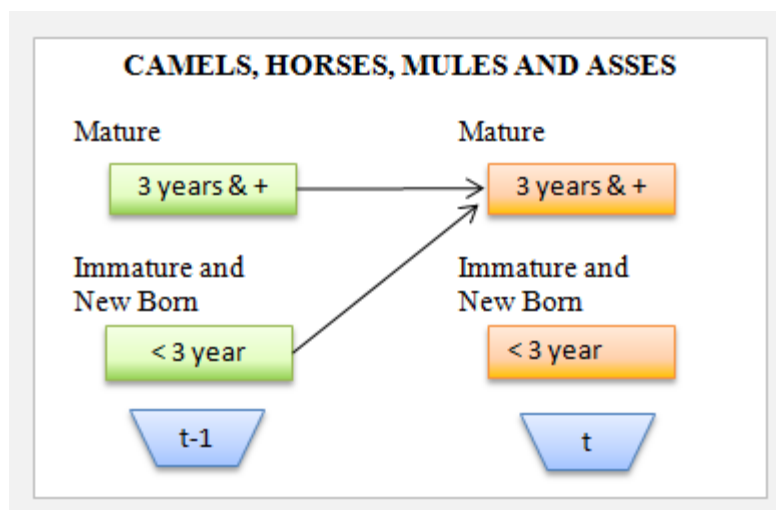


Figure 2.3: Classification of Camels, Horses, Mules and Asses on Age-Years

2.5.2 Output of Livestock Products

The other livestock products are milk, draught power, dung and urine, wool and hair and Desi Ghee (homemade substitute for cheese & butter sold by farmers. The data on these products (except “Desi Ghee” which is a new component in 2015-16 base) is being provided by the livestock wing of the Ministry of National Food Security and Research (MNFSR). The missing link is the prices of these items which had been collected through the Agriculture Input-Output Survey 2016-17, cross-checked from other data sources (WPI, CPI etc.). Milk production is valued on quantity of milk available for human consumption after deducting quantity of milk used for breeding calves. Valuation of draught power has been calculated by an indirect method as it is not common to hire animals for ploughing and planking. Equivalent output has been applied for valuation. Unit prices detected through the agriculture input-output survey 2016-17 have been applied to the quantities of dung and urine, wool and hairs. The population of livestock and changes are given at Annexure IX & X. Data on milk production, dung, urine, wool and hairs, poultry and poultry products have been annexed as Annexure XI. Estimation of draught power has been attached as Annexure XII.

a. Intermediate consumption

Intermediate consumption consists of fodder, including green, dry and concentrates. Green and dry fodder fed to all livestock. Concentrates are generally given to the buffaloes and cows in milk which improve the quantity as well quality of their milk. Poultry feed is provided to poultry farms only. Similarly, the value of chicks and rent of sheds, repairs etc. are also related to poultry farms. However, transportation and medical care costs relate to whole livestock and poultry. The ratios have been revised accordingly. Other inputs include grazing charges, rent of sheds and medical charges etc.

b. Poultry and Poultry Products

The data are available on farming and domestic poultry separately as a product of the Livestock Census (2006) (to be updated through the Integrated Agriculture Census). Poultry farms are managed on a scientific basis. Data are provided on the number of layers, broilers, breeding stock and chicks and eggs in farming. This segment is called commercial poultry. In domestic poultry, data are provided on hens, cocks, chickens and eggs. This category is generally available in the rural part of the population. The price structure has been adopted from the “Provincial Poultry Research Institutes” and compared with Price Statistics of “Pakistan Bureau of

Statistics”. The major products are eggs and meat. Generally, live birds are sold in the market. Poultry meat is also reported by the MNFSR.

c. Animal Husbandry

According to PSIC 2010, the provision of services of animal husbandry falls under Agriculture (Group 014, “Agricultural and Animal Husbandry service activities, except Veterinary activities” and 0162 respectively). It includes activities related to promoting propagation, growth and output of animals, herd testing services, poultry caponizing etc. The activities related to artificial insemination, stud services etc. are also covered. Data for the output of these services is not available unless provided by the government. In Pakistan, the provinces are providing data on Animal Husbandry. The contribution of animal husbandry to the GVA of the general government is calculated from the federal, provincial and district budgets. Details are given below in **Table 2.12**. From the National Accounts perspective, these services are covered as a non-market output of the Government under PSIC 014 and 0162 respectively. This figure is captured under the output of livestock. On the expenditure side of GDP, this falls under government consumption (net of very minor payments of farmers for these services). On the input side, the payments of the farmers for Animal Husbandry are covered under “other inputs”. Hence this output is treated as value-added.

Table 2.12: Components of Animal Husbandry 15-16 base (Rs. in Million)

| Description | Base 2005-06 | | Base 2015-16 | % Change | |
|------------------------------------|---------------|------------------------------|---------------|-----------------|-----------------|
| | 2005-06 Price | 2015-16 at prices of 2015-16 | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A. Output | 15,396 | 16,194 | 16,194 | 5.18 | 0 |
| Federal Govt. | 1,250 | 561 | 561 | -55.12 | 0 |
| Provincial & District Govt. | 14,146 | 15,633 | 15,633 | 10.51 | 0 |
| B. Intermediate Consumption | 6,466 | 5,049 | 5,049 | -21.91 | 0 |
| Federal Govt. | 789 | 34 | 34 | -95.69 | 0 |
| Provincial & District Govt. | 5,677 | 5,015 | 5,015 | -11.66 | 0 |
| C. GVA (A-B) | 8,930 | 11,145 | 11,145 | 24.8 | 0 |

Data about animal husbandry are not available. It is assumed, in consultation with industry experts that these are equal to the amount of the government services estimated through budgets. Thus, the figure of this output given in the table above is an estimate at the current price for the year 2015-16 and the same has been adopted for the new base year. On the input side, the payments of farmers for animal husbandry are covered under “other inputs”. The inputs of providers of husbandry services are considered here to be negligible in this context of estimates. Hence the output of government is taken as private animal husbandry services.

d. Hunting

According to PSIC 2010, hunting falls under *Class 017*. As detailed relevant data is not available, the estimates prepared are based on an input approach assuming that inputs are widely made up of hunting fees as recorded in the Provincial Budget Documents 2016-17. Annual revenue receipts from hunting fees for 2015-16 for each province have been taken, as per the detail given below in **Table 2.13**.

Table 2.13: Gross Value Added (Value of receipts) of Hunting Activities 2015-16 Base (Million Rs.)

| Description | Base 2005-06 | 2015-16 Base | | % Change | |
|----------------------------|---------------|------------------------------|---------------|-----------------|-----------------|
| | 2005-06 Price | 2015-16 at prices of 2015-16 | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Punjab | 22 | 0 | 0 | -100 | |
| Sindh | 0.015 | 2.991 | 2.99 | 19,840.00 | 0 |
| KPK | 8.585 | 25 | 25 | 191.21 | 0 |
| Baluchistan | N.A | 8.96 | 8.96 | | 0 |
| Total Receipts/ GVA | 30.6 | 36.95 | 36.951 | 20.75 | 0 |

Source: Provincial Annual Budget Documents

e. Silk Worms

This activity comes under *division 01 group 014 class 0149* “Raising of other animals” with subclass 0149200 “ Raising of silkworms, production of silk cocoons. This activity is the first time covered in this base.

Currently, this activity is being carried out in Punjab and KP province only. Data has been collected from the “**Punjab Sericulture Department**” and “**Non-Timber Forest Department KP**”. The detail is given in *Table 2.14* below.

Table 2.14: Rearing of Silk worms GVA 2015-16 Base

| Description | 2015-16 | | |
|----------------------------------|----------|-------------|---------------|
| | Punjab | KPK | Total |
| 1 | 2 | 3 | 4 |
| 1. Quantity of Silk Cocoons (KG) | 33,141 | 3,500 | 36,641 |
| 2. Value of output (Mill. Rs.) | 2.34 | 5.08 | 7.41 |
| 3. Inputs (Mill. Rs.) | 0.33 | 0.32 | 0.65 |
| 4. GVA (Mill. Rs.) (2-3) | 2 | 4.76 | 6.76 |

f. Honey Bee Keeping (Farm Honey)

This activity is captured the first time in national accounts. Detailed information was collected to understand the honey beekeeping activity as there was no frame and no documented data was available in Pakistan regarding farmers and their production capacity. In this regard, information on the total number of farms, each farm having an average number of boxes, the capacity of each box to produce honey, price per kg and input cost was collected through a study. “Agriculture Research & Development Institute Tarnab, Peshawar” and “All Pakistan Honey Beekeeping Association” have also been consulted. Information on employment cost, the structure of inputs and output have been collected.

Estimates have been drawn based on information taken from all sources mentioned above. Detail is given in *Table 2.15*.

Table 2.15: Estimation of Honey Bee Keeping 2015-16 Base at Basic Prices

| S. No. | Row Labels | 2015-16 |
|--------|---|----------------|
| 1 | 2 | 3 |
| 1 | Estimated Number of farms in the Country (No.) | 50,000 |
| 2 | Per farm boxes (No.) | 150 |
| 3 | Average Price of Barry Honey per kg (Rs.) | 750 |
| 4 | Average Price of others per kg (Rs.) | 170 |
| 5 | Total Boxes (1*2) (No.) | 7,500,000 |
| 6 | Per Box production/anum (kg) | 15 |
| 7 | Total Production of all farms (5*6) (M.Tons) | 112,500 |
| 8 | Ratio of Barry and other in Production | 30:70 |
| 9 | Production of honey from Barry (M.Tons) | 33,750 |
| 10 | Production of honey from others (M.Tons) | 78,750 |
| 11 | Value of Barry honey (Mill Rs.) | 25,313 |
| 12 | Value of other honey (Mill Rs.) | 13,388 |
| 13 | Total value of Honey (11+12) (Mill Rs.) | 38,700 |
| 14 | Input charges (55%) (Mill Rs.) | 21,285 |
| 15 | GVA of Honey (13-14) (Mill Rs.) | 17,415 |

Hence Output has been estimated at Rs.38 billion and inputs are estimated at Rs.21 billion, so the GVA is Rs. 17.4 billion.

2.5.3 Effect of Rebasing

The effect of 2015-16 base with those extrapolated for 2015-16 on 2005-06 base prices is shown in **Table 2.16** below. Due to the improvement of coverage and updates of input-output ratios and prices, gross output for the base year 2015-16 has now been assessed at Rs.5,747.9 billion. The intermediate consumption has now been assessed at Rs.1,213.4 billion. As a result of both new assessments, the GVA has been revised 17.52 % upward. The effect of rebasing has an impact on the growth between 2005-06 and 2015-16. Over these 10 years, output has increased by 398.61%. Intermediate consumption increased by 461.03%, at a higher rate than output, due to the inclusion of new components like grazing and higher production estimates of green fodders because green fodders production estimation methodology has changed as per international standards by “Crop Reporting services Punjab”. The increase in GVA of Livestock is 384.20%.

Table 2.16: Comparison of Components of Value Added of Livestock (Million Rs.)

| Description | 2005-06 Base | 2015-16 Base | | % Change | |
|---|------------------|------------------|------------------|---------------|---------------|
| | 2005-06 Prices | 2015-16 Prices | 2015-16 Prices | Col.4 / Col.2 | Col.4 / Col.3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Output (1 to 8) | 1,152,774 | 4,613,140 | 5,747,855 | 398.61 | 24.6 |
| 1. Natural Growth and Regeneration | 168,530 | 673,088 | 688,300 | 308.41 | 2.26 |
| 2. Sold for Slaughtering | 271,379 | 1,091,101 | 1,175,043 | 332.99 | 7.69 |
| 3. livestock products | 621,308 | 2,477,433 | 3,364,013 | 441.44 | 35.79 |
| Milk | 511,783 | 2,112,544 | 2,891,350 | 464.96 | 36.87 |
| Draught Power | 48,723 | 119,756 | 137,095 | 181.38 | 14.48 |
| Dung & Urine | 58,550 | 237,189 | 315,000 | 438 | 32.81 |
| Wool & Hairs | 2,252 | 7,944 | 2,648 | 17.56 | -66.67 |
| Desi Ghee | | | 17,921 | | |
| 4. Poultry and Poultry Products | 76,130 | 355,287 | 465,561 | 511.53 | 31.04 |
| 5. Animal Husbandry | 15,396 | 16,194 | 16,194 | 5.18 | 0 |
| 6. Hunting | 31 | 37 | 37 | 19.2 | 0 |
| 7. Farm Honey | | | 38,700 | | |
| 8. Silkworm* | | | 7.4 | | |
| Intermediate Consumption | 216,276 | 754,809 | 1,213,366 | 461.03 | 60.75 |
| Fodders | 173,410 | 574,714 | 850,347 | 390.37 | 47.96 |
| Other Inputs | 19,947 | 62,915 | 130,105 | 552.25 | 106.79 |
| Poultry Inputs | 22,919 | 117,180 | 211,628 | | 80.6 |
| Silkworm inputs | | | 21,285 | | |
| Inputs farm honey | | | 0.6 | | |
| GVA | 936,498 | 3,858,332 | 4,534,489 | 384.2 | 17.52 |
| Animals and Animal Products GVA | 883,287 | 3,620,224 | 4,263,135 | 382.64 | 17.76 |
| Poultry GVA | 53,211 | 238,108 | 253,932 | 377.22 | 6.65 |
| Farm honey GVA | | | 17,415 | | |
| Silk Worm GVA | | | 6.8 | | |

2.5.4 Extrapolation and Deflators

The output of livestock at basic prices of 2015-16 is extrapolated through numbers/quantities for the subsequent years given by their respective sources. The result is output at constant prices over the years. Output at constant (basic) prices for subsequent years is multiplied with an appropriate output inflator i.e., WPI for fresh milk, meat, chicken and eggs to get the output of years at current (basic) prices.

Intermediate consumption of the subsequent years at constant prices is calculated directly from the input quantities available and using the input-output ratios of the base year 2015-16 where needed. Intermediate consumption of the subsequent years at constant prices is multiplied by an appropriate inflator; WPIs for the inputs to get intermediate consumption of the years at current prices.

- For Animal husbandry and Hunting, current data from provincial and federal budgets are taken for next years and is deflated by CPI general to get constant estimates.

- For silkworms, output at constant prices is extrapolated through production from the provincial sericulture departments. To estimate output at current prices, WPI (silk and Rayon fabric) is applied to output at constant prices.
- Intermediate consumption at current and constant prices is estimated by applying the input-output ratio of the base year.
- GVA is output less intermediate consumption at constant and current prices separately.
- GVA of farm honey is extrapolated at current prices using the growth rate of honey exports which is converted into constant prices through WPI (honey).

2.6 Forestry

2.6.1 Coverage

It covers the production of round wood for the forest-based manufacturing industries (PSIC rev. 4, division 16 and 17) as well as the extraction and gathering of wild growing non-wood forest products. Besides the production of timber; forestry activities result in products that undergo little processing such as firewood, charcoal, wood chips and round wood used in unprocessed forms. Natural and planted forests are both included. The activity pertains to PSIC rev. 4, division 02, Section A.

This is a small sector of the economy as far as its contribution to the GDP is concerned which is 0.42%. There are three important types of data sets. Data on timber and firewood from the public forests are provided by the Inspector General, Forests, a government department. It provides quantity, cut and sold. A bulk supply is from the private-owned forests but it is not available directly. The non-wood forest product is another component. The data on this component is also scanty. For estimation of forestry GVA, the methodology of the base year 2005-06 has been applied to the relevant components.

2.6.2 Output

The data needed for direct valuation of this sub-sector through the *production* approach is not available; hence it is measured indirectly from the *user* side. The uses of timber and firewood in the industry sector, i.e., mining and quarrying, large scale manufacturing industry, small and household manufacturing industry and construction have been taken from the surveys and census conducted for this purpose in 2015-16 base.

Census of Manufacturing Industries (CMI 2015-16), Small and Household Manufacturing Industries (SHMI 2015-016) Survey, Study on selected minerals (2016-17) in mining industry and Construction survey 2014-15 are the reference sources, adjusted to the base year where needed. To make the output at Producer's Prices, 40% has been deducted as trade and transport margins taken from the "Study on Whole Sale and Retail Trade" used in 2005-06 base. Consumption of firewood in the households has been taken from the Household Integrated Economic Survey (HIES) 2015-16 and adjusted at Producer's prices of the year 2015-16 by deducting 30% trade margin taken from the "Study on Whole Sale and Retail Trade" used in 2005-06 base. The contribution of the non-wood forest products and own-account capital formation has been adopted from the 2005-06 base estimates. The detail of output of forestry is given at Annexure-XIII.

2.6.3 Intermediate Consumption

According to SNA 2008, Intermediate Consumption is valued at Purchasers' Prices. The input structure has been taken from the base year 2005-06. The input cost for Timber and Firewood

has been taken as 25% of the output whereas non-wood forest products have no input cost as these components (medicinal herbs, gums and wax etc.,) grow naturally.

2.6.4 Gross Value Added

The gross value added is *output minus intermediate consumption*. The gross value added for forestry for the base year 2015-16 is given below in **Table 2.17**.

Table 2.17: Gross Value Added in Forestry 2015-16 Base (Rs. in Million)

| Item Description | 2005-06 Base | | 2015-16 Base | % Change | |
|--|---------------|----------------|----------------|--------------|-------------|
| | 2005-06 | 2015-16 | 2015-16 | 4/2 | 4/3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. Output (I+II+III) | 46,336 | 224,566 | 212,498 | 358.6 | -5.4 |
| I) Timber | 11,272 | 39,726 | 37,234 | 230.3 | -6.3 |
| II) Firewood (a+b) | 32,956 | 173,983 | 165,590 | 402.5 | -4.8 |
| a. Industry | 1,484 | 11,915 | 30,112 | 1,929.10 | 152.7 |
| b. Households | 31,472 | 162,069 | 135,478 | 330.5 | -16.4 |
| III) output Non-wood forest Products / Own account Capital formation | 2,108 | 10,857 | 9,675 | 358.9 | -10.9 |
| 2. Intermediate consumption | 11,057 | 53,427 | 50,706 | 358.6 | -5.1 |
| I) Timber | 2,818 | 9,931 | 9,308 | 230.3 | -6.3 |
| II) Firewood | 8,239 | 43,496 | 41,398 | 402.5 | -4.8 |
| 3. Gross Value Added (1-2) | 35,279 | 171,139 | 161,793 | 358.6 | -5.5 |

2.6.5 Effect of Rebasing

The effect of the rebasing 2015-16 can be shown by comparison of the results 2015-16 according to the new base with those extrapolated for 2015-16 on base 2005-06. It is shown in **Table 2.17** above. Output for the new base year 2015-16 has now been assessed at **Rs. 212.5 billion**. This is 5.4% less than the extrapolated figure based on the 2005-06 base year, as the dominating component of output is firewood by households decreased 16.4%. The intermediate consumption has now been assessed at **Rs.50.7 billion**. This is the percentage of the output, determined from the previous base. As a result of new assessments, the GVA has been estimated at 5.5% downward.

The effect of rebasing also has an impact on the growth between 2005-06 and 2015-16. Over these 10 years, GVA has increased by 358.6%.

2.6.6 Extrapolation and Deflators

Output, intermediate consumption and value-added will not be calculated for each year as calculated for the new base year. Value of output at constant prices of timber is extrapolated with production received from provincial forest departments.

The other major component is firewood used in households and it is extrapolated at prices with the growth of rural dwellings estimated from 2017 census. One component is the use of firewood in small industries and it is linked with the growth of small and household manufacturing industries. Non-wood forest products are based on a share of the 2005-06 base. Input-output ratios of the base year are applied for the calculation of intermediate consumption.

The output of timber at current prices is inflated by using WPI timber and the output of firewood is inflated by WPI fuel wood in logs. For non-wood forest products, the base year percentage share are used to derive constant estimates is also used for current estimates. For intermediate consumption input-output ratio is applied to the current value of output to get the value of IC at current prices.

2.7 Fishing

This activity is divided into two categories, marine fishing and freshwater fishing. The input structure and jurisdiction of these activities are different. Freshwater activity is concentrated in the areas where suitable underground tube well water is available. The other location of the activity is where the land is available on the banks of large canals. However marine fishing is concentrated at the coastal belt of Sind and Baluchistan.

2.7.1 Coverage

According to PSIC rev. 4 this activity pertains to PSIC division 03, Section A, which covers Marine Fishing and Freshwater Fishing. It includes the activities of aquaculture, marine as well as freshwater. The data on fish catch, on regular basis, is being supplied by the “Marine Fisheries Department” Ministry of Maritime Affairs, Government of Pakistan. Two studies have been conducted for the base year 2015-16 to estimate price and input-output structure, namely, “Study on Marine fishing 2016-17” and “Study on Freshwater fishing 2016-17”.

2.7.2 Output

It is important to understand the activity (fishing) before valuation. In marine fishing, the crew is often paid a share of the value of landing. The landed fish is auctioned at the port. The fishermen directly pay the auctioneer or the auction hall for marketing their fish catch. Auctioneers or the auction hall have to pay some of this amount as a membership fee to the fishing cooperative society. The activities of the auctioneers belong to the PSIC, ‘other business activities. Auction halls are to be classified under PSIC wholesale and retail trade. A fishing cooperative society is to be classified under PSIC, ‘other community, social and personal services. The fees have been treated as intermediate consumption of fishing as well as output of trade. In terms of the SNA output is the product of volume and price. The volume stands for quantity plus quality. The estimation has been based on both, quantity as well quality. Different species have been evaluated separately. Output is valued using per kg price at the national level captured from study and quantity supplied by the source.

2.7.3 Intermediate Consumption

According to SNA intermediate consumption is valued at purchasers’ prices (at market prices). The input structure regarding marine fishing has been determined through study. It includes fuel, ice, salt, water, medicine, repair and maintenance charges etc. The major components are fuel and ice. For freshwater fishing, the inputs are seed, feed, POL/electricity, water and others. Others include transport charges used for farm inputs, gas, chemicals, medicine, cleaning materials etc. The major inputs are feed, Electricity, Fertilizers, seeds and others (fodders, chemicals and cleaning material etc.).

2.7.4 Gross Value Added

The gross value added is output minus intermediate consumption. The gross value added for fishing for the new base year 2015-16 is given below in Table 2.18 along with base year prices and input-output ratios of the components.

Table 2.18: Gross Value Added

| Description | Base 2005-06 | | 2015-16 Base | % Change | |
|-------------------------------------|------------------|---------------------------------|-----------------|--------------------|--------------------|
| | 2005-06 Price | 2015-16 at prices of 2015-16 | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A. OUTPUT AT BASIC PRICES | 66,090 | 168,589 | 175,047 | 164.86 | 3.83 |
| Marine | 31,001 | 57,898 | 57,230 | 84.60 | -1.15 |
| Freshwater | 35,088 | 110,692 | 117,818 | 235.77 | 6.44 |
| B. INTERMEDIATE CONSUMPTION | 22,927 | 56,367 | 58,781 | 156.38 | 3.94 |
| Marine | 12,401 | 23,159 | 15,189 | 22.48 | -34.42 |
| Freshwater | 10,526 | 33,207 | 43,593 | 314.12 | 31.27 |
| C. GROSS VALUE ADDED (A - B) | 43,163 | 112,223 | 116,266 | 169.37 | 3.6 |
| Marine | 18,600 | 34,739 | 42,041 | 126.02 | 21.02 |
| Freshwater | 24,562 | 77,484 | 74,225 | 202.20 | -4.21 |

2.7.5 Effect Of Rebasing

The effect of the rebasing 2015-16 can be shown by comparison of the results 2015-16 according to the new base with those extrapolated for 2015-16 on 2005-06 as shown in Table 2.18 above. Due to improvement of coverage and updates of input-output ratios and prices, gross output for the base year 2015-16 has now been assessed at Rs.175.0 billion. The intermediate consumption has now been assessed at Rs.58.8 billion. This increase in the inputs is the result of the new input-output ratios, determined from the studies. As a result of both new assessments, the GVA has been revised 3.6% upward.

The effect of rebasing will also have an impact on the growth between 2005-06 and 2015-16. Over these 10 years, output has increased by 164.9%. Intermediate consumption increased by 156.4%, at a lower rate than output, due to the low Input-output ratio of marine fishing. The increase in GVA of fishing is 169.4%.

2.7.6 Extrapolation And Deflators

Output at basic prices of 2015-16 is extrapolated through quantities for the subsequent years given by the sources. The result is output at constant prices over the years. Output at constant (basic) prices of years is multiplied with output inflator (WPI Fishing) to get an output of years at current (basic) prices for subsequent years.

Intermediate consumption of the subsequent years at constant and current prices will be calculated using the input-output ratios of the base year 2015-16.

Gross value added is obtained by subtracting intermediate consumption from the output for the constant prices and the current prices figures, respectively.

2.7.7 Effect Of Rebasing On Agriculture

Table 2.19 given below presents the overall impact of rebasing on agriculture in 2015-16 from base year 2005-06. An increase of 8.1% has been observed due to an increase in livestock and fishing. The decline has been witnessed in crops (-4.6%) and forestry (-5.5%). Within crops decline of 4.6% is because of a decline in important crops (-14.8%) and cotton ginning (-23.8%). An increase of 23.4% in other crops is due to the fresh evaluation of green fodder.

Table 2.19: Comparison of GVA of Agriculture for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Description | Base 2005-06 | | Base 2015-16 | % Change | |
|------------------------------|------------------|------------------------------|------------------|-----------------|-----------------|
| | 2005-06 Price | 2015-16 at prices of 2015-16 | | column 4 over 2 | column 4 over 3 |
| | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Agriculture | 1,775,346 | 6,771,606 | 7,321,581 | 312.4 | 8.1 |
| 2.1.1 Crops (i+ii+iii) | 766,274 | 2,629,912 | 2,509,033 | 227.43 | -4.6 |
| i. Important crops | 449,025 | 1,725,837 | 1,470,354 | 227.45 | -14.8 |
| ii. Other crops | 256,777 | 741,556 | 914,899 | 256.3 | 23.4 |
| iii. Cotton ginning & others | 60,472 | 162,519 | 123,780 | 104.69 | -23.8 |
| 2.1.2 Livestock | 930,842 | 3,858,332 | 4,534,489 | 387.14 | 17.5 |
| 2.1.3 Forestry | 35,067 | 171,139 | 161,793 | 361.38 | -5.5 |
| 2.1.4 Fishing | 43,163 | 112,223 | 116,266 | 169.36 | 3.6 |

CHAPTER 3

Industry



INDUSTRY**Introduction**

The components of this chapter are the producing industries other than agriculture, forestry and fishing. First Part covers the mining and quarrying activities while the second part which is major part covers the manufacturing industry. It is further sub-divided into three components, i.e., large scale manufacturing, small scale manufacturing and slaughtering. Third Part covers electricity, gas and water supply. Gas production is a component of mining and quarrying. Construction activities are covered separately under last part. A detailed description of each industry is given as follows.

3.1 Mining and Quarrying**3.1.1 Coverage**

According to the Pakistan Standard Industrial Classification (PSIC), 2010, Mining and Quarrying include the extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by underground or surface mining or well operation. This section includes services incidental to mining, e.g. drilling services, derrick erection and the like. This section also includes supplementary activities aimed at preparing the crude materials for marketing, for example, crushing, grinding, cleaning, drying, sorting, concentrating ores, liquefaction of natural gas and agglomeration of solid fuels. These operations are often accomplished by the units that extracted the resource and/or others located nearby. This section excludes manufacturing of gas and distribution of gaseous fuels through mains which in PSIC 2010 is covered under section D “Manufacturing of gas; distribution of gaseous fuels through main”, group 352 and is dealt with in the respective part of the rebasing methodology.

a. Two approaches

The data position of mining and quarrying is very good as compared to other industries as the provincial Mines and Mineral Development Departments supply quarterly data regularly on physical production. However, data is supplied commodity-wise and not on basis of establishment or enterprise-level. Therefore, the main approach for Pakistan’s annual National Accounts is a functional (or “commodity”) approach. This means that the compilation of output, intermediate consumption and value-added is based on commodity data. For empirical reasons, they are the better choice than those the mining enterprises or establishments could provide, notwithstanding the fact, that for measuring variables of production and capital formation the SNA recommends the use of data about establishments. The option chosen for this rebasing is a compromise between the SNA recommendation and the empirical prevalence of commodity data in the country.

For the base year census of exploration companies was conducted to compile input-output ratios and basic prices of oil and gas in the base year. Exploration cost which is captured in GFCF as well as GVA of the mining sector has also been evaluated through this census. In this regard, it is fortunate that in Pakistan the production of natural gas – which falls under “mining” - and its distribution through mains (which falls under “gas distribution”) are widely done by specialized companies (Sui Northern and Sui Southern). Only Mari Gas is distributing its

production of natural gas through its own mains. The distribution component of Mari Gas has been included in the distribution activities of gas.

The idea is to sort the oil and gas companies through their main activity and delineate their input-output ratio for the base year as well as their exploration cost and their taxes on products and royalties. The input-output ratios for oil and gas are used to derive value-added as a share of output which is calculated product-wise as explained below. The input-output ratios are assumed to be constant over time till the next rebasing.

Nevertheless, there are some missing links for calculating the value-added which neither the mining departments nor the company reports are providing:

- Product-wise output prices and intermediate consumption of mining and quarrying activity of the minerals under supervision of the mining departments which are natural gas, crude oil, coal and 38 other minerals have been summarized as “other minerals”,
- Output, intermediate consumption and value-added of crushing of stones and gravel.
- Output, intermediate consumption and value-added of oil and gas exploration and allied services incidental to mining.

The above missing links have been filled by the “Study on minerals 2016-17”, “study on stone crushing 2016-17” and “census of exploration companies (oil and gas) 2015-16”. The figures for production (extraction) of surface minerals have been extrapolated from the base 2005-06.

b. The Functional Approach adopted by PBS

The functional approach comes from the product perspective and is based on the quantities reported by the Provincial Mining Departments. For valuation of the output related to extracted minerals under supervision of the Mining Departments’ pithead prices have been collected through Census of Oil and Gas exploration companies and studies conducted for rebasing. Pithead prices are equivalent to farm gate or factory gate prices. They exclude any taxes on products and include any subsidies on products. The details of output, Intermediate consumption and GVA are given in Table 3.1 below.

Table 3.1: Consumption Output, intermediate and GVA of mining and quarrying 2015-16 (Rs. in Million)

| Description | Output at basic prices | Intermediate Consumption | GVA (basic Prices) |
|--|------------------------|--------------------------|--------------------|
| 1 | 2 | 3 | 4 |
| Natural Gas | 403,556 | 21,880 | 381,676 |
| Crude Oil | 111,289 | 17,730 | 93,559 |
| Coal | 25,244 | 5,722 | 19,522 |
| 1. Sub total | 540,090 | 45,332 | 494,757 |
| Other minerals | 105,874 | 16,375 | 89,499 |
| Surface minerals | 13,329 | 1,226 | 12,102 |
| Crushing of stone | 66,549 | 29,281 | 37,267 |
| 2. Subtotal of all other minerals | 185,752 | 46,882 | 138,868 |
| 3. Allied services | 24,935 | 11,388 | 13,547 |
| 4. Exploration Services | 52,022 | - | 52,022 |
| Total (1+2+3+4) | 802,799 | 103,602 | 699,195 |

c. Effect of Rebasing

The effect of the rebasing 2015-16 can be shown by comparison of the results 2015-16 according to the new base with those extrapolated for 2015-16 on the 2005-06 base. It is shown in Table 3.1 above that due to improvement of coverage and updates of input-output ratios and prices, gross output for the base year 2015-16 has now been assessed at Rs.802.8 billion, and intermediate consumption has now been assessed at Rs.103.6 billion.

Table 3.2: GVA of Mining and Quarrying 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. in Millions)

| Items | 2005-06 base (current prices) | | 2015-16 base | % Change | |
|-------------------------|-------------------------------|----------------|----------------|-----------------|-----------------|
| | 2005-06 | 2015-16 | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. Natural Gas | 143,685 | 344,336 | 381,676 | 165.63 | 10.84 |
| 2. Crude Oil | 49,448 | 109,924 | 93,559 | 89.21 | -14.89 |
| 3. Coal | 6,342 | 10,168 | 19,522 | 207.82 | 91.99 |
| 4. Stone Crushing | 10,700 | 38,481 | 37,267 | 248.29 | -3.15 |
| 5. Allied services | 6,869 | 13,043 | 13,547 | 97.22 | 3.86 |
| 6. Exploration services | 16,273 | 42,964 | 52,022 | 219.68 | 21.08 |
| 7. Other minerals | 21,947 | 89,865 | 89,499 | 307.8 | -0.41 |
| 8. Surface minerals | 3,365 | 12,102 | 12,102 | 259.64 | 0 |
| Total (1 to 8) | 258,628 | 660,884 | 699,195 | 170.35 | 5.8 |

d. Extrapolation and Deflators

Output at basic prices of 2015-16 is extrapolated through the production of mineral products provided by the mining departments for the subsequent years which is converted into current prices through product-specific WPIs. For other minerals, surface minerals, crushing of stone and gravel, WPI (Fuel) will be used.

Intermediate consumption is derived by using product-specific base year 2015-16 input-output ratios separately at constant and current prices. Gross value added is obtained by subtracting intermediate consumption from the output for the constant and current prices

3.2 Manufacturing

3.2.1 Coverage

Manufacturing is one of the key segments of the economy in Pakistan. Currently, it contributes about 12% to GDP. Manufacturing comprises establishments engaged in the physical or chemical transformation of materials, substances or components into new products or Manufacturing is the processing of raw materials or parts into finished goods through the use of tools, human labour, machinery and chemical processing. Materials used in manufacturing are products of agriculture, forestry, fishing, mining & quarrying as well as products of other manufacturing activities.

For empirical reasons (different sources of data) Pakistan's National Accounts capture manufacturing in three different components:

- Large Scale Manufacturing
- Small Scale Manufacturing
- Slaughtering

In Pakistan Standard Industrial Classification (PSIC 2010 (Rev.4), all economic activities concerning manufacturing are covered in section C, Divisions 10 to 33. Data for the manufacturing industries (large & small scale) have been obtained from the Census of Large Scale Manufacturing Industries (CMI 2015-16) and the Survey of Small and Household Manufacturing Industries (SHMI) 2015, respectively.

3.2.2 Large-Scale Manufacturing

a. Sources of Data

Large Scale Manufacturing covers the establishments having 10 or more employees. The Source of data is the Census of Manufacturing Industries (CMI) for the year 2015-16. Provincial Industry Departments coordinated the field operations of CMI 2015-16 through their focal persons, in their respective provinces. The focal persons were Chief Executive Officer of Urban Unit Punjab, Director General, Bureau of Statistics Sindh, Director, Bureau of Statistics KP and Director General Labour Balochistan. These focal persons were authorized officers/statistical agents of PBS for CMI 2015-16 as per section 22 of the General Statistics (Re-organization) Act 2011. Respective departments provide data on value and quantities of output, inputs, fixed assets, stocks, employment, employment cost, and contribution to GDP and GFCF etc.

The CMI data 2015-16 has been used for the compilation of benchmark National Accounts estimates 2015-16. For further details, the CMI report is available on the official website of PBS (www.pbs.gov.pk).

b. Methodology

Gross value added at basic prices is equal to output at basic prices minus intermediate consumption at purchasers' prices. A minor part of the output includes trade services which are carried out as a secondary activity. In National Accounts, the trade services are calculated on a functional basis under PSIC 2010, Division 45 of wholesale and retail trade. Therefore, the trade services are deducted from manufacturing output to avoid double counting.

Table 3.3 shows the sequence of calculations resulting in the gross value added at basic prices. It may be noted that adjustments of GVA at basic prices have been made to bring them into the framework of national accounts as per SNA 2008.

Table 3.3: Gross Value Added LSM (At Basic Prices) 2015-16 (Rs. in Million)

| PSIC 2010 | Industry Groups | Output at Basic Prices | Trade Margin | Output (at B.P) (Col.3-4) | Industrial Cost | Non Industrial Cost | Intermediate Consumption (Col.6+7) | GVA (at BP) (Col.5-8) |
|---|--|---------------------------------------|-------------------------|--|----------------------------|------------------------------------|---|--------------------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | Food Products | 2,489,164 | 3,011 | 2,486,152 | 1,865,026 | 129,233 | 1,994,259 | 491,893 |
| 11 | Beverages | 218,052 | 27 | 218,024 | 123,241 | 36,102 | 159,343 | 58,681 |
| 12 | Tobacco Products | 105,035 | - | 105,035 | 31,532 | 12,345 | 43,877 | 61,158 |
| 13 | Textiles | 2,426,545 | 1,429 | 2,425,116 | 1,708,777 | 129,533 | 1,838,310 | 586,806 |
| 14 | Wearing Apparel Leather and Related Products | 693,095 | 259 | 692,835 | 402,209 | 52,473 | 454,682 | 238,153 |
| 15 | Wood, Products of Wood & Cork, Except Furniture; Articles of Straw & Plaiting Materials | 135,591 | 337 | 135,254 | 84,959 | 9,927 | 94,885 | 40,369 |
| 16 | Paper and Paper Products Printing and Reproduction of Recorded Media | 42,263 | 39 | 42,224 | 32,227 | 676 | 32,903 | 9,321 |
| 17 | | 184,978 | 50 | 184,928 | 125,126 | 6,248 | 131,374 | 53,554 |
| 18 | | 62,765 | 2 | 62,762 | 38,656 | 3,858 | 42,514 | 20,248 |
| 19 | Coke and Refined Petroleum Products | 748,869 | 4,317 | 744,552 | 554,504 | 8,865 | 563,369 | 181,184 |
| 20 | Chemicals and Chemical Products | 884,940 | 20,827 | 864,113 | 542,896 | 86,336 | 629,232 | 234,881 |
| 21 | Pharmaceuticals products Rubber and Plastics Products | 511,921 | 4,061 | 507,860 | 288,861 | 64,277 | 353,138 | 154,722 |
| 22 | | 225,200 | 100 | 225,100 | 161,211 | 5,276 | 166,487 | 58,612 |
| 23 | Other Non-Metallic Mineral Products | 655,090 | 806 | 654,284 | 310,942 | 26,388 | 337,330 | 316,954 |
| 24 | Basic Metals Fabricated Metal Products, Except Machinery and Equipment | 489,494 | 1,242 | 488,252 | 370,829 | 11,370 | 382,200 | 106,052 |
| 25 | | 96,779 | 61 | 96,718 | 58,727 | 3,369 | 62,096 | 34,622 |
| 26 | Computer, Electronic and Optical Products | 17,299 | - | 17,299 | 11,222 | 725 | 11,947 | 5,352 |
| 27 | Electric Equipment Machinery and Equipment N.E.C. | 257,450 | 255 | 257,195 | 182,638 | 20,470 | 203,109 | 54,087 |
| 28 | Motor vehicles, trailers etc. | 103,253 | 203 | 103,050 | 68,202 | 5,829 | 74,030 | 29,019 |
| 29 | Other Transport Equipment | 430,531 | 4,265 | 426,266 | 322,237 | 16,298 | 338,535 | 87,731 |
| 30 | | 125,856 | 1 | 125,855 | 95,615 | 8,189 | 103,804 | 22,051 |
| 31 | Furniture | 48,503 | 23 | 48,480 | 27,265 | 1,247 | 28,512 | 19,968 |
| 32 | Other Manufacturing | 95,841 | 27 | 95,814 | 52,078 | 3,853 | 55,931 | 39,883 |
| ALL INDUSTRIES | | 11,048,512 | 41,344 | 11,007,167 | 7,458,982 | 642,886 | 8,101,868 | 2,905,300 |
| 1010 -Processing & preserving meat | | 26,083 | - | 26,083 | 16,483 | 2,954 | 19,437 | 6,646 |
| All Industries (Excluding meat) | | 11,022,429 | 41,344 | 10,981,085 | 7,442,499 | 639,932 | 8,082,431 | 2,898,654 |

Table 3.4: Comparison of Industry-wise Gross Value Added at basic prices of 2015-16 and 2005-06 (Rs. in Million)

| PSIC 2010 | Industry Groups | CMI | | | | %Change |
|--|---|----------------|------------------|------------------|------------------|------------------------------|
| | | 2005-06 | 2015-16 | Share 2005-06 | Share 2015-16 | 2015 -16 Over 2005- 06 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1010 | Processing and preservation of Meat | 1,009 | 6,646 | 0.11 | 0.23 | 558.67 |
| 10 | Food Products (Including meat) | 129,445 | 485,248 | 13.87 | 16.7 | 274.87 |
| 11 | Beverages | 8,987 | 58,681 | 0.96 | 2.02 | 552.95 |
| 12 | Tobacco Products | 20,123 | 61,158 | 2.16 | 2.11 | 203.92 |
| 13 | Textiles | 254,322 | 586,806 | 27.25 | 20.2 | 130.73 |
| 14 | Wearing Apparel | 42,117 | 238,153 | 4.51 | 8.2 | 465.46 |
| 15 | Leather and Related Products | 8,806 | 40,369 | 0.94 | 1.39 | 358.43 |
| | Wood, Products of Wood & Cork, Except Furniture; Articles of Straw & Plaiting Materials | 5,755 | 9,321 | 0.62 | 0.32 | 61.96 |
| 16 | Paper and Paper Products | 27,100 | 53,554 | 2.9 | 1.84 | 97.62 |
| 17 | Printing and Reproduction of Recorded Media | 2,567 | 20,248 | 0.28 | 0.7 | 688.78 |
| 18 | Coke and Refined Petroleum Products | 47,026 | 181,184 | 5.04 | 6.24 | 285.28 |
| 19 | Chemicals and Chemical Products | 89,814 | 234,881 | 9.62 | 8.08 | 161.52 |
| 20 | Pharmaceuticals products | 32,830 | 154,722 | 3.52 | 5.33 | 371.28 |
| 21 | Rubber and Plastics Products | 10,672 | 58,612 | 1.14 | 2.02 | 449.21 |
| 22 | Other Non-Metallic Mineral Products | 62,181 | 316,954 | 6.66 | 10.91 | 409.73 |
| 23 | Basic Metals | 54,015 | 106,052 | 5.79 | 3.65 | 96.34 |
| 24 | Fabricated Metal Products, Except Machinery and Equipment | 7,854 | 34,622 | 0.84 | 1.19 | 340.82 |
| 25 | Computer, Electronic and Optical Products | 5,017 | 5,352 | 0.54 | 0.18 | 6.68 |
| 26 | Electric Equipment | 18,841 | 54,087 | 2.02 | 1.86 | 187.07 |
| 27 | Machinery and Equipment N.E.C. | 13,356 | 29,019 | 1.43 | 1 | 117.27 |
| 28 | Motor vehicles, trailers etc. | 36,892 | 87,731 | 3.95 | 3.02 | 137.8 |
| 29 | Other Transport Equipment | 11,157 | 22,051 | 1.2 | 0.76 | 97.64 |
| 30 | Furniture | 416 | 19,968 | 0.04 | 0.69 | 4700 |
| 31 | Other Manufacturing | 43,845 | 39,883 | 4.7 | 1.37 | -9.04 |
| 32 | | | | | | |
| Total (Including meat-1010) | | 933,140 | 2,905,300 | 100 | 100 | 211.35 |
| ALL INDUSTRIES (Excluding meat) | | 932,131 | 2,898,654 | | | |

Table 3.5 summarizes the output (excluding processing meat) at Rs.10,981 billion, intermediate consumption Rs.8,082 billion and Gross value added (GVA) Rs. 2,898.65 billion at basic prices for 2015-16, against the GVA of CMI 2005-06 which stood at Rs.933 billion. This shows an increase of 210.63 %. The published /existing GVA for 2015-16 at 2005-06 base stood Rs.2,874 billion, whereas the CMI result for 2015-16 is Rs.2,899 showing a rebasing effect of 0.87 percent.

Table 3.5: Comparison of Components of Value Added - LSM (Rs. in Million)

| Description | 2005-06 | 2015-16 (published) | 2015-16 (CMI) | %Change | %Change |
|--------------------------|-----------|------------------------|------------------|-----------|-----------|
| | | | | Col.(4/2) | Col.(4/3) |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Output | 3,183,664 | 9,804,247 | 10,981,085 | 244.92 | 12 |
| Intermediate Consumption | 2,250,524 | 6,930,600 | 8,082,431 | 259.14 | 16.62 |
| Gross Value Added | 933,140 | 2,873,647 | 2,898,654 | 210.63 | 0.87 |

c. Extrapolation and deflators

During the past, several users have requested to have figures and growth rates of manufacturing at a more detailed level. The previous method of extrapolation with growth rates in real terms as per production index QIM (Quantum Index of Large Scale Manufacturing) will in principle be maintained. But to match users' needs, the extrapolation will be done for relevant parts of manufacturing, separately. For each of these divisions or groups, thereof the respective output, as well as intermediate consumption, will be extrapolated with the increase or decrease of the output of commodities of the QIM which appropriately fit the output structure of the divisions. This implies that the input-output ratios will remain constant over time.

3.2.3 Small Scale Manufacturing Industries

a. Introduction

Small Scale Manufacturing Industries covers establishments & households units that are engaged in manufacturing activities having less than ten employees. Manufacturing, irrespective of whether a large or small scale is covered in section C of PSIC-2010. The majority of the units are not registered and are part of the informal sector and most of them are difficult to estimate.

Pakistan Bureau of Statistics collected base year information through a special survey called "Small and Household Manufacturing Industries Survey" (SHMI), carried out in 2015 (calendar year). The results have been used in rebasing of National Accounts 2015-16, which are as follows in Table 3.6.

Table 3.6: Gross value added as per results of SHMI 2015 (Rs. in Million)

| S No. | Description | Pakistan | | |
|-------|--|----------------|----------------|----------------|
| | | Urban | Rural | Total (2015) |
| 1 | 2 | 3 | 4 | 5 |
| 1 | Value of Products & by Products at Producer Prices | 600,537 | 258,729 | 859,265 |
| 2 | Non Industrial Receipts | 1,030 | 107 | 1,137 |
| 3 | Output Producers, Prices (1+2) | 601,567 | 258,836 | 860,403 |
| 4 | Taxes on Production other than Sales Tax | 93 | 34 | 127 |
| 5 | Subsidies on Production | - | - | - |
| 6 | Output at Basic Prices (3-4+5) | 601,474 | 258,801 | 860,276 |
| 7 | Industrial Cost | 244,057 | 114,441 | 358,498 |
| 8 | Non Industrial Cost | 18,732 | 6,913 | 25,645 |
| 9 | Intermediate Consumption (7+8) | 262,789 | 121,355 | 384,143 |
| 10 | Gross Value Added at Basic Prices (6-9) | 338,686 | 137,447 | 476,133 |

Reference year of SHMI and base year National Accounts differ by calendar and financial year, which are adjusted by taking two quarters of 2015(July to December) and added two quarters of 2016 (January-June) along with growth and deflator change of (3.87%+8.20% = 12.07%) to adjusting and to calculate the figure for the financial year 2015-16 as given in Table 3.7.

Table 3.7: Gross value-added of SHMI in Financial Year i.e. 2015-16 (Rs.in Million)

| S No. | Description | Total (2015) | Total | 2015-16 | 2015-16 |
|-------|--|-----------------|----------------|----------------|----------------|
| | | | (2015)/2 | (Jan-Jul) | (July - June) |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Value of products & by products at Market prices | 859,549 | 429,775 | 481,649 | 911,423 |
| 2 | Non Industrial receipts | 1,137 | 569 | 637 | 1,206 |
| 3 | Sales Tax Levied on the output | 284 | 142 | 159 | 301 |
| 4 | Output producers, prices (1+2-3) | 860,403 | 430,201 | 482,127 | 912,328 |
| 5 | Net Taxes on production other than sales tax | 127 | 64 | 71 | 135 |
| 6 | Output at basic prices (4-5) | 860,276 | 430,138 | 482,055 | 912,193 |
| 7 | Industrial cost | 358,498 | 179,249 | 200,884 | 380,133 |
| 8 | Non Industrial cost | 25,645 | 12,823 | 14,370 | 27,193 |
| 9 | Intermediate consumption (7+8) | 384,143 | 192,072 | 215,255 | 407,326 |
| 10 | Gross value added at basic prices (6-9) | 476,133 | 238,066 | 266,801 | 504,867 |

b. Rebasing Effect

Gross value added at basic prices amounting to Rs. 505 billion in the new base year 2015-16 is much higher than the value accruing in old base year 2005-06 which was Rs. 92 billion and with the published value of Rs.414 billion. Thus, the effect of rebasing reflects an increase of 449 % as compared to 2005-06 and an increase of 22.11% with respect to published results of 2015-16 on old base of 2005-06. In other words, this activity was grossly underestimated in the old base. Comparison is given in Table 3.8 below.

Table 3.8: Comparison of gross value added – SHMI (Rs. Million)

| Description | Gross Value Added at Basic Price | | | % change | |
|---------------------------------|----------------------------------|---|------------------------------|-----------------|-----------------|
| | 2005-06 base | 2015-16 (Current) Base year 2005-06 | Base year 2015-16 SHMI | Column (4/2) | Column (4/3) |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Output | 205,479 | 924,257 | 912,193 | 343.93 | -1.31 |
| Intermediate Consumption | 113,557 | 510,788 | 407,326 | 258.7 | -20.26 |
| Gross Value Added | 91,922 | 413,469 | 504,867 | 449.23 | 22.11 |

c. Extrapolation

For forward extrapolation, we will use annual growth of 8.87 % starting from SHMI 2015-16 base year, whereas from constant to current WPI-SSMI deflator, will be used.

The SHMI survey did not deliver the true and clear picture of data having an equivalent matching long time series of constant values. Hence in special exercise, National Accounts figures have transformed to constant price uniformly into one single base and were decided to choose 1980-81 base years for this purpose as 1980-81 constant base covers all the

SHMI survey results up till now. The main results of subsequent surveys are given in table 3.9 given below.

Table 3.9: Results of Various SHMI Surveys

| SNo. | Description | SHMI Rs. Million | | | | |
|------|---|------------------|---------|---------|---------|---------|
| | | 1983-84 | 1987-88 | 1996-97 | 2006-07 | 2015-16 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Value of products & by-product at market price | 25,945 | 19,683 | 67,541 | 230,656 | 911,423 |
| 2 | industrial cost | 14,665 | 9,780 | 33,238 | 121,723 | 380,133 |
| 3 | Census value added (1-2) | 11,280 | 9,903 | 34,303 | 108,933 | 531,290 |
| 4 | Non-industrial cost - non-indus. Receipts | 265 | 38 | 265 | 4,341 | 25,987 |
| 5 | Gross value added at market price (3-4) | 11,015 | 9,865 | 34,038 | 104,592 | 505,303 |
| 6 | Net indirect taxes | 17 | 20 | 221 | 327 | 659 |
| 7 | GVA at factor cost, current prices (5-6) | 10,998 | 9,845 | 33,817 | 104,265 | 504,645 |
| 8 | Deflator (1980-81 = 100) | 117 | 157 | 349 | 490 | 1,103 |
| 9 | Gross value added at factor cost, constant prices (basis 1980-81) | 9,410 | 6,255 | 9,686 | 21,294 | 45,768 |
| 10 | Growth | | -34.0 | 55.0 | 120.0 | 115.0 |
| 11 | Geometric Growth | | -10.0 | 5.0 | 8.0 | 9.0 |

Table 3.10: Geometric Growth of SHMI 2015-16 over Previous SHMIs

| No | SHMI over previous SHMI | Geometric Growth | Total No years |
|----|-------------------------|------------------|----------------|
| 1 | 2 | 3 | 4 |
| 1 | 2015-16 over 2006-07 | 8.87 | 9 Years |
| 2 | 2015-16 over 1996-97 | 8.52 | 19 Years |
| 3 | 2015-16 over 1987-88 | 7.37 | 28 Years |
| 4 | 2015-16 over 1983-84 | 5.07 | 32 Years |
| 5 | Average | 7.46 | - |

Shifting of National Accounts' base year from 2005-06 to 2015-16, alternate geometric annual growth rate were calculated between SHMI 2006-07 and SHMI 2015-16 and then for the longer period between SHMI 1983-84, SHMI 1987-88 and SHMI 1996-97. After analysing different SHMI survey growth and focusing on choosing an appropriate period of two surveys for which the inter-survey annual growth could be calculated and then be taken as a yardstick for extrapolation and also for backward, growth between 2005-06 over 2015-16 i.e. 8.87%, has been taken as yardstick on the recommendations of the technical committee.

3.3 Slaughtering

3.3.1 Coverage

Slaughtering is not easy to define and classify. In Pakistan slaughtering activity can roughly be categorized into three different kinds:

- i. Slaughtering is an activity of large scale manufacturing resulting in commodities delivered at a big scale to wholesale or retail trade for the domestic market or exports.
- ii. Slaughtering is a small scale activity carried out by butchers belonging to the informal sector of the economy.
- iii. Services rendered by slaughterhouses to butchers who use these facilities against paying a fee for this.

Slaughterhouses can be part of the formal or informal sector. A slaughterhouse provides a facility where animals are processed/ slaughtered for consumption as food products. In PSIC rev. 4, the activities of slaughterhouses and butchers are covered in section C, in class 1010 of division 10. Then the meat is cut and sold in specialized shops. For this purpose, the “Retail sale of food in specialized stores” category, 4721 of PSIC rev. 4 is reserved.

The data situation in Pakistan does not encourage an “establishment approach” to cover the output of slaughtering. It is considered to have a “commodity flow approach” instead. This means that annual data about slaughtered animals are the basis for the calculation. The data, on regular basis, are available based on Census 2006 and provided by the “Ministry of National Food Security & Research (MNFSR), Livestock Wing.

The commodity flow approach is a functional one. At first, this means that we do not differentiate among the three kinds of slaughtering mentioned above. Secondly, we calculate slaughtering solely excluding any other secondary activity carried out by the slaughterhouses/slaughter shops. Consequently, PBS does not sub-classify slaughtering into large scale manufacturing and small scale manufacturing.

This functional approach is applied because of the informal nature of slaughtering activity and the non-availability of data from formal establishments. In Pakistan, around 67.9 million animals were slaughtered in 2015-16 in addition to 1016 million chickens, ducks, drakes, ducklings and other birds. In the benchmark year 2015-16, 2.02 million tons of beef, 0.69 million tons of mutton and 1.17 million tons of poultry meat were produced in Pakistan.

3.3.2 Output

The output consists of meat (mutton, beef and poultry), edible offal and other products (blood, bones, horns and hooves, heads and trotters, animal fats, guts, casings, and hides and skins). Prices of these products were collected through a study on Slaughtering in 2016-17. Based on the area sampling method, five villages were selected from each District and, one butcher was selected from each village. In Rural areas, a butcher himself performs all the activities of slaughtering. The butchers purchase animals from village farmers and slaughter & sell the animal meat.

Data on slaughtering Products is provided by MNFSR based on Livestock Census 2006. Due to the non-availability of fresh census data, old projections have been utilized for comparison. A detail of the output is given in Table 3.11.

3.3.3 Intermediate Consumption

The major input in the case of the slaughtering industry is the live animals and poultry. Animals and poultry are the output of livestock, where these are treated as “Sold for slaughtering” i.e., the output of the farmer is an input of slaughtering. To estimate intermediate consumption, projections based on Livestock Census 2006 have been used due to the non-availability of fresh data as detailed in table 3.11.

The gross value added is output minus intermediate consumption. The gross value added for the slaughtering of the new base year 2015-16 is given below in Table 3.11 with detail of output and inputs.

Table 3.11: Output, intermediate consumption and GVA of Slaughtering 2015-16 Rs. Million)

| Description | Output at basic Prices | Intermediate Consumption | GVA at basic prices |
|--------------------------|------------------------|--------------------------|---------------------|
| | | | col.2 - col.3 |
| 1 | 2 | 3 | 4 |
| Beef & Mutton | 1,237,154 | 1,175,043 | 62,111 |
| Poultry | 274,642 | 144,953 | 129,688 |
| Other Product* | 157,662 | 10,685 | 146,978 |
| Total | 1,669,458 | 1,330,681 | 338,776 |

* Other products include hides, skin, blood, bones, fat and head & trotters etc.

As shown in Table 3.11 above, the output of slaughtering has been assessed at Rs.1,669.5 billion. The intermediate consumption has now been assessed at Rs.1,330.7 billion. As a result of both new assessments in output and inputs, the GVA has been estimated as Rs. 338.8 billion.

3.3.4 Effect of Rebasing

The effect of the rebasing 2015-16 can be shown by comparison of the results 2015-16 according to the new base with those extrapolated for 2015-16 on old base 2005-06. It is shown in table 3.12 below. Two comparisons are of special interest:

- What is now the revised growth of value-added during the period between the two base years 2005-06 and 2015-16?
- What would be the discrepancy between the so for extrapolated figures and the new updated ones for the year 2015-16?

The effect of rebasing will also have an impact on the growth between 2005-06 and 2015-16. Over these 10 years output has increased by 320.6%. Both components contributed heavily. Intermediate consumption increased by 313.8%, at a lower rate than output, resulting in a higher increase in GVA which is 349.7%. The changeover 2015-16 as extrapolated according to the base 2005-06 is an increase of 9.03%.

Table 3.12: Output, IC and GVA of Slaughtering 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Description | 2005-06 base (Current Prices) | | 2015-16 base | % increase | |
|------------------------------------|-------------------------------|-----------|--------------|-----------------|-----------------|
| | 2005-06 | 2015-16 | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A. Output at basic prices | 396,910 | 1,647,504 | 1,669,458 | 320.61 | 1.33 |
| B. Intermediate Consumption | 321,572 | 1,336,795 | 1,330,681 | 313.81 | -0.46 |
| C. Gross Value Added (A-B) | 75,339 | 310,708 | 338,776 | 349.67 | 9.03 |

3.3.5 Extrapolation and Deflators

Output at constant basic prices is extrapolated through the production of meat and meat products for the subsequent years. Output at current prices for subsequent years is estimated by applying output inflator WPI (beef, mutton and chicken).

Intermediate consumption of the subsequent years at constant prices is calculated directly from the input data and using the input-output ratios of the base year 2015-16. Intermediate consumption of the subsequent years at constant prices is inflated with WPI (beef, mutton & chicken) to arrive at current prices.

Gross value added is obtained by subtracting intermediate consumption from the output for the constant prices and the current prices.

3.4 Electricity Generation & Distribution, Gas Distribution And Water Supply

This part consists of electricity generation, transmission & distribution, gas distribution and water supply in the private sector. All activities have been discussed separately. The establishment approach has been applied to the electricity and gas industry, whereas water supply has been estimated through study.

3.4.1 Electricity Generation And Distribution

In Pakistan electricity generation, transmission and distribution activities are conducted separately. The calculation of output, intermediate consumption and value-added of generation, transmission and distribution for the base year is done separately using specific data sources. Moreover, the treatment of subsidies on products is taken into consideration at the time of distribution by making it part of the output.

The production of electricity under this heading is confined to Water and Power Development Authority (WAPDA), provincial power development companies, public generation companies often abbreviated as “GENCOs” and independent power producers (IPPS). The production of electricity by other producers like shopkeepers, restaurants etc. and by private households are not included. This generation of electricity is part of the production process of these producers and to be recorded as intermediate consumption (e.g., diesel) or is part of private consumption, respectively.

About the physical conditions of electricity generation in Pakistan, there are four sources, hydel, thermal, nuclear and renewables (mainly solar and wind-based power generation). WAPDA and provincial energy departments supply hydel power, whereas Pakistan Electric Power Company (PEPCO) manages thermal electricity generation all over the country except Karachi and some areas of the Sindh and Baluchistan provinces. These areas fall under the jurisdiction of K-Electric, a Semi-government Company with a 24.63 % share of government.. The company is performing all three tasks i.e. generation, transmission and distribution. However, in the case of generation, the company also purchases power from IPPS and PEPCO. Captive units generate electricity for their use but also supply their surpluses to other distributors. Under the heading of electricity generation and distribution, the activity of the captive units is confined to their input to the public grid

a. Coverage

According to Pakistan Industrial Classification (PSIC) 2010 the coverage of the activity pertains to Division 35, Group 351, Class 3510.

b. Data

The data on production and intermediate consumption is being supplied by the generation, transmission and distribution establishments regularly. Some establishments publish annual reports which have also been utilized. Pakistan Energy Year Book 2016, published by Hydrocarbon Development Institute of Pakistan (HDIP) is another authentic source for details. It throws light on the physical structure of output and of their inputs, including the primary energy sources like oil, gas or coal used for the production of electricity. For the calculation of the subsidies linked to the distribution of electricity, figures of government expenditures have been used.

c. Output

As indicated it is intended to reconcile and to combine the figures of National Accounts (monetary terms) with those of the physical side (Hydrocarbon Institute). To begin with the physical side: WAPDA and provincial power development companies are major producers of Hydel power. The share of hydropower is 31% in the generated units (GWh) of electricity in 2015-16. Thermal power is being generated in a combination with public generation companies (GENCOs), K- Electric and IPPs and its contribution in the total power generation is 63% during the same year. The share of nuclear energy generation is around 4% only. Due to fluctuation in price and limited availability of fossil fuels (to be used for thermal power generation), the government started promoting renewable electricity mainly from wind and solar power. As a result, the share of renewable electricity increased from negligible in 2005-06 to 1.4% in 2015-16 and this share is continuously increasing. Captive units generally supply what is extra with them.

It is important to note that after the disintegration of WAPDA, the electricity distribution companies (DISCOs) have been taken as separate establishments. Furthermore, National Transmission and Distribution Company (NTDC) is taken as a separate entity. As, all of these establishments (WAPDA, DISCOs and NTDC) are publically owned establishments, therefore in the analysis these have been incorporated under the heading named “WAPDA and Companies”. The detail of units generated during 2015-16 and the respective share of each technology along with the distribution pattern is presented in Table 3.13.

Table 3.13: Detail of Technology and Sector-wise Power Generation during 2015-16

| Technology | Establishment | GWh | Share | GWh | % | | |
|-------------|---------------|---------|--------------------------------|---------|--------|-------------|---------|
| 1 | 2 | 3 | 4 | 5 | 6 | | |
| Hydel | WAPDA | 33,433 | Hydel. | 34,633 | 31.12 | | |
| | AJKPDO | 172 | Thermal | 70,512 | 63.35 | | |
| | PEDO/IPP | 1,028 | Nuclear | 4,606 | 4.14 | | |
| | S-Total | 34,633 | Renewable | 1,549 | 1.39 | | |
| Thermal | GENCOs | 13,917 | Total | 111,300 | 100 | | |
| | K-Electric | 10,323 | | | | | |
| | IPPs | 46,272 | | | | | |
| | S-Total | 70,512 | Auxiliary Consumption | | 4,123 | | |
| Nuclear | KANUPP | 430 | | | | Imported | 463 |
| | CHASNUPP-I | 1,616 | | | | Net Supply | 107,640 |
| | CHASNUPP-II | 2,560 | | | | Consumption | 90,431 |
| Renewable | Renewable | 1,549 | T & D losses | | 17,209 | | |
| | S-Total | 1,549 | Losses as % of Net supply = 16 | | | | |
| Grand Total | | 111,300 | | | | | |

Source: Pakistan Energy Yearbook 2016

Output in monetary terms is given in Table 3.14. It has been determined from the annual reports, questionnaires and correspondence with the establishments. About the generation and distribution of electricity, it is imperative to deal with subsidies and taxes properly.

It is well known and intensively discussed in the media and politics that in Pakistan provision of electricity to consumers is made at prices that do not fully cover the cost. The costs are mainly determined by the prices that the National Electric Power Regulatory Authority (NEPRA) has approved to be paid by the distribution companies. For many years, the DISCOs are running losses. For National Accounts there are two options to deal with these losses:

- In case these persistent losses occur “as a matter of deliberate government economic and social policy,” the SNA (7.105c) foresees to treat the compensation of these losses as a subsidy (“other subsidy on products”, transaction code D.319).
- The view is shared that these losses just happen because of poor performance or other economic deficiencies. The government and the management of the companies try hard to overcome these deficiencies.

As both these options persist in Pakistan so for this rebasing of National Accounts and this kind of activity subsidies have been incorporated in the output of the industry. This is consistent with the decision taken during the last rebasing of 2005-06.

d. Intermediate Consumption

The input structures of the four types of products are different from each other. Hydel generation is a cheaper one as it uses a flow of water as one of the major inputs. Thermal generation requires another input set. Furnace oil and natural gas / LNG are the major inputs. The third component is nuclear power which is being provided by nuclear power plants in the country. Renewable electricity is the fourth source of generation and is mainly provided by wind and solar power. Although solar power is abundantly available in the country, however, due to the

higher initial costs and lower efficiency of solar panels, solar electricity has not been promoted at a higher level as compared to wind power. In terms of fuel consumption, these resources are like hydro and are not fuel dependent. However, the per-unit cost of electricity from wind and solar is high as compared to hydro due to the reason that the government has allowed higher per-unit cost to promote these resources in Pakistan. The intermediate consumption pattern of these resources, therefore, differs accordingly.

Table 3.14 shows the details of input structure in monetary terms (values) using the prices of the base year. The physical composition of the inputs of the various producers remains constant over time. As WAPDA and provincial energy departments along with some IPPs are responsible for hydroelectricity generation, therefore its input structure is entirely different from other generation establishments. In the case of GENCOs, the input structure is heavily dependent on the use of fossil fuels. Generation from GENCOs is therefore almost completely dependent upon the use of natural gas / LNG and furnace oil. Gas is the main fuel for K-Electric. The dependence of IPPs' input is heavily on furnace oil and gas. The remaining are the mixed expenditures. The captive units are supplying to the national system what is surplus with them. The own use of energy in the captive units is being covered in the Census of large scale Manufacturing Industries. Table 3.14 below is referred for details.

e. Gross Value Added

It is derived from the output and intermediate consumption estimates. WAPDA & companies are major contributors; their contribution to value added is 83%. IPPs are the second major shareholders in value-addition.

Table 3.14: Generation and Distribution of Electricity 2015-16

| Category | Output | | Intermediate Consumption | | Gross Value Added | | Subsidy |
|--------------------|------------------|------|--------------------------|------|-------------------|------|-------------|
| | Mill. Rs | % | Mill. Rs | % | Mill. Rs | % | Million Rs. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| WAPDA & Companies* | 1,028,544 | 56.6 | 849,161 | 63.5 | 179,383 | 37.5 | 117,805** |
| K-Electric | 221,336 | 12.2 | 117,725 | 8.8 | 103,611 | 21.6 | 53,400 |
| IPPs*** | 494,855 | 27.2 | 356,185 | 26.6 | 138,671 | 29 | |
| Captive | 18,150 | 1 | 13,216 | 1 | 4,934 | 1 | |
| Renewables | 18,540 | 1 | 935 | 0.1 | 17,605 | 3.7 | |
| Nuclear | 34,780 | 1.9 | 388 | 0 | 34,392 | 7.2 | |
| Grand Total | 1,816,204 | 100 | 1,337,608 | 100 | 478,596 | 100 | |

* Companies include GENCOs, DISCOs and NTDC** only to DISCOs

The last column to the right shows the subsidies on products, included in the output which is measured at basic prices i.e. excluding taxes on products but including any subsidy levied on the products.

f. Effect of Rebasing

Table 3.15 enables a comparison of the results of the rebasing 2015-16 with the figures of the previous base for the same year as well as with the figures of the base year 2005-06. It is clear from the comparison of the previous and the new base for 2015-16 that the output is increased marginally by Rs.4 billion. The difference is attributed to the addition of small hydro operated by provincial public organizations and IPPs.

Column 5 of Table 3.15 indicates a huge increase (412%) in value-added of 2015-16 (new base) over 2005-06. The difference is due to a substantial increase in the consumption of electricity which rose from 67,430 GWh to 90,431 GWh and prices.

Column 6 of Table 3.15 reflects the change in volume accruing from improving data sources and methods. The output for the year 2015-16 on the base year 2005-06 has been underestimated due to the missing hydropower under provincial public organizations (PPDC (Punjab), PEDO (KPK) and AJK PDO).

Table 3.15: Comparison of output and GVA of electricity generation and distribution for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Description | Base Year 2005-06 (Current Prices) | | Base Year 2015-16 | % Change | |
|----------------------------|------------------------------------|-----------|-------------------|-----------------|-----------------|
| | 2005-06 | 2015-16 | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A. Output | 487,415 | 1,811,621 | 1,816,204 | 272.6 | 0.25 |
| B. Input | 394,009 | 1,337,501 | 1,337,608 | 239.5 | 0.01 |
| WAPDA & Companies | | 849,161 | 849,161 | | - |
| K-Electric | | 117,725 | 117,725 | | - |
| IPPs* | | 356,077 | 356,185 | | 0.03 |
| Captive | | 13,215 | 13,215 | | - |
| Renewables | | 935 | 935 | | - |
| Nuclear | | 388 | 388 | | - |
| C. Gross Value Added (A-B) | 93,406 | 474,120 | 478,596 | 412.4 | 0.94 |

* IPPs include all thermal, hydro and hydropower from provincial power departments.

g. Extrapolation and Deflators

For subsequent years, output and intermediate consumption of electricity generation and distribution are compiled at current prices using data reported by establishments/enterprises. The treatment of subsidies on products is taken into consideration at the time of distribution by making it part of the output. For constant price estimates of electricity generation and distribution, an Implicit Volume Index for Output (IVO) has been applied due to the non-availability of product-specific output and input deflators. Under this method, the current price output is deflated using CPI electricity to obtain output at constant prices which are then used to extrapolate intermediate consumption, derived as base year ratio, at constant prices. The current price subsidies are deflated separately and are added in the output at constant prices to obtain industry output at constant prices.

3.4.2 Gas Distribution

Natural gas forms a part of the output of mining. Its contribution to GDP has been discussed in the relevant industry (mining). The distribution activity is being discussed under a separate industry (class 3520 in PSIC 2010) but it should be noted that gas distribution here is confined to distribution through mains while sales of gas as energy for vehicles through CNG-stations does not fall under “gas distribution” but is covered under retail trade-in class 4730 of PSIC 2010. It should further be noted that production of Liquefied Petroleum Gas (LPG) is covered under manufacturing, class 1920 and its distribution is covered under trade-in class 4661 of PSIC 2010.

Sui Northern Gas Pipeline (SNGPL), Sui Southern Gas Company (SSGC) and Mari Gas Company are the major distributors. Mari Gas Company is treated as a special case. The production of gas activity has been covered under a functional approach in the mining and quarrying industry. If the secondary activity is nearly as important as the primary one, then the

secondary activity may also be covered as a separate establishment. First, the gas is produced under one industry (PSIC) and then it is distributed under another industry (PSIC). According to the vertical integration rule, such a situation demands separate establishments be assigned to each activity. For reference, paras of SNA 2008 are given below.

“ 5.15 Although the definition of an establishment allows for the possibility that there may be one or more secondary activities carried out, they should be on a small scale compared with the principal activity. *If a secondary activity within an enterprise is as important, or nearly as important, as the principal activity, then that activity should be treated as taking place within a separate establishment from that in which the principal activity takes place.*

5.22 Within the SNA, a separate establishment should be identified for each different kind of activity wherever possible.

5.23 *A vertically integrated enterprise is one in which different stages of production, which are usually carried out by different enterprises, are carried out in succession by different parts of the same enterprise.* The output of one stage becomes an input into the next stage, only the output from the final stage is sold on the market. *ISIC* describes vertically integrated enterprises as follows:

Vertical integration of activities occurs where the different stages of production are carried out in succession by the same unit and where the output of one process serves as input to the next. Examples of common vertical integration include tree felling and subsequent on-site sawmilling, a clay pit combined with a brickworks, or production of synthetic fibers in a textile mill.”

Vertical integration means to record deliveries between different establishments of Mari Gas “gross” while in the company’s record they are netted out (consolidated). Vertical integration also requires splitting the intermediate consumption as per the company record between the establishments involved. This has been done in the method described below.

a. Coverage

The coverage according to PSIC 2010 pertains to division 35, group 352, class 3520. In Pakistan, gas distribution only comprises Sui Southern, Sui Northern and Mari Gas companies. The data has been supplied by the distribution companies. The annual reports of the companies are a major source of data. Energy yearbook 2016 and onward are another authentic source for details. Efforts have been made to combine and reconcile these two sources as far as possible.

b. Output

As a first-round compilation, output has been delineated by using the data provided by the companies. However, in case of non-availability of data, annual reports of Sui Northern, Sui Southern and Mari gas companies have been used. Tables 3.16 and 3.17 show the cost of gas distribution by SSGC and SNGPL.

Table 3.16: Cost of gas distributed by “SSGC” 2015-16

| Item | | Value in Mill. Rs |
|---------------------|-----------------------|-------------------|
| 1 | 2 | 3 |
| Stock in pipelines | beginning of the year | 342 |
| | end of the year | 336 |
| Purchased | | 180,778 |
| Internally consumed | | 4,122 |
| Total | | 180,784 |

Table 3.17: Cost of gas distributed by “SNGPL” 2015-16

| Item | | Value in Mill. Rs |
|---------------------|-----------------------|-------------------|
| 1 | 2 | 3 |
| Stock in pipelines | beginning of the year | 1030 |
| | end of the year | 967 |
| Purchased | | 228,353 |
| Internally consumed | | 2,008 |
| Total | | 228,416 |

The quantity distributed by Mari Gas Company and output, intermediate consumption and gross value added has been calculated from the annual reports. It includes the quantities stemming from Mari’s own mining activities.

National Accounts output and value-added are measured at basic prices. This means that any tax levied on the products is excluded while any subsidy given to the distribution of gas is included. In the case of gas distribution taxes on products (here GST, only) is not shown separately in the company reports. These figures are relevant for calculating GDP which is the sum of all value added at basic prices plus taxes on products minus subsidies on products.

c. Intermediate Consumption

Intermediate consumption is compiled from the company reports at purchaser's price. For Sui Southern and Sui Northern, the major input is the gas it is purchasing from the mining companies. For Mari Gas, the gas it is distributing from its own production in their mining establishments.

d. Gross Value Added

The gross value added is calculated as output minus intermediate consumption. Gas distribution and its per unit value added by the companies have also been calculated. Table 3.18 shows the results.

Table 3.18: Output, intermediate consumption and GVA of distribution of gas during FY 2015-16 (Rs. in Million)

| Distributor | Output | Intermediate consumption | Gross Value Added |
|--------------|----------------|--------------------------|-------------------|
| 1 | 2 | 3 | 4 |
| SSGC | 183,388 | 143,032 | 40,356 |
| SNGPL | 254,273 | 232,925 | 21,348 |
| Mari Gas Co. | 25,874 | 7,140 | 18,734 |
| Total | 463,535 | 383,097 | 80,438 |

e. Rebasing Effect

The figures calculated for the new base year 2015-16 as compared with those calculated under the existing base year for 2005-06 show a huge increase of value-added of gas distribution activity by 243%. This is mainly attributed to the increasing prices of gas.

Table 3.19: Comparison of output and GVA of gas distribution for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. in Million)

| Description | Base 2005-06 | | Base 2015-16 | % Change | |
|-----------------------------|-------------------|-------------------|-----------------|----------|----------|
| | 2005-06 Prices | 2015-16 Prices | | Column 4 | Column 4 |
| | | | | over 2 | over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A. Gross output | 185,199 | 463,535 | 463,535 | 150.3 | - |
| B. Intermediate Consumption | 161,785 | 383,097 | 383,097 | 136.8 | - |
| SNGPL | 95,354 | 143,032 | 143,032 | 50 | - |
| SSGC | 66,141 | 232,925 | 232,925 | 252.2 | - |
| Mari gas company | 291 | 7,140 | 7,140 | 2,353.60 | - |
| C. Gross Value Added (A-B) | 23,414 | 80,438 | 80,438 | 243.5 | |

f. Extrapolation And Deflator

Output, intermediate consumption and value-added is calculated for each year at current prices and will be deflated by using WPI gas to arrive at constant prices.

3.4.3 Water Supply; Sewerage, Waste Management and Remediation Activities

a. Coverage

This industry is covered in Section E of the PSIC and is comprised of Divisions 36-Water collection, treatment and supply, 37-Sewerage, 38-Waste collection, treatment and disposal activities; materials recovery, and 39-Remediation activities and other waste management services. It includes the collection, treatment, and distribution of water for domestic and industrial needs. The activities related to the collection, treatment, and disposal of various forms of wastes, such as solid or non-solid industrial or household waste, as well as contaminated sites are also included.

b. Estimation of Output

In the 2005-06 base series of the GDP, the estimates of this industry are not separately available as it was included in the General Government Services. In 2015-16 rebasing, the contribution of this industry in the private sector has been estimated from the user side as the data needed for direct valuation through production approach is not available. The uses of the water, refuse/waste collection in industries i.e. agriculture, mining and quarrying, large-scale manufacturing industry, small and household manufacturing industry, construction, etc. have been taken from the surveys and census conducted for rebasing purposes. For industries where expenditures on water charges were reported along with electricity and gas, water charges have been estimated by using ratios of reported industries. Among the industries, the major expenditures on the water have been reported in agriculture i.e. Rs.84.363 billion out of which Rs.2.1 billion expenditure on canal water has been deducted. The remaining value of tube well water i.e. Rs.82.224 billion has been further adjusted for both electricity and diesel tube-wells in the public sector. The final overall expenditures on the water in the private sector have been estimated at Rs.81.934 billion

after excluding canal water and public sector tube well water. The expenditure on water charges incurred by households has been estimated through HIES 2015-16 which stands at Rs.65.1 billion. The household's expenditure has also been further adjusted for public sector supply of water using the proportion of piped water (27%) obtained from PSLM 2014-15 which comes out to be Rs.17.57 billion. The remaining amount of Rs.47.51 billion is the estimated value of the private-sector output of the water supply industry. The water supply expenditures in remaining industries have also been adjusted for public sector expenditures using industry-wise public-private employment ratios obtained from Labour Force Surveys which is Rs.29.55 billion. The reported expenditures by industries and households have been adjusted to the base year using CPI Water Supply. The total output/expenditures of the water supply have been estimated at Rs.159.0 billion.

The output of sewerage, waste collection, treatment, and disposal activities for households has also been estimated using expenditures reported in HIICS 2015-16 i.e. Rs.12.5 billion. Thus, the total output/expenditures in water supply; sewerage, waste management, and remediation activities in the private sector have been estimated at Rs.171.5 billion.

c. Intermediate Consumption

The input structure of water supply; sewerage, waste management, and remediation activities have been estimated from the establishments reported in the non-agricultural establishments part of the HIES Surveys. The input/output ratio has been estimated at 20%, which leads to the figure of intermediate consumption of Rs.34.3 billion. Thus the total GVA for the 2015-16 base years stands at Rs.137.2 billion.

d. Extrapolation and Deflators

The output is extrapolated at constant prices using inter-census (2017 and 1998) growth of urban dwellings, which is inflated by using CPI Water whereas intermediate consumption will be deflated through combined CPI energy and rent.

After the addition of water supply, the detailed estimates of the sector at both current and constant prices are as under:

Table 3.20: Comparison of output and GVA of electricity for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Description | Base Year 2005-06 | | Base Year 2015-16 | % Change | |
|-----------------------------|-------------------|----------------|-------------------|-----------------|-----------------|
| | 2005-06 Prices | 2015-16 Prices | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| ELECTRICITY | | | | | |
| A. Gross Output | 487,415 | 1,811,621 | 1,816,204 | 272.62 | 0.25 |
| B. Input | 394,009 | 1,337,501 | 1,337,608 | 239.49 | 0.01 |
| C. Gross Value Added (A-B) | 93,406 | 474,120 | 478,596 | 412.38 | 0.94 |
| GAS | | | | | |
| A. Gross output | 185,199 | 463,535 | 463,535 | 150.29 | - |
| B. Intermediate Consumption | 161,785 | 383,097 | 383,097 | 136.79 | - |
| C. Gross Value Added (A-B) | 23,414 | 80,438 | 80,438 | 243.55 | - |
| WATER | | | | | |
| A. Gross Output | | 171,518 | 171,518 | | - |
| B. Input | | 34,304 | 34,304 | | - |
| C. Gross Value Added (A-B) | | 137,214 | 137,214 | | - |
| TOTAL | | | | | |
| A. Gross Output | 672,614 | 2,275,156 | 2,451,257 | 264.44 | 7.74 |
| B. Input | 555,794 | 1,720,598 | 1,755,009 | 215.77 | 2 |
| C. Gross Value Added (A-B) | 116,820 | 554,558 | 696,248 | 496 | 25.55 |

3.5 Construction

3.5.1 Coverage

The construction industry accounts for 2.8% of the total GDP in Pakistan. According to PSIC 2010, Section F deals with general construction and specialized construction activities for building and civil engineering works. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site, and also a construction of temporary nature. Further, the section includes the complete construction of buildings (Division 41), the complete construction of Civil engineering works (Division 42) as well as specialized construction activities, if carried out as a part of the construction process (Division 43).

3.5.2 Estimation Methodology

Viewed from its products, the construction activity covers land improvement and construction of all types of buildings, roads, bridges, railway lines, utility lines (telecommunication lines, power lines, pipelines) waterways, dams as well as repairs and maintenance of such infrastructure. In the old base i.e. 2005-06, the estimates of construction activity were developed by a product flow approach based on the expenditures incurred by the establishments undertaking the construction or the contractors or the sub-contractors purchasing the construction material. The data on expenditures on construction of these activities were obtained from GFCF reported under various industries. The estimates of construction in 2005-06 base were compiled using input-out ratios of the study conducted for change of base in 1999-2000. For 2005-06, a 'Private Building Construction Survey 2007-08' was conducted but it was only restricted to private construction

covering partial construction activity. Hence, the survey results could not be used for the estimation of value-added of the construction industry primarily due to limited coverage.

For 2015-16 rebasing of national accounts, to overcome the previous rebasing shortcomings in the construction industry, two separate questionnaires were designed for Construction Establishments and Private Buildings under the umbrella of Construction Survey 2014-15 to improve the coverage of formal and informal activities respectively. The sampling frame was based on construction industries incorporated in the Business Register (BR) of the Pakistan Bureau of Statistics (PBS) comprising of contractors and operators registered in the Pakistan Engineering Council (PEC), the statutory body to regulate engineering progression in the country. The frame, comprising of 24,299 establishments, was further stratified by provinces and by eight distinct categories by their capital/working capacity ranging from No limit to 20 million rupees. A sample of 2,566 establishments was selected by the Sample Design Section of the PBS. The response, received from 302 establishments (12%), was low due to security reasons and a general reluctance on the part of establishments. However, the non-response was adjusted through weights derived by the Sample Design Section. The raised output of establishments, comprising of construction of residential, non-residential buildings, other structures, construction work abroad, consultancy services, etc. have been estimated at Rs.661.2 billion whereas intermediate consumption, mainly comprising of cement, iron/steel, PVC pipes, sanitary items, block/bricks, ceramics and marble tiles, etc. has been estimated at Rs.287.9 billion resulting into GVA of Rs.373.7 billion (excluding bank charges and insurance payments) for the survey period i.e. 2014-15.

For private buildings (informal construction activity undertaken by households), all buildings/structures in urban and rural areas of four provinces of Pakistan were considered as the universe of the survey. A two-stage stratified random sampling technique, as applied in other household surveys conducted by the PBS e.g. Pakistan Social & Living Standard Measurement (PSLM), Household Integrated Economic Survey (HIES) and Labour Force Survey etc. was applied. In the first stage, enumeration blocks in urban areas and villages in rural areas were selected. Fourteen large cities in urban areas were considered as Self Representative Cities (SRC) and constituted separate stratum which were further sub-stratified into low, middle, and high-income groups. The remaining urban areas/localities within an administrative Division were considered as a separate stratum. In the rural domain, each administrative district in the provinces of Punjab, Sindh and KP was considered as an independent stratum whereas, in the Balochistan province, each administrative division was taken as a stratum. Keeping in view the objectives of the survey and resource constraints of the PBS, a sample of 2,065 enumeration blocks (PSUs) comprising of 1,245 enumeration blocks from urban areas and 820 from rural areas, was selected. The responses (97.5%) were received from 2013 sample areas. The remaining 52 sample areas had to be dropped due to security reasons. The non-response was adjusted by using weights provided by the Sample Design Section. The raised construction expenditures for private buildings, comprising of construction materials such as cement, iron/steel, PVC pipes, sanitary items, block/bricks, ceramics and marble tiles, etc. and construction related services such as architecture/engineers services, site preparation, electrician, plumbing charges, heat and air conditioning installation costs, painting, building completion and finishing, shuttering charges, cost of hiring machinery, plant & equipment, etc., has been estimated at Rs.836.2 billion. This construction expenditure has been treated as the output of private buildings. The input-output ratio of establishments @0.46 (derived from the construction of buildings by establishments) has been used to derive the estimates of intermediate consumption and GVA of private buildings which stands at Rs.384.1 billion and Rs.452.2 billion respectively. Hence, the total output, intermediate consumption and GVA obtained from the Survey during the reference period i.e. 2014-15 stands at Rs.1497.8 billion, 672.6 billion and

Rs.825.2 billion respectively. The survey results have been adjusted to the base year 2015-16 by using aggregate growth of construction expenditure at current prices reported by producing industries. Hence, output, intermediate consumption and GVA for the construction industry during the base year 2015-16 have been estimated at Rs.1644.3 billion, Rs.737.6 billion and Rs.906.6 billion respectively.

Table 3.21: Comparison of GVA of the construction industry for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. in Million)

| Description | Base 2005-06 (Current Prices) | | Base 2015-16 | % Change | |
|--------------------------------|-------------------------------|---------|--------------|--------------|--------------|
| | 2005-06 | 2015-16 | | column 4 / 2 | column 4 / 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Establishments | | | 410,231 | | |
| Households (Private Buildings) | | | 496,383 | | |
| Gross Value Added | 197,110 | 608,467 | 906,614 | 359.95 | 49 |

3.5.3 Extrapolation and Deflators

The GVA estimates at current prices for subsequent years have been derived by using aggregate growth of construction expenditures at current prices reported by producing industries. WPI building material has been used to derive the value-added estimates at constant prices.

SERVICES**4.1 Wholesale and Retail Trade****4.1.1 Coverage**

Wholesale and retail trade (WRT) covers Section (“G”) of Pakistan Standard Industrial Classification (PSIC) 2010, termed as “Wholesale and retail trade; repair of motor vehicles, motorcycles”. This industry is comprised of wholesale & retail trade, repair of motor vehicles & motorcycles, wholesale trade & retail trade except for motor vehicles and motorcycles.

4.1.2 Estimation Methodology

For the conceptual clarification and future guidance, the trade activity is briefly described in the light of the 2008 SNA, paras **6.146 to 6.150**: “Although wholesalers and retailers buy and sell goods, the goods purchased are not treated as part of their intermediate consumption when they are resold with only minimal processing such as grading, cleaning, packaging, etc. Wholesalers and retailers are treated as supplying services to their customers by storing and displaying a selection of goods in convenient locations and making them easily available for customers to buy. Their output is measured by the total value of the trade margins realized on the goods they purchase for resale. *A trade margin is defined as the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed off.*”

According to SNA **6.147**, “*the standard formula for measuring output has to be modified for wholesalers or retailers by deducting from the value of the goods sold or otherwise used the value of the goods that would need to be purchased to replace them. The latter includes the additional goods needed to make goods recurrent losses due to normal wastage, theft or accidental damage. In practice, the output of a wholesaler or retailer is given by the following identity:*

The value of output =

the value of sales,

plus the value of goods purchased for resale and used for intermediate consumption,

compensation of employees, etc.,

minus the value of goods purchased for resale,

plus the value of additions to inventories of goods for resale,

minus the value of goods withdrawn from inventories of goods for resale,

minus the value of recurrent losses due to normal rates of wastage, theft or accidental damage.”

In Pakistan, the trade margins have to be calculated indirectly for the reason that the economy is not well documented and establishment-level data relating to trading activities are not available. However, the results follow the rationale of SNA 2008. The purpose is achieved by determining the marketable supply of the economy and applying ratios of average trade margins. The marketable supply is a commodity-based concept. It is a commodity flow approach and complies

with the “functional” or commodity-wise approach applied for measuring the output of crops, livestock, fishing and slaughtering. The formula is *Marketable supply at basic prices * ratio for trade margin = output of WRT at basic prices* (“trade margin”).

The above-mentioned concept of marketable supply is applied to three main groups of commodities. Crops, livestock products other than animals sold for slaughtering, forestry products and fishing are one group. The products produced by domestic large scale manufacturing, small scale manufacturing including slaughtering, are another group. The third group consists of imports of consumer goods, capital goods and intermediate goods. In each of these groups, we estimate the value of goods that are sold to intermediate or final domestic or foreign users via trade.

4.1.3 Data, Sources and Results by Commodity Groups

a. Agricultural Products, Forestry and Fishing

The output data for the agricultural products at basic prices, compiled for the value-added estimation of agriculture e.g. crops, livestock, forestry and fishing are subsequently used for the estimation of trade value-added. The marketable supply of agricultural products is estimated using the proportion of output retained by farmers for their own final consumption and wages in kind reported in the Household Integrated Income & Consumption Survey (HIICS) 2015-16 conducted by PBS. The information in HIICS is also available on “Own produced and consumed, retained, wages in kind, received as a gift etc.” on the agricultural commodities. Marketable supply percentages have been determined in this rebasing. Trade and transport margins for crops are computed from the “input/output survey of crops 2016-17”. The harvest prices are subtracted from wholesale prices to get wholesale margin and wholesale prices are subtracted from retail prices to get retail margins. Margins for livestock are derived from the study on “Beopari” conducted in 2016-17.

For fishing industry, the ratio for marketable supply is derived from HIICS 2015-16 and trade margins are calculated by using wholesale & retail prices taken from the price section and producer prices taken from the study on fishing 2016-17. For forestry products, the output is already calculated from the demand side like firewood. Thus, the output is close to the marketable supply. For forestry, the trade margin is repeated as in 2005-06 base.

b. Products of Large Scale Manufacturing

Ratios for marketable supply have been updated for the base year 2015-16. The output from the “CMI 2015-16” is the base value for the commodity flow approach. However, it has been clubbed according to the groups of the monthly production index “QIM” and the trade margins of the previous base year have been maintained.

c. Products of Small Scale Manufacturing

Ratios for marketable supply have been updated for the base year 2015-16. Trade margins and intermediate consumption of the previous base year have been maintained and applied to the output.

d. Products of Slaughtering

Different outputs of slaughtering avail the trading services. Meat hides and skins, fats etc. pass through this channel. Trade margins and ratios have been updated through the study on slaughtering (Butcher) conducted in 2016-17.

e. Imports

This group has been divided into three categories, i. e., consumer goods, capital goods and intermediate goods. The data on respective imports is being supplied by the external trade section of PBS. The marketable portions of the commodities and trade margins ratios have been retained from the previous base. The margins of the groups have been compiled based on margins of related commodities falling in the respective group.

Table 4.1: Application of Ratios of WRT for Trade Value-Added and Extrapolation, base 2015-16

| Sr.No. | Items/commodities | Ratios to output for % | | | 2015-16 (Rs. Million) | | | | |
|--------|--------------------------------|------------------------|-------------|------|-----------------------|-----------|---------|---------|---------|
| | | Market Supply | Trade (MS) | | Output | MS | Trade | | |
| | | | Output | GVA | | | Output | GVA | IC |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Wheat | 75 | 37.9 | 29.3 | 809,658 | 607,620 | 230,365 | 177,934 | 52,431 |
| 2 | Maize | 95 | 37.9 | 29.3 | 139,399 | 132,429 | 50,207 | 38,780 | 11,427 |
| 3 | Rice | 90.2 | 37.9 | 29.3 | 186,884 | 168,596 | 63,919 | 49,371 | 14,548 |
| 4 | Barley, Bajra, Jowar | 95 | 37.9 | 29.3 | 17,476 | 16,602 | 6,294 | 4,862 | 1,433 |
| 5 | Gram | 66.3 | 19.4 | 15 | 25,284 | 16,751 | 3,251 | 2,511 | 740 |
| 6 | Other pulses | 78.7 | 33.4 | 25.8 | 11,991 | 9,442 | 3,157 | 2,439 | 719 |
| 7 | Potatoes & Sweet potato | 97.3 | 20 | 15.5 | 69,406 | 67,515 | 13,535 | 10,454 | 3,081 |
| 8 | Onion | 97.7 | 20 | 15.5 | 59,140 | 57,769 | 11,581 | 8,945 | 2,636 |
| 9 | All Other Vegetables | 94 | 24.1 | 19.4 | 53,455 | 50,265 | 12,097 | 9,769 | 2,329 |
| 10 | Vegetables seeds | 100 | 11.4 | 9.2 | 24,761 | 24,761 | 2,833 | 2,284 | 549 |
| 11 | Fruits | 95.7 | 51.2 | 45.1 | 281,274 | 269,265 | 137,939 | 121,496 | 16,442 |
| 12 | Oils seeds | 89 | 10.4 | 9.1 | 27,882 | 24,815 | 2,573 | 2,266 | 307 |
| 13 | Flowers &F.Buds | 97 | 41.1 | 34.5 | 10,448 | 10,135 | 4,165 | 3,497 | 668 |
| 14 | Spices | 97 | 22.9 | 20.1 | 32,249 | 31,282 | 7,151 | 6,299 | 852 |
| 15 | Tobacco | 40 | 21 | 15.6 | 16,323 | 6,529 | 1,373 | 1,017 | 356 |
| 16 | Sugarcane | 33 | 34.8 | 27.8 | 302,960 | 99,977 | 34,775 | 27,820 | 6,955 |
| 17 | Green Fodders | 40 | 20 | 16 | 489,076 | 195,630 | 39,126 | 31,301 | 7,825 |
| 18 | Dry Fodders | 40 | 20 | 15 | 323,092 | 129,237 | 25,847 | 19,386 | 6,462 |
| 19 | Cotton | 99 | 37.9 | 29.3 | 322,013 | 318,793 | 120,863 | 93,355 | 27,508 |
| 20 | Live animals to be slaughtered | 96.8 | 20.1 | 15.6 | 1,175,043 | 1,137,442 | 228,892 | 177,414 | 51,478 |
| 21 | Poultry &Eggs (farming) | 94.6 | 9 | 6.3 | 439,389 | 415,519 | 37,416 | 26,147 | 11,270 |
| 22 | Milk | 88.5 | 25.1 | 19.1 | 2,891,350 | 2,558,503 | 643,245 | 487,709 | 155,537 |
| 23 | Wool &Hair | 100 | 41.4 | 31.1 | 2,648 | 2,648 | 1,097 | 823 | 274 |
| 24 | Dung &urine | 50 | 20 | 18 | 315,000 | 157,500 | 31,500 | 28,350 | 3,150 |

| Sr.No. | Items/commodities | Ratios to output for % | | | 2015-16 (Rs. Million) | | | | |
|--------|---|------------------------|-------------|------|-----------------------|-----------|---------|---------|---------|
| | | Market Supply | Trade (MS) | | Output | MS | Trade | | |
| | | | Output | GVA | | | Output | GVA | IC |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 25 | Honey | 83.4 | 43.7 | 39.4 | 38,700 | 32,277 | 14,110 | 12,722 | 1,388 |
| 26 | Forestry | 94 | 58.7 | 53.1 | 212,498 | 199,749 | 117,252 | 106,113 | 11,139 |
| 27 | Fishing | 91.7 | 42.1 | 36.8 | 175,047 | 160,456 | 67,594 | 59,009 | 8,584 |
| 28 | Food Products | 97 | 31.6 | 24.6 | 2,460,070 | 2,386,268 | 754,061 | 585,905 | 168,156 |
| 29 | Beverages | 97 | 31.6 | 24.6 | 218,024 | 211,484 | 66,829 | 51,926 | 14,903 |
| 30 | Tobacco Products | 97 | 31.6 | 24.6 | 105,035 | 101,884 | 32,195 | 25,016 | 7,180 |
| 31 | Textiles | 97 | 25.3 | 19.9 | 2,425,116 | 2,352,362 | 595,148 | 468,024 | 127,124 |
| 32 | Wearing Apparel | 97 | 25.3 | 19.9 | 692,835 | 672,050 | 170,029 | 133,711 | 36,318 |
| 33 | Leather and Related Products | 97 | 35.2 | 26.2 | 135,254 | 131,196 | 46,194 | 34,410 | 11,784 |
| 34 | Wood and of Products of Wood and Cork, Except Furniture; Articles of Straw and Plaiting Materials | 97 | 28.9 | 21 | 42,224 | 40,957 | 11,816 | 8,608 | 3,208 |
| 35 | Paper and Paper Products + Printing and Reproduction of Recorded Media | 97 | 45.6 | 33.9 | 247,690 | 240,260 | 109,630 | 81,532 | 28,098 |
| 36 | Coke and Refined Petroleum Products | 97 | 27.5 | 18.8 | 744,552 | 722,216 | 198,320 | 135,671 | 62,649 |
| 37 | Chemicals and Chemical Products | 97 | 34 | 29.8 | 864,113 | 838,190 | 284,565 | 249,678 | 34,888 |
| 38 | Pharmaceuticals products | 97 | 30.6 | 23.3 | 507,860 | 492,624 | 150,891 | 114,918 | 35,972 |
| 39 | Rubber and Plastics Products | 97 | 19 | 17.4 | 225,100 | 218,347 | 41,399 | 37,904 | 3,494 |
| 40 | Other Non-Metallic Mineral Products | 97 | 21.6 | 16.4 | 654,284 | 634,656 | 136,895 | 103,986 | 32,910 |
| 41 | Basic Metals | 97 | 19.8 | 16.2 | 488,252 | 473,604 | 93,916 | 76,936 | 16,980 |
| 42 | Fabricated Metal Products, Except Machinery and Equipment | 97 | 19.8 | 16.2 | 96,718 | 93,816 | 18,604 | 15,240 | 3,364 |
| 43 | Computer, Electronic and Optical Products | 97 | 41.6 | 34.3 | 17,299 | 16,780 | 6,981 | 5,763 | 1,217 |
| 44 | Electric Equipment | 97 | 41.6 | 34.3 | 257,195 | 249,479 | 103,783 | 85,684 | 18,100 |
| 45 | Machinery and Equipment N.E.C. | 97 | 31.6 | 27.9 | 103,050 | 99,958 | 31,597 | 27,872 | 3,725 |
| 46 | Motor vehicles, trailers etc. | 97 | 35.3 | 25.3 | 426,266 | 413,478 | 145,834 | 104,461 | 41,373 |
| 47 | Other Transport Equipment | 97 | 35.3 | 25.3 | 125,855 | 122,079 | 43,057 | 30,842 | 12,215 |
| 48 | Furniture | 97 | 28.9 | 21 | 48,480 | 47,026 | 13,567 | 9,884 | 3,683 |

| Sr.No. | Items/commodities | Ratios to output for % | | | 2015-16 (Rs. Million) | | | | |
|--------|----------------------------------|------------------------|-------------|------|-----------------------|-----------|---------|---------|---------|
| | | Market Supply | Trade (MS) | | Output | MS | Trade | | |
| | | | Output | GVA | | | Output | GVA | IC |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 49 | Other Manufacturing | 97 | 31.2 | 24.4 | 95,814 | 92,940 | 29,029 | 22,690 | 6,339 |
| 50 | Small scale manufacturing | 90 | 52.3 | 39.7 | 912,193 | 820,974 | 429,369 | 326,321 | 103,049 |
| 51 | SL.Meat | 97 | 9.8 | 9 | 1,511,795 | 1,466,441 | 144,416 | 132,083 | 12,333 |
| 52 | Sl-other products | 100 | 39.6 | 26.7 | 157,662 | 157,662 | 62,439 | 42,146 | 20,293 |
| 53 | Imp-consumer products | 95 | 31 | 24.8 | 870,977 | 827,428 | 256,503 | 205,202 | 51,301 |
| 54 | Imp-capital goods | 68 | 22 | 20.1 | 1,482,678 | 1,008,221 | 221,809 | 202,622 | 19,186 |
| 55 | Imp-intermediate goods | 72 | 25 | 21.9 | 2,305,095 | 1,659,668 | 414,917 | 364,090 | 50,827 |
| 56 | Natural Gas(CNG station) | | 80 | 80 | 35,214 | 35,214 | 35,214 | 28,171 | 7,043 |
| 57 | Maintenance & Repair of Vehicles | | 90 | 90 | 201,685 | 201,685 | 201,685 | 181,516 | 20,168 |

4.1.4 Effect of Rebasing

Table 4.2: Gross Value Added of Trade 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Gross Value Added of | Base 2005-06 | | Base 2015-16 | % increase | |
|------------------------------------|------------------|------------------------------|------------------|---------------|---------------|
| Trade-in | 2005-06 Price | 2015-16 at prices of 2015-16 | | Col. 4 over 2 | Col. 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Agriculture | 313,370 | 1,165,489 | 1,512,073 | 382.5 | 29.7 |
| Crops | 154,620 | 505,438 | 613,786 | 297 | 21.4 |
| Livestock | 118,851 | 505,283 | 733,164 | 516.9 | 45.1 |
| Forestry | 23,085 | 111,879 | 106,113 | 359.7 | -5.2 |
| Fishing | 16,813 | 42,889 | 59,009 | 251 | 37.6 |
| Manufacturing | 791,250 | 2,586,219 | 2,911,208 | 267.9 | 12.6 |
| LSM | 686,937 | 2,129,208 | 2,410,659 | 250.9 | 13.2 |
| SSM | 73,418 | 330,237 | 326,321 | 344.5 | -1.2 |
| Slaughtering | 30,895 | 126,773 | 174,229 | 463.9 | 37.4 |
| Imports | 271,588 | 773,628 | 771,914 | 184.2 | -0.2 |
| Others | 34,231 | 125,956 | 209,687 | 512.6 | 66.5 |
| CNG (special stores) | 5,530 | 17,868 | 28,171 | 409.4 | 57.7 |
| Maintenance and repair of vehicles | 28,701 | 108,088 | 181,516 | 532.4 | 67.9 |
| TOTAL | 1,410,439 | 4,651,292 | 5,404,882 | 283.2 | 16.2 |

4.2 Transport and Storage

Introduction

It is a vast sector, data sources are multiple and data availability is the main factor to determine the estimation approach. The sources are annual reports and questionnaires received from respective enterprises/establishments. These have been supplemented by studies and surveys. The estimation is a combination of functional, enterprise and establishment approaches. The indicators and ratios have also been taken from the surveys/studies of 2015-16. The sources have been mentioned in the respective sections.

Coverage

The coverage is according to the PSIC-2010 which includes the provision of passenger or freight transportation, by land, water and air. It includes rail, road, pipeline, water, air and associated activities such as terminal and parking, cargo handling, storage etc. The renting of transportation equipment with operators, postal and courier services are also part of this industry. The sources of data along with PSIC references are given below.

Table 4.3: Transport and Storage Structure and Sources of Data by PSIC

| PSIC 2010 | Description | Company reports | Survey and studies for rebasing |
|-----------|---|--|--|
| 1 | 2 | 3 | 4 |
| 491 | Railway transport | Pakistan Railways | - |
| 492 | Other land transport | - | Road Transport |
| 493 | Transport via pipelines | APL,PARCO(Oil Pipeline),FOTCO | - |
| 501 | Sea and coastal water transport | Pakistan National Shipping Corporation (PNSC) | - |
| 502 | Inland water transport | - | Inland Water Transport (Boats Inland) |
| 511 | Air transport | Domestic, airlines (PIA, Sareen Air, Air Blue), Foreign airlines | - |
| 521 | Storage and warehousing | - | The Study on warehouses and Storage 2016-17 |
| 791 | Travel agencies and tour operators | - | Travel agents/Tour operators & Railways franchised booking agents. |
| 522 | Other supporting and auxiliary transport activities | KPT,PQA,KICT,QICT,PICT, | Shipping, Goods Forwarding and Custom clearing agents and International freight forwarders |
| | | Engro Vopak Container Terminal | |
| 531 | National post activities | Post Office, Pakistan | - |
| 532 | Other courier services | - | Courier services & franchised post offices |

The company reports serve the enterprise concept. The studies are based on the establishment concept and some data series example mechanized road transport- are compiled by functional approach.

4.2.1 Transport

It has been divided into three main groups, land, water and air transport. These are further subdivided into groups according to their characteristics. Passengers and freight transportation are the main categories according to the PSICs

a. Land Transport

This is the major category of the industry. Transportation via railways, road and pipeline are the sub-categories. These are briefly discussed below.

i. Transport via Railways

Pakistan Railways (PR) is a commonly used mode of transportation for passengers and freight in the country. The data are collected through questionnaires supplemented by the annual reports. The coverage also includes Railways franchised booking agents and Pakistan Railways Advisory and Consultancy Services (PRACS). For PR, annual estimates are compiled at current prices based on the reports received from the source and converted into constant prices using double deflation. For franchise booking agents, a special survey was conducted in 2016-17. A sampling frame was obtained from PRACS and efforts were made to collect information directly from the franchise booking agents. However, a reasonable response was not received. The matter was

taken up with PRACS and they have started providing annual output and IC of all franchise booking agents along with their report.

Extrapolation and Deflator

For subsequent years output and IC is compiled at current prices based on reports received from sources. For the output of PR, PRACS and franchise booking agents, a specifically developed unit value index by combining passengers and tonnage per kilometer is used as the deflator. For IC, WPI diesel is applied to arrive at constant prices.

ii. Road transport

It is a major component of transportation activities, which is mostly informal. It contributes 85% to GVA of the transport and storage industry. In the case of road transport, the most reliable figure is that of the number of registered vehicles used for commercial transport. Therefore, the output and the input of road transport have been estimated per vehicle. Because of the informal nature of the industry and the non-availability of the data at the establishment level, the value-added contribution for the base year has been estimated indirectly using the number of vehicles on road obtained from National Transport Research Centre (NTRC). In 2015-16, output and IC per vehicle were estimated through a study conducted in 18 major cities of Pakistan separately for mechanized and non-mechanized road transport. Information was collected for 24 types of mechanized vehicles by the field staff of the Regional / Field offices of PBS. The gross value added of the mechanized road transport industry has been estimated by multiplying the number of vehicles on road obtained from NTRC with category-wise output and IC per vehicle obtained from the study.

A dedicated study for non-mechanized road transport e.g. hand cart, horse cart, donkey cart and camel cart etc. was conducted in 18 major cities of the country. Information on 06 categories was collected and output and IC per vehicle were estimated. Number of non-mechanized categories already in use since 2007-08 provided by PBS, Karachi were extrapolated by growth in several animals for work provided by the Ministry of National Food Security and Research (M/o NFS&R).

Extrapolation and Deflator

Output and IC for mechanized road transport are extrapolated at constant prices by using several mechanized vehicles on road provided by NTRC which are inflated by CPI (mechanized) urban and WPI (diesel) respectively.

Output and IC for non-mechanized road transport are extrapolated at constant prices by using the growth of several animals for work and inflated by using CPI (General) urban.

iii. Transportation via Pipelines

The pipeline transport industry comprises 03 establishments namely, Asia Petroleum Limited (APL), Pak-Arab Refinery Ltd. (PARCO) (Oil Pipeline) and Fauji Oil Terminal and Distribution Company (FOTCO). Output and IC at current prices are compiled from data received from these sources. CPI (General) is used as the deflator.

b. Water Transport

The Water Transport industry comprises of Pakistan National Shipping Corporation (PNSC), Karachi Port Trust (KPT), Port Qasim Authority (PQA), Gawadar Port Authority (GPA), Container Terminal Companies, Shipping & Customs Clearing Agents and Goods Forwarding Agencies, International Freight Forwarders and Boats.

PNSC, KPT, PQA, GPA and Container Terminal Companies provide data on output and IC on current prices. A specifically developed unit value index by combining cargo handled at seaports and revenue is used as a deflator for output and IC WPI (diesel) is applied.

For Shipping & Customs Clearing Agents and Goods Forwarding Agencies, a dedicated study was conducted by field staff of PBS to estimate output, IC and GVA in the base year. The sampling frame of 4,016 establishments for Shipping & Customs Clearing Agents was obtained from the Federal Board of Revenue (FBR) and for Goods Forwarding Agencies frame of 10,588 establishments was received from the Goods Forwarding Association.

To estimate, output, IC and GVA of International Freight Forwarders in the base year, a study was conducted by using the sampling frame of 644 establishments, provided by the Pakistan International Freight Forwarders Association.

Boats comprise of inland and marine. This industry is completely informal and its contribution to GDP 2015-16 rebasing has been assessed through a study. A sample frame of inland boats was developed by utilizing the field staff of PBS by visiting commonly used crossing points in their respective areas and 769 crossing points were identified. In their second visit, PBS field staff filled questionnaires from boat operators through the interview method. Output amounting to RS.1,035 million and IC amounting to Rs.460 million were estimated resulting in GVA of Rs.575 million. For Marine boats, the frame was received from the Mercantile Marine Department, Karachi which consisted of 437 passenger water transport boats excluding the fishing boats. For marine, per boat output and IC were estimated in the base year.

Extrapolation and Deflators

For Shipping and Customs Clearing Agents and International Freight Forwarders, output and IC at current prices will be extrapolated by using the growth of trade (import plus exports) other than petroleum products. A specifically developed unit value index by combining cargo handled at seaports and revenue which is used as a deflator for output and IC WPI (diesel) is applied.

For Goods Forwarders, output and IC at constant prices are extrapolated by the growth in the number of trucks on road provided by NTRC. A specifically developed unit value index by combining cargo handled at seaports and revenue is used as an inflator for output and, for IC WPI (diesel) is applied.

For inland boats, output and IC are extrapolated at constant prices by the growth of a number of boats. The output is inflated by CPI (general) and IC by WPI (diesel). Similarly, for marine boats, output and IC are extrapolated at constant prices by multiplying the number of marine boats with per boat output and IC estimated in the base year. To arrive at current prices, CPI (general) and WPI (diesel) are used for output and IC respectively.

c. Air Transport

The Air transport industry comprises domestic airlines, foreign airlines, Sialkot international airport (SIAL) (the only airport in the private sector), Civil Aviation Authority (CAA), travel agents & tour operators. Information regarding output, IC and GVA are compiled from the sources on annual basis at current prices except for travel agents and tour operators. Based on the data provided by Pakistan International Airlines (PIA), a specifically developed unit value index by combining passengers and tonnage per kilometer is used as a deflator for output as well as IC.

To assess the value addition of travel agents & tour operators in the industry, a study was conducted during 2016-17. A Sampling Frame containing 5,716 establishments was provided by Capital Administration and Development Division (CAAD), International Air Transport Association (IATA) and for Non-IATA from Provincial Tourism Departments.

Extrapolation and Deflators

For travel agents and tour operators, output and IC are extrapolated at current prices by using the growth of output of domestic and international airlines. Based on the data provided by PIA, a specifically developed unit value index by combining passengers and tonnage per kilometer is used as a deflator for output as well as IC.

4.2.2 Postal and Courier Activities

This industry contains Pakistan Post, franchise post offices and courier services. Pakistan Post is a public sector entity that provides its financial details at current prices on an annual basis.

Contribution towards the GDP of franchise post offices has been estimated through a study conducted in 2016-17. A sampling frame of 118 establishments was provided by Pakistan Post. Output, IC and GVA were estimated for the base year. For courier companies, no sampling frame was available; hence, the same was developed through the internet. 21 major courier companies were identified and data were collected from these companies by regional / field offices of PBS.

Extrapolation and Deflators

For franchise post offices, output and IC is extrapolated at constant prices by using the growth rate of the number of franchise post offices. Output and IC of courier activities are extrapolated at current prices by using the growth of output and IC of Pakistan Post respectively.

Postal Services

The output of Pakistan Post, franchise post offices and courier services are deflated using CPI (postal services), however for deflating IC different deflators are used. For Pakistan Post, Implicit Volume Index for output (IVO), Franchise Post offices CPI (postal services) and for Courier Companies WPI (Diesel), are used as deflators.

4.2.3 Warehousing and Storage

The warehousing and storage industry is covered under PISIC-2010, Group 52 and Class 5210. This industry comprises refrigerated storage, bulk liquid or gas storage, storage of goods in foreign trade zones and other warehouses and storage activities. Due to the non-availability of a reliable sampling frame, efforts were made to develop a new sampling frame by consulting sources such as Export Processing Zones Authority (EPZA) and the internet, resultantly; a frame of 741 establishments was developed. Data was collected through the field staff of Regional / Field Offices of PBS.

Extrapolation and Deflators

For this industry, output and IC will be extrapolated at constant prices by using the growth of output and IC of wholesale and retail trade. WPI (Food and Energy) will be used as an inflator.

The detailed results for the base year 2015-16 are given in table 4.4 below.

Table 4.4: Output, IC and GVA by Major Components (Rs. in Million)

| Sub-Sectors | Output | IC | GVA | % Share | I/O Ratio |
|--------------------|------------------|------------------|------------------|------------|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Railways | 45,162 | 18,467 | 26,695 | 0.77 | 0.41 |
| Pipeline Transport | 7,175 | 2,064 | 5,111 | 0.15 | 0.29 |
| Road Transport | 4,786,657 | 1,833,990 | 2,952,667 | 85.14 | 0.38 |
| Water Transport | 177,645 | 70,946 | 106,699 | 3.08 | 0.4 |
| Air Transport | 314,578 | 136,084 | 178,494 | 5.15 | 0.43 |
| Storage | 332,101 | 174,442 | 157,659 | 4.55 | 0.53 |
| Postal/Courier | 54,028 | 13,173 | 40,855 | 1.18 | 0.24 |
| Total | 5,717,348 | 2,249,166 | 3,468,182 | 100 | 0.39 |

Rebasing Effect

Table 4.5: Comparison of GVA (at bp) for 2015-2016 as per base years 2005-2006 & 2015-2016 (Rs. Million)

| Name of activity | Base 2005-2006 | | Base Year 2015-2016 | Growth Rate | | Difference |
|--------------------|--------------------|--------------------|------------------------|--------------|-------------|----------------|
| | 2005-2006 Price | 2015-2016 Price | | Col.4/2 | Col.4/3 | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Railways | 7,474 | 26,869 | 26,695 | 257.17 | -0.65 | -174 |
| Pipeline Transport | 5,203 | 5,112 | 5,111 | -1.77 | -0.02 | -1 |
| Road Transport | 721,597 | 2,818,007 | 2,952,667 | 309.19 | 4.78 | 134,660 |
| Water Transport | 33,167 | 79,409 | 106,699 | 221.7 | 34.37 | 27,290 |
| Air Transport | 43,670 | 172,158 | 178,494 | 308.73 | 3.68 | 6,336 |
| Storage | 28,209 | 93,026 | 157,659 | 458.9 | 69.48 | 64,633 |
| Postal/Courier | 15,966 | 35,922 | 40,855 | 155.89 | 13.73 | 4,933 |
| GVA | 855,286 | 3,230,503 | 3,468,182 | 305.5 | 7.36 | 237,679 |

4.3 Accommodation and Food Service Activities (Hotels and Restaurants)

4.3.1 Coverage

According to PSIC-2010 accommodation and food service activities include the provision of short-stay accommodation for visitors and other travelers and the provision of complete meals and drinks fit for immediate consumption. The accommodation activities are covered under PSIC code 55 and include the provision of short-stay accommodation for visitors and other travelers, typically on a daily or weekly basis provided by hotels, resort hotels, suite/apartment hotels, motels, motor hotels, guesthouses, bed and breakfast units, visitor flats and bungalows, time-share units, holiday homes, chalets, housekeeping cottages and cabins, youth hostels and mountain refuges. In the food and beverage serving activities, all the establishments providing complete meals or drinks fit for immediate consumption, whether in traditional restaurants, self-service, or take-away restaurants, whether as permanent or temporary stands with or without seating have been covered. The establishment engaged in the production of meals not fit for immediate consumption or not planned to be consumed immediately or those producing prepared food that is not considered to be a meal have not been covered here. Under food and beverage service activities establishments like restaurants, cafeterias, fast-food restaurants, pizza delivery,

take-out eating places, ice cream truck vendors, mobile food carts, and food preparation in market stalls have been covered.

The share of accommodation and food service activities (Hotels & Restaurants) in the GDP is 1.90% but was not published separately and was part of wholesale and retail trade. To re-assess the contribution of accommodation and food service activities towards the GDP of Pakistan, the data collection was undertaken in two parts i.e. census part and the survey part. In the census part, big establishments i.e. listed with Pakistan Hotels Association (PHA), Air-conditioned restaurants, and PTDC motels have been covered whereas all remaining establishments including take-out eating places, ice cream truck vendors, coffee shops/fruit juice bars, and mobile beverage vendors have been covered in the survey part i.e. Other Private Services (OPS) 2016-17. The total number of establishments engaged in the provision of accommodation and food service activities stands at 294,044.

4.3.2 Output, Intermediate Consumption, and GVA

The survey results have been adjusted to the base year 2015-16 and the total output of the industry at basic prices stands at Rs.864.0 billion whereas intermediate consumption is Rs.437.269 billion yielding a gross value added of Rs.426.7 billion. The estimated GVA in the existing series, on 2005-06 base for 2015-16 at current prices is Rs.521.4 billion. The application of fixed growth rate in 2005-06 rebasing has resulted in an overestimation of Rs.94.7 billion (18.2%) in the value-added of the industry.

4.3.3 Extrapolation and Deflators

The GVA of accommodation and food service activities was used to be extrapolated through fixed growth rates i.e. 10% in 1999-2000 rebasing and 4.92% in 2005-06 rebasing due to non-availability of the relevant indicators. In 2015-16 rebasing too, extrapolation of the GVA of this industry is an issue. Keeping in view the current data limitation, a fixed growth rate of 4.08% (an inter-census growth rate of urban-dwelling for 2 and more rooms) is used to estimate output and IC at constant prices. The output of the industry is inflated through CPI Restaurants and Hotels (urban) whereas weighted CPI food, energy and rent (urban) are used for inflation of intermediate consumption. GVA is the difference between output and IC.

4.3.4 Rebasing Effect

Table 4.6: Gross Value Added of Hotel & Rest. 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Gross Value Added | Base 2005-06 | | Base 2015-16 | % increase | |
|--------------------------------|---------------|------------------------------|--------------|-----------------|-----------------|
| | 2005-06 Price | 2015-16 at prices of 2015-16 | | Column 4 over 2 | column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Hotel & Restaurants | 131124 | 492449 | 426719 | 225.4 | -13.3 |

4.4 Information and Communication Services

Coverage

This is covered under Section “J”. This section includes the production and distribution of information and cultural products, the provision of the means to transmit or distribute the products, as well as data or communication, information technology activities and the processing of data and other information service activities.

The main components of this section are publishing activities including software publishing (division 58), motion picture and sound recording activities (division 59), radio and TV broadcasting and programming activities (division 60), Telecommunication activities (division 61) and information technology activities (division 62) and other information service activities (division 63). In 2015-16 rebasing, the contribution of these activities has been assessed through studies briefly described in the following:

4.4.1 Publishing Activities

According to the survey “Other Private Services (OPS) 2016-17”, there are 5,655 establishments engaged in the publishing activity in the private sector in Pakistan including 988 units engaged in book publishing, 273 units in the publishing of newspapers, journals and periodicals, 52 units in the publishing of directories and mailing lists and 4,341 units in other publishing activities. The study results have been adjusted to 2015-16. The output of the activity has been estimated at Rs.18.189 billion whereas intermediate consumption is Rs.4.756 billion resulting in a GVA of Rs.13.433 billion for 2015-16. A brief on Survey on OPS is given at Annexure-IV.

Extrapolation and Deflators

The output and intermediate consumption at constant prices are extrapolated by using the growth rate of student enrolments. The output is inflated by using CPI (Education) and IC by CPI (Energy and rent) urban.

4.4.2 Motion Pictures, Video And Television Programme Production

A dedicated study was conducted during 2015-16 to capture Motion Pictures, video and television programme production. The sample frame was received from Pakistan Electronic Media Authority (PEMRA). The output of the activity has been estimated at Rs.169.193 billion whereas intermediate consumption is Rs.57.704 billion resulting in a GVA of Rs.111.489 billion for 2015-16.

Extrapolation and Deflators

The extrapolation of output and IC at current prices is made by using the growth of output and IC of TV channels (ATV, PTV & PBC) and Output is deflated by CPI (Recreation) while IC is deflated by CPI (Energy and rent) urban.

4.4.3 Telecommunication

This division includes the activities of providing telecommunications and related services i.e. transmitting voice, data, text, sound and video. These activities include wired & wireless telecommunication and satellite telecommunication activities etc. The source agencies are Pakistan Telecommunication Corporation Ltd (PTCL), all other major telecommunication companies and mobile phone companies. The data is collected regularly from these companies. The output of the activity has been estimated at Rs.492.956 billion whereas intermediate consumption is Rs.178.567 billion resulting in a GVA of Rs.314.389 billion for 2015-16.

Extrapolation and Deflators

The GVA at current prices is compiled from the reports provided by the source agencies. Output is deflated by CPI (Communication) and IC is deflated by using Implicit Volume Index for output (IVO).

4.4.4 Computer Programming and Consultancy

A study was carried out during 2016-17 to estimate the value addition of computer programming and consultancy activities. The sampling frame was received from Pakistan Software Export Board (PSEB). Efforts were made to collect primary data however much success was not attained. After detailed deliberation with PSEB, PSEB agreed to provide valuable information regarding revenues, exports, the core area of expertise and employment size. The identification of establishments was kept confidential by PSEB. PBS utilized this information and also consulted with the Pakistan Software House Association (P@SHA). Results were adjusted to 2015-16. The output of the activity has been estimated at Rs.161.263 billion whereas intermediate consumption is Rs.32.305 billion resulting in a GVA of Rs.128.958 billion for 2015-16.

Extrapolation and Deflators

The current output and IC have been extrapolated by using the growth of exports of Information Technology (IT) and Computer Services. CPI (Communication) is used as the deflator.

4.4.5 Information Service Activities

Base year estimates for information service activities have been developed through a study “Computer-related activities 2016-17” with the collaboration of PSEB and P@SHA. Results were adjusted to 2015-16. This activity includes data processing service of web hosting & related activities, news agencies and telephone-based information services. The output of the activity has been estimated at Rs.52.403 billion whereas intermediate consumption is Rs.8.764 billion resulting in a GVA of Rs.43.639 billion for 2015-16.

Extrapolation and Deflators

The current output and IC have been extrapolated by using the growth of exports of telecommunication, computer and information services. CPI (Communication) is used as the deflator.

Table 4.7: Output, Intermediate consumption and GVA of Information and Communication Services for the year 2015-16 Base according to PSICs (Rs. Million)

| PSIC 2010 | Name of activity | Output | Input | GVA |
|--------------|--|---------|---------|---------|
| 1 | 2 | 3 | 4 | 5 |
| 58-63 | Information and Communication Services | 894,004 | 282,096 | 611908 |
| 58 | Publishing activity | 18,189 | 4,756 | 13,433 |
| 59-60 | Motion picture, video and television programme production, sound recording | 169,193 | 57,704 | 111,489 |
| 61 | Telecommunication | 492,956 | 178,567 | 314,389 |
| 62 | Computer programming, consultancy and related activities | 161,263 | 32,305 | 128,958 |
| 63 | Information service activities | 52,403 | 8,764 | 43,639 |

Rebasing Effect

Table 4.8: Comparison of GVA of Information and Communication services, Base 2005-06 and 2015-16

| PSIC 2010 | Name of activity | Base-2005-06 (Current Prices) | | Base 2015-16 | Change in | | |
|--------------|--|----------------------------------|---------|-----------------|-----------|----------|-----------|
| | | | | | % | | Mill. Rs. |
| | | | | | Col.5/3 | Col. 5/4 | Col. 5-4 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 58-63 | Information and Communication Services | 170,539 | 458,339 | 611908 | 258.81 | 33.51 | 153,569 |
| 58 | Publishing activities | | | 13433 | | | 13,433 |
| 59-60 | Motion picture, video and television programme production, sound recording | | | 111,489 | | | 111,489 |
| 61 | Telecommunication | 114,742 | 310,136 | 314,389 | 174 | 1.37 | 4,253 |
| 62 | Computer programming, consultancy and related activities | 55,797 | 148,203 | 128958 | 131.12 | -12.99 | -19,245 |
| 63 | Information service activities | | | 43639 | | | 43,639 |

4.5 Finance and Insurance Activities

4.5.1 Introduction

The finance and insurance sector constitutes financial corporations providing financial services. The production (goods and services) of financial services is the result of financial intermediation, financial risk management, liquidity transformation or auxiliary financial activities. According to SNA 2008 financial intermediation is carried out by financial corporations exclusively. Financial corporations consist of all resident financial institutes that are primarily engaged in providing financial services, including insurance and pension fund services, to other institutional units. The provision of financial services is always subject to strict regulation and financial institutes always provide financial services as “primary production”. The SNA 2008 often uses the term “financial institution” which is a pure synonym for “financial corporation”. Financial production is an economic activity. SNA 2008 describes that there are two main types of output, namely goods and services which are described as products. The output of an enterprise/ establishment is classified as market output or non-market output based upon the nature of production. The market output of financial services is available at economically significant prices while non-market output is provided in the absence of economically significant prices.”

4.5.2 Classification Financial Corporations

Finance and insurance activities (Section K) are classified according to PSIC-2010 into three main Divisions i/e Division 64 “Financial service activities except for insurance and pension funds”, Division 65 Insurance, reinsurance and pension funding, except compulsory social security; and Division 66 Activities auxiliary to financial service and insurance activities. A special group 641, “monetary intermediation”, is subdivided into 6411 “central banking” and 6419 “other monetary intermediation”.

Sub-classification

The SNA 2008 sub-classifies the financial corporations' sector (S12) into nine sub-sectors according to its activity in the market and the liquidity of its liabilities. These nine subsectors are

shown below. All the subsectors are financial intermediaries of one sort or another except subsector 6 and subsector 7.

- i. Central Bank
- ii. Deposit-taking corporations except for the Central Bank
- iii. Money market funds (MMF)
- iv. Non-MMF investment funds
- v. Other financial intermediaries except for insurance corporations and pension funds (ICPF)
- vi. Financial auxiliaries
- vii. Captive financial institutions and money lenders
- viii. Insurance corporations (IC)
- ix. Pension funds (PF)

The above sectors of financial corporations may also be aggregated to *financial intermediaries, financial auxiliaries and other financial corporations*.

4.5.3 Measurement of Financial Services

The financial intermediation services provided by the different financial institutions are separated into two distinct types according to the nature of measurement. Firstly, financial intermediation services directly measured and secondly, financial intermediation services measured indirectly which are termed as Financial Intermediation Services Indirectly Measured (FISIM).

a. Financial Services directly measured

The financial services, in return for explicit charges, such as fees, commissions and brokerage which are paid directly by the clients, are provided by different categories of financial institutions and are called financial services directly measured. These services may be paid either explicitly or implicitly or both, for example, deposit-taking institutes (such as banks) may charge households to manage a portfolio. Similarly, specialized financial institutes may also charge non-financial corporations to arrange a flotation of shares. Most probably, the largest direct fee charged is by the credit card issuers to those units which accept credit cards as a means of payments or to the cardholders who pay annual card fees. Such fees constitute the output of the financial services.

b. Financial Intermediation Services Indirectly Measured (FISIM)

Financial institutes (e.g., banks etc.) provide financial intermediation services to the clients which are recorded as “services rendered”. Such financial intermediation services are part of the financial output and are included in GDP. The remuneration received against these financial services cannot be measured directly. This remuneration is measured indirectly by imputing a service charge on account of the clients of the banks. According to SNA 2008, such services are called “financial intermediation services indirectly measured” and it’s easy to pronounce the acronym is “FISIM” which is an implicit payment against banking services.

FISIM applies only to loans and deposits, and only when those loans and deposits are provided by, or deposited with, financial institutions. The SNA 2008 calculates the output of FISIM on loans (Y_L) and deposits (Y_D) only, using a reference rate (rr). Assuming these loans and deposits attract interest rates on Loans (r_L) and interest rates on Deposits (r_D), respectively. The output of FISIM is calculated according to the formula

$$(r_L^t - rr^t)Y_L^t - (r_D^t - rr^t)Y_D^t$$

Or

$$(r_L^t - rr^t)Y_L^t + (rr^t - r_D^t)Y_D^t$$

Where “r” is the actual rate of interest, “rr” is the reference rate which is Karachi Interbank Offer Rate (KIBOR), “D” stands for deposits and “L” for loans, “Y” for total value and “t” for the current period. This formula is applied for all types of assets and liabilities to be covered in the compilation of FISIM. PBS receives data about Loans and Deposits, KIBOR and rates of interest on deposits and Loans from SBP.

The cornerstone in the measurement of FISIM is the “reference rate” which according to SNA 2008 guidelines represents a risk-free rate of interest i.e. (KIBOR in the case of Pakistan). FISIM is also allocated among other producing industries as input based on their respective share in Loans and Deposits.

FISIM on constant prices is calculated using the base year KIBOR rate and interest rates on Loans and Deposits after deflating Loans and Deposits by CPI General.

4.5.4 The Output of Financial Corporations

The major portion of the output of deposit-taking institutions (approximately 86%) is measured by FISIM. The rest is compiled by direct measurement. The Non-market output of a few financial institutions such as Central bank, House building Finance Corporation, Employees’ old-age benefit institute, Pakistan stock exchange company and Pakistan mercantile exchange company, is compiled using the cost of production approach; the horizontal summation of compensation of employees, consumption of fixed capital and intermediate consumption. However, the market output of the remaining institutes e.g. insurance companies, asset management companies etc. is calculated by subtracting intermediate consumption from their output.

The PBS also conducted two studies to estimate the output, IC and value addition of Exchange companies, and Stock & mercantile exchange brokers for the year 2015-16. The sampling frame of stock exchange companies was provided by SBP while for stock and mercantile exchange brokers it was received from the Securities and Exchange Commission of Pakistan (SECP).

4.5.5 Intermediate Consumption of the Financial Corporations

According to SNA 2008, Intermediate consumption is strictly consisting of inputs while delivering financial services. These expenses are part of the Profit & Loss Accounts in the financial statement and consist of three positions namely “administrative expenses, other provisions/write-offs net and other charges”. The provisions/write off-net and other charges fall outside the boundary of intermediate consumption and are omitted while calculating intermediate consumption. So SNA-2008 guides that intermediate consumption (IC) is simply that portion of administrative expenses that preclude salaries, allowances, charge for defined benefits plan, non-executive directors’ fees, amortization, depreciation, insurance service charges and any kind of donations. Intermediate consumption of the SBP generally consists of note printing charges, agency commissions, establishment charges and any other charges.

4.5.6 Gross Value Addition

The GVA of financial institutions is calculated by the production approach.

4.5.7 Extrapolation and Deflators

For the subsequent years, output and IC for all financial institutes except stockbrokers is compiled on current prices from the data directly received from the sources. As discussed above in para 4.5.4 PBS conducted two studies in the base year 2015-16 i.e. Exchanges Companies and Stock and mercantile exchange brokers. The Output and IC of Exchange Companies are extrapolated using the growth rate of workers' remittances received from SBP. However, mercantile exchange brokers' output and IC is extrapolated using the growth rate of "Total traded volume on Pakistan Mercantile Exchange Limited (PMEX). CPI (general) is used as the deflator.

For stockbrokers output and IC is extrapolated at constant prices by using the growth rate of "Number of shares traded" on the Pakistan Stock Exchange (PSX). All share index of PSX is used as an inflator. Results of GVA by Division for the base year 2015-16 and their effects are given in Table 4.9 below.

Table 4.9: GVA by Division for the base year 2015-16 and their effects

| Division | Description | Base Year 2005-06 | | Base Year 2015-16 | % Increase in GVA | |
|-----------|---|-------------------|---------------------------|-------------------|-------------------|---------------|
| | | 2005-06 Price | 2015-16 at 2015-16 prices | | col. 5 over 3 | col. 5 over 4 |
| | | GVA | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 64 | Financial service activities, except insurance and pension funding | 253,865 | 451,102 | 451,034 | 77.67 | -0.01 |
| 65 | Insurance, reinsurance and pension funding, except compulsory social security | 10,384 | 35,596 | 35,596 | 242.8 | 0 |
| 66 | Activities auxiliary to financial service and insurance activities | 18,671 | 57,602 | 43,555 | 133.28 | -24.39 |
| GVA-Total | | 282,920 | 544,301 | 530,186 | 87.4 | -3 |

The detailed results by source/ group for the base year 2015-16 and their effects are given below.

Table 4.10: Output, Intermediate consumption and GVA of Finance and Insurance for the year 2015-16 Base by source/ group (Rs. Million)

| Sub-Sectors | Base Year 2005-06 | | | | | | Base Year 2015-16 | | | % Increase in GVA | |
|--|-------------------|--------|---------|--------------------------|---------|---------|-------------------|---------|---------|-------------------|----------------|
| | 2005-06 Price | | | 2015-16 at 2015-16 Price | | | | | | | |
| | Output | IC | GVA | Output | IC | GVA | Output | IC | GVA | col. 10 over 4 | col. 10 over 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Central Banking | 11,972 | 6,236 | 5,736 | 40,913 | 19,836 | 21,077 | 40,913 | 19,836 | 21,077 | 267.45 | - |
| Other Monetary Intermediation | 264,267 | 25,175 | 239,092 | 566,575 | 147,733 | 418,842 | 566,575 | 147,733 | 418,842 | 75.18 | - |
| Financial Leasing | 6,007 | 779 | 5,228 | 4,558 | 588 | 3,970 | 4,468 | 570 | 3,898 | -25.44 | -1.81 |
| Other Credit Granting | 4,699 | 890 | 3,809 | 11,558 | 4,346 | 7,212 | 11,562 | 4,346 | 7,216 | 89.45 | 0.06 |
| Insurance, reinsurance and pension funding except compulsory social security | 19,666 | 9,282 | 10,384 | 80,621 | 45,024 | 35,597 | 80,621 | 45,024 | 35,597 | 242.81 | - |
| Activities auxiliary to financial service activities, except insurance and pension funding | 20,926 | 6,112 | 14,814 | 48,301 | 18,192 | 30,110 | 25,728 | 9,665 | 16,063 | 8.43 | -46.65 |
| Activities auxiliary to insurance and pension funding. | 4,285 | 428 | 3,856 | 30,548 | 3,055 | 27,493 | 30,548 | 3,055 | 27,493 | 612.99 | - |
| GVA-Total | 331,822 | 48,902 | 282,920 | 783,074 | 238,774 | 544,301 | 760,415 | 230,229 | 530,186 | 87.4 | -2.59 |

4.6 Real Estate Activities (Including Ownership of dwellings)

4.6.1 Coverage

Real estate activities are covered in the Section L of the PSIC- 2010, includes acting as lessors, agents, and/or brokers in one or more of the following: selling or buying real estate, renting real estate, providing other real estate services such as appraising real estate or acting as real estate agents. Activities in this section may be carried out on their own or leased property and may be done on a fee or contract basis. Maintaining ownership or leasing of such structures is also included in the building of structures.

To re-assess the contribution of real estate activities in the GDP of Pakistan under the umbrella of Rebasing of National Accounts of Pakistan from 2005-06 to 2015-16, PBS has broadly divided these activities into two categories including:

- i) “Ownership of Dwellings” i.e. the provision of housing services by the owner of a dwelling to its occupants irrespective of whether the owner is also an occupier
- ii) Activities of real estate agents.

The estimation methodology for these categories is described below:-

4.6.2 Ownership of Dwellings

According to SNA 2008 (Para 10.68), *dwellings are buildings, or designated parts of buildings, that are used entirely or primarily as residences, including any associated structures, such as garages, and all permanent fixtures customarily installed in residences*. Houseboats, barges, mobile homes and caravans used as principal residences of households are also included, as are public monuments identified primarily as dwellings. Examples of products are single and multiple dwelling buildings as well as residential buildings for communities, retirement homes, hostels, orphans, etc. described in *CPC 2*, class 5311. The prefabricated buildings, including those intended for housing or buildings associated with housing such as garages described under *CPC 2*(group 387) are also included. Further, incomplete dwellings are included to the extent that the ultimate user is deemed to have taken ownership, either because the construction is on its own account or as evidenced by the existence of a contract of sale or purchase (SNA 10.71). Similarly, dwellings acquired for military personnel are also included because they are used for the production of housing services, in the same way as dwellings acquired by civilian units (SNA, 10.71).

Households that own the dwellings they occupy are formally treated as owners of unincorporated enterprises that produce housing services consumed by those same households. The output of the housing services produced by owner-occupiers is valued at the estimated/imputed rental that a tenant would pay for the same accommodation, taking into account factors such as location, neighbourhood amenities, etc. as well as the size and quality of the dwelling itself. The same figure (output of the service) is recorded under households’ final consumption expenditures. In the sequence of the accounts, this is consistent as the households of the owners generate an imputed value-added out of the imputed renting which consequently leads to an imputed increase of the disposable income enabling the owners to purchase the service they are providing to themselves. Finally, they pay only the amount which is to be recorded as intermediate

consumption of the services of owner-occupied dwellings (some repair and maintenance work plus some services of property dealers) and the property tax levied on the buildings.

4.6.3 Sources and Data

The data sources for implementing 2015-16 rebasing for this industry are:

- a. Housing Census of 1998 & 2017.
- b. Rent Survey 2014-15
- c. Household Integrated Income and Consumption Survey (HIICS) 2015-2016

4.6.4 Output

The output of ownership of dwellings includes actual rent for rented dwellings, the imputed rent for owner-occupied dwellings, the imputed rent for dwellings on subsidized rent, and the imputed rent for rent-free dwellings. In 2005-06 rebasing, the output of ownership of dwelling was derived by multiplying the number of estimated dwellings by “number of rooms” obtained through inter-census compound growth rates from housing censuses i.e. 1981 and 1998 by average rent obtained from rent survey. However, the rent survey has some limitations:-

- a. It is conducted only in urban areas. Rent for rural areas was estimated at @50% of those in urban areas.
- b. Rent survey covers only rented dwellings. Like the other categories including owner-occupied dwellings, subsidized rent and rent-free accommodation are not covered in the rent survey, therefore, the break-up of the output by-products such as rented, owner-occupied, subsidized and rent-free accommodation is not possible.

In 2015-16, the rental values i.e. output has been directly estimated from HIES 2015-16 using data on housing (Section 3-F) and household expenditures (Section 4-M, Part-D) reported on house rent, the market value of owner-occupied accommodation excluding self-hiring, the market value of subsidized rent (hiring/self-hiring), and market value of rent-free accommodation in two stages. In the first stage, the rental values have been estimated for dwellings having 1 room, 2 rooms, 3 rooms, 4 rooms, and 5 rooms & above by provinces with an urban-rural break-up keeping in view the structure of information provided on the stock of dwellings in the housing censuses.

In the second stage, the rental values obtained from HIES have been adjusted. The reason behind this adjustment was that the estimated number of dwellings based on HIES was significantly lower i.e. 25.919 million as compared to those estimated by using inter-census compound growth rates between 1998 and 2017 Housing Censuses i.e. 30.605 million. Hence, the total rental value i.e. the output in ownership of dwellings has been estimated at Rs.1800.5 billion (Rs.1211.2 billion in urban areas and Rs.589.4 billion in rural areas). Most of the output i.e. Rs.1474.8 billion (82%) pertains to owner-occupied dwellings followed by Rs.206.3 billion (11.5%) to rented dwellings, Rs.81.8 billion (4.5%) to rent-free accommodation and Rs.37.6 billion (2.1%) to subsidized house rent. Further, the break-up of output into the number of rooms suggests that contribution of dwellings with 5 & more rooms stands at Rs.487.2 billion followed by those with 2 rooms (Rs.398.8 billion), 3 rooms (Rs.380.8 billion), 4 rooms (Rs.286.7 billion), and 1 room (Rs.247.1 billion).

To check the consistency and reliability of the estimation methodology, an alternative approach was also used to estimate the output of the ownership of dwellings. Under this approach, weighted average rents by “number of rooms” and provinces, were calculated separately for urban and rural areas using the number of households living in rented, owner-occupied dwellings, subsidized accommodation and rent-free accommodation as a measure of weight. In the second, these rents were applied to an estimated number of dwellings compiled by using inter-census compound growth rates between 1998 and 2017 Housing Censuses by “number of rooms” and further disaggregated by provinces and urban & rural areas. The total estimated value of rentals i.e. the output in ownership of dwellings under this approach stands at Rs.1799.0 billion. Hence, the margin of variations between the two approaches is 0.1%. However, output estimates of the first approach i.e. Rs.1800.5 billion have been used in the final estimates being close to recommendations of the 2008 SNA relating to the compilation of imputed rental of owner-occupied dwellings.

4.6.5 Intermediate Consumption

The intermediate consumption of this industry is the cost of repairs and maintenance of dwellings during the reference year, commission paid to real estate agents for rented dwellings, and imputed consumption of bank and insurance services i.e. FISIM. In 2015-16 rebasing, the expenditure on repair and maintenance comprising of materials such as whitewash, cement, bricks/blocks, bajri/sand, etc. and expenditure on services provided by carpenters, masons, unskilled labourers, plumbers, electricians, and painters, etc. have also been estimated from HIES 2015-16 (Section 6 M, Part-D) and further adjusted to the census number of dwellings by categories mentioned for the output and stands at Rs.82.74 billion. The commission paid to real estate agents has been taken from Rent Survey of Dwellings 2014-15 and has been adjusted to the base year 2015-16 by using CPI (Rent). The estimated amount of commission paid to real estate agents stands at Rs.9.4 billion which has been allocated to urban dwellings as the activities relating to renting of dwellings are mostly carried out in the urban areas. The third component of intermediate consumption i.e. FISIM is allocated to producing industries at the aggregation stage. Hence, the total intermediate consumption for ownership of dwelling has been estimated at Rs.92.1 billion. Resultantly, GVA in the ownership of dwellings for the new base year 2015-16 comes to Rs.1708.4 billion.

4.6.6 Activities of Real Estate Agents

For 2015-16 rebasing of national accounts, the activities of real estate agents have been covered in the Survey on “Other Private Services” (OPS) 2016-17. The number of establishments engaged in real estate activities stands at 32,824. The total output of the activity during 2016-17 stands at Rs.45.6 billion whereas intermediate consumption was Rs.9.1 billion. Thus, the total GVA is Rs.36.5 billion which has been adjusted for the 2015-16 base year using the growth of ownership of dwellings, which stands at Rs.32.5 billion.

Table 4.11: Summary of output, IC and GVA of the industry (Rs. Million)

| S. No. | Description | Urban | Rural | Total |
|---|---|-----------|----------|------------------|
| 1 | 2 | 3 | 4 | 5 |
| Ownership of Dwellings | | | | |
| 1 | Number of Dwelling units | 11428430 | 19176911 | 30605342 |
| 2 | Gross Rentals/ Output (at basic prices) | 1,211,161 | 589,354 | 1,800,514 |
| 3 | Intermediate Consumption (4+5) | | | 92,140 |
| 4 | Repair & Maintenance | | | 82,735 |
| 5 | Commission paid to Real Estate Agents | | | 9,405 |
| 6 | GVA - I (Ownership of dwellings) | | | 1,708,374 |
| Activities of real estate agents | | | | |
| 7 | Output | | | 40,547 |
| 8 | Intermediate Consumption | | | 8,082 |
| 9 | GVA - II (Real estate agents) | | | 32,465 |
| 10 | Total Gross Value Added (6+9) | | | 1,740,839 |

4.6.7 Rebasing Impact

The total output and intermediate consumption for the Housing Services industry during 2015-16 rebasing have been estimated at Rs.1,841.1 billion and Rs.100.2 billion respectively. So, the GVA for the new base year i.e. 2015-16 stands at Rs.1,740.8 billion, which is higher by 15.4% over existing estimates of Rs.1,509.0 billion.

Table 4.12: Comparison of output and GVA of housing services for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Description | Base Year 2005-06 | | Base Year 2015-16 | % Change | |
|-------------------------------|-------------------|--------------------------|-------------------|---------------|--------------|
| | 2005-06 Price | 2015-16 at 2015-16 Price | | Col. 4/2 | Col. 4/3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Ownership of dwellings | | | | | |
| Output | 518422 | 1,549,939 | 1,800,514 | 247.31 | 16.17 |
| IC | 16342 | 52,776 | 92,140 | 463.82 | 74.59 |
| GVA – I | 502100 | 1,497,164 | 1,708,374 | 240.25 | 14.11 |
| Real estate agents | | | | | |
| Output | | | 40,547 | | |
| IC | | | 8,082 | | |
| GVA-II | 3,568 | 11,871 | 32,465 | 809.89 | 173.49 |
| Housing Services | | | | | |
| Output | | | 1,841,061 | | |
| IC | | | 100,222 | | |
| GVA- Total | 505,668 | 1,509,034 | 1,740,839 | 244.27 | 15.36 |

4.6.8 Extrapolation and Deflators

The base year results relating to ownership of dwellings is extrapolated separately at constant prices for urban and rural areas by applying inter-census growth of dwellings @4.08% and 2.77% comprising of 2 & more rooms which represent 74.3% and 65.2% of urban and rural dwellings respectively. CPI Rent (urban) and CPI Rent (rural) is used as deflators to convert constant price estimates of urban and rural areas separately into current prices. The GVA of real estate agents is extrapolated at constant by applying inter-census growth of urban dwellings @4.08% comprising of 2 & more rooms which is converted into current prices by applying CPI Rent (urban).

4.7 Public Administration and Social Security (General Government)

4.7.1 Coverage

The public administration and defence; compulsory social security is also known as “General Government” are described in Section O of the PSIC-2010. The “General Government” is one of the institutional sectors other than non-financial corporations, financial corporations, households, and non-profit institutions serving households (NPISH). The activities of the general government are dispersed over various industries, including public administration and defence, education, health, and many others. In 2015-16 rebasing, all the figures of variables of production have been calculated in a way that both purposes are served i.e. figures by PSIC as well as figures by COFOG for the government sector are available.

The general government in Pakistan includes Federal, Provincial, District governments, Local bodies, Cantonment boards and Social security funds. Apart from this, in the base year 2015-16, a dedicated census of autonomous bodies engaged in education, health and social work activities were conducted. It was ensured that autonomous bodies other than education, health and social work having market output were covered in their respective industries. Autonomous bodies are considered as institutional units of their own but being market producers (e.g. Pakistan Railways, Pakistan International Airlines, Shipping Corporation) are belonging to the non-financial corporations' sector. The State Bank of Pakistan, by definition of the SNA for central banks, belongs to the financial corporations' sector. However, those autonomous bodies having non-market output were compiled along with the general government.

4.7.2 Output

The output of the General Government is non-market. According to SNA 2008, “Non-market output consists of goods and individual or collective services produced by non-profit institutions serving households (NPISHs) or government that is supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole”. Such output is recorded at the time it is produced, which is also the time of delivery in the case of non-market services. In general, however, it cannot be valued in the same way as goods or services produced for their own final consumption or own capital formation that are also produced in large quantities for sale in the market. The value of the non-market output provided without charge to households is estimated as the sum of costs of products comprising of

- a. Intermediate consumption,
- b. Compensation of employees,

- c. Consumption of fixed capital, and
- d. Other taxes (less subsidies) on production.

The budget documents of federal, provincial, district government, tehsil municipal administrations, cantonment boards, and autonomous bodies are the universe for the coverage, most of which have been taken into account. The non-market output of the sector is comprised of employee remuneration which covers wages and salaries of all employees (regular, contract, ad hoc, etc.). It also includes in-kind payments, rations, entertainments, gifts, scholarships, etc. to employees including residential accommodation facilities and allowances. Actual and imputed welfare contributions are also part of remuneration. Other taxes on production less other subsidies are negligible in the government structure. Consumption of fixed capital is taken as 10% of the gross fixed capital formation of the sector. In the first step, the output of the autonomous bodies, operating under federal and provincial governments, having non-market output engaged in education, health and social work activities has also been included but separately identified. The output in the general government sector for the base year 2015-16 has been estimated at Rs.3, 432.916 billion. The detail is given in Table 4.13.

4.7.3 Intermediate Consumption

According to SNA intermediate consumption is to be valued at purchasers' prices. For this sector, it includes the expenditures on utilities, stationery, repair and maintenance, fees, occupancy charges (excluding residential component), etc. The data are available from the budget documents including the aforementioned object codes. Subsidies are not a part of intermediate consumption. Intermediate consumption for the base year 2015-16 has been estimated at Rs. 1,280.114 billion detail of which is given in table 4.13 below.

4.7.4 Gross Value Added

The gross value added is output minus intermediate consumption. However, for this sector value added is measured directly through the cost of production approach. Compensation of employees (Rs.2065.850billion) and consumption of fixed capital (Rs.86.951 billion) are added together to have the value-added estimate. The gross value added for this sector for the new base year 2015-16 is given below in *table 4.13* which gives the details of the estimates developed. The table shows Financial Intermediation Services Indirectly Measured (FISIM) amounting to Rs.54.116 billion. It represents the intermediation services provided by banks to the government.

Table 4.13: GVA, Intermediate consumption and Output of General Government by components Rebasing (Rs. Million, 2015-16)

| Description | Compensation of Employees | Consumption of Fixed Capital | GVA (Basic prices) | Intermediate Consumption | Output |
|-------------------------|---------------------------|------------------------------|--------------------|--------------------------|------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Federal | 792,962 | 20,694 | 813,656 | 643,529 | 1,457,185 |
| Provincial | 806,047 | 52,746 | 858,793 | 446,276 | 1,305,069 |
| District/TMA/CB | 365,552 | 10,501 | 376,053 | 56,514 | 432,567 |
| Others | 101287 | 3,007 | 104,294 | 79,679 | 183,973 |
| FISIM | | | | 54,116 | 54,116 |
| Total (G. Govt.) | 2,065,850 | 86,951 | 2,152,801 | 1,280,114 | 3,432,916 |

4.7.5 Results by Industrial Classification (PSIC)

In the second step, the figures for output, intermediate consumption, and value-added, are classified by PSIC, also. For this purpose, the budget data by function codes have been used. PBS has developed a bridge table assigning each function code used by the government authorities for performing their budgets to one class of the industrial classification of PSIC. The results are given in **Table 4.14** below which includes the non-market output of autonomous bodies engaged in their respective industries. It should be noted that education, health services and other classes of the PSIC are frequented by other sectors of the economy, also, e.g. corporations, households and Non-Profit Institutions (NPIs). However, class “Public Administration and Defence” of the PSIC division 84 can only be assigned to institutional units of the sector general government, by definition of the SNA.

Table 4.14: GVA, Intermediate Consumption and Output of General Government (Rs. in Million)

| PSIC 2010 (Codes and description) | GVA | Intermediate Consumption | Output |
|---------------------------------------|------------------|--------------------------|------------------|
| 1 | 2 | 3 | 4 |
| 84- Public administration & defense | 1,458,465 | 1,021,584 | 2,480,049 |
| 85-Education | 537,585 | 105,434 | 643,019 |
| 86-88 Health & Social Work activities | 156,751 | 98,981 | 255,732 |
| FISIM | | 54,116 | 54,116 |
| Total (General Government) | 2,152,801 | 1,280,114 | 3,432,916 |

4.7.6 Effect of Rebasing

The effect of the rebasing 2015-16 can be shown by the comparison of the results for the year 2015-16 according to the new base and the base 2005-06. It is shown in Table 4.15 below. The differences are negligible as the source data are the same. The improvement in the base year 2015-16 is due to better coverage of non-market autonomous bodies.

Table 4.15: Output, IC and GVA of General government 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Description | Base 2005--2006 | | Base 2015-16 | % change | |
|-----------------------------------|-------------------|--------------------------------------|------------------|-----------------|-----------------|
| | Results 2005-2006 | Results 2015-16 at prices of 2015-16 | | Column 4 over 2 | Column 4 over 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| A. Output at basic prices | 845,933 | 3,248,893 | 3,432,916 | 305.81 | 5.66 |
| B. Intermediate consumption | 420,717 | 1,198,332 | 1,280,114 | 204.27 | 6.82 |
| C. Gross Value Added (A-B) | 425,216 | 2,050,561 | 2,152,801 | 406.28 | 4.99 |

4.7.7 Extrapolation and Deflator

The GVA in the General Government sector is compiled directly at current prices from the data obtained/extracted from budget documents of the governments. The GVA of autonomous bodies engaged in education and health is extrapolated through the aggregate growth rate of wages and salaries reported by federal, provincial and district governments relating to education and health

respectively. The estimates at constant prices are compiled using CPI (General), CPI (Education) and CPI (Health) as the deflators for respective activities.

4.8 Education

Coverage

Education is primarily described by level in the PSIC-2010. To re-assess the contribution of education in 2015-16 Rebasings of National Accounts, PBS has broadly divided education into four major categories including i) Public sector education provided by institutions of federal, provincial, and district governments purely on a non-market basis covered in the budget of respective governments ii) Autonomous bodies engaged in education and falling under federal and provincial governments but with separate budgets iii,) Education provided by non-profit institutions purely on a non-market basis and iv) Education provided in the private sector on a market basis. The value-added contribution of autonomous bodies providing educational services at economically significant prices i.e. with market output; has been combined with private sector education and those with non-market output have been added to the general government.

4.8.1 Education in the Private Sector

To have a better assessment of the contribution of private-sector education, it was further divided into census and survey parts. In the census part, private sector universities and industry leaders have been covered separately. In the survey part, the educational establishment operating in the selected block was covered under Survey “Other Private Services 2016-17”. For the census part, a predefined list of the establishment was provided to PBS Regional/Field offices with clear instructions not to cover any establishment twice, if it falls in a block selected for the survey. The results of both census and survey parts have been combined to represent the private sector education as a whole.

The total number of establishments engaged in the provision of education in the private sector stands at 89,897 in 2016-17 all over Pakistan. The survey results have been adjusted to the base year 2015-16. Output for the base year 2015-16 has been estimated at Rs.476 billion whereas intermediate consumption is Rs.83 billion. The GVA is Rs.393 billion during 2015-16 which is extrapolated at constant prices through the growth rate of enrolments of students. The (CPI) education will be used as a deflator for output and CPI (energy and rent) urban for IC.

4.8.2 Education in the Public Sector

The output, intermediate consumption, and GVA of education in the public sector, as described under the General Government part above, stands at Rs.643.019, 105.434, and 537.585 billion respectively. The GVA of education is compiled directly along with estimates of the general government.

4.8.3 Education by NGOs

Alongside the PSIC, the economy is also divided into institutional sectors including non-financial corporations, financial corporations, households, general government, and Non-Profit Institutions Serving Households (NPISH). NPISH is covered under two categories i.e. Non-Profit Institutions (NPIs) and Membership Organizations. The PBS conducted a special survey i.e.

NGOs Survey 2015-16 to assess the value-added contribution of NPIs engaged in education, health, social work, and other activities based on the frame provided by the Pakistan Centre for Philanthropy. In the NGOs survey, 1,1781 NGOs were covered including 676 in the census part; 10,967 in the survey part and 138 international NGOs.

As the general government, the output of the NGOs is non-market and is comprised of compensation of employees, consumption of fixed capital, and intermediate consumption. The output and intermediate consumption of NGOs engaged in education have been estimated at Rs.35.848 billion and Rs.9.931 billion respectively resulting in GVA of Rs.25.918 billion during 2015-16. Extrapolation of education at constant prices is done by the growth rate of the number of enrolments of students linked with private sector education. NGOs' education is deflated through CPI (Education).

Effect of Rebasing

The effect of 2015-16 rebasing is shown in *Table 4.16* below. The GVA of education in the private sector has increased substantially by 462.4% as compared to that in the existing series in base 2005-06. The GVA of public sector education has also increased by 6.89% due to the improvement in coverage of non-market output of autonomous bodies. However, the GVA of NGOs providing education has decreased by 8.8%.

Table 4.16: Output, IC and GVA of Education 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

| Institutional Sector | 2015-16 on 2005-06 base (current prices) | | | 2015-16 base | | | % change |
|---|---|--------|----------------|----------------|---------------|----------------|-------------------|
| | Output | IC | GVA | Output | IC | GVA | Col. 7 / Col.4 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Private corporations and households (Private sector) | 100,826 | 30,883 | 69,943 | 476082 | 82,726 | 393,356 | 462.4 |
| General government (Public sector) | 565,052 | 62,105 | 502,947 | 643,019 | 105,434 | 537,585 | 6.89 |
| NPISH (NGOs) | | | 28,432 | 35,848 | 9,931 | 25,918 | -8.8 |
| Total (Education) | | | 601,326 | 1154949 | 198091 | 956,859 | 59.12 |

4.9 Human Health and Social Work Activities

Coverage

Human health and social work activities are described in Section Q of the PSIC and are comprised of three distinct Divisions i.e. 86-Human health activities, 87-Residential care activities, and 88-Social work activities without accommodation. For coverage in the rebasing of national accounts from 2005-06 to 2015-16, human health and social work activities have been broadly divided into i) Human health and social work activities provided by public sector institutions of federal, provincial, and district governments purely on the non-market basis and covered in the budget of respective governments ii) Autonomous bodies engaged in the provision of human health and social work activities and falling under federal and provincial governments but with separate budgets, iii,) Human health and social work activities are provided by non-profit institutions purely on anon-market basis and iv) Human health and social work activities

are provided in the private sector on a market basis. The value-added contribution of autonomous bodies providing human health and social work activities at economically significant prices i.e. with market output; has been combined with the private sector and those with non-market output have been added to the general government.

4.9.1 Health and Social Work in the Private Sector

The contribution of private sector human health and social work activities has been assessed through census and survey parts. In the census part, private sector hospitals have been covered separately. In the survey part, health and social work establishments operating in the selected blocks were covered under Survey on “Other Private Services 2016-17”. For the census part, a predefined list of establishments was provided to PBS Regional/Field offices with clear instructions not to cover any establishment twice, if it falls in a block selected for the survey. The results of both census and survey parts have been combined and adjusted for 2015-16 to represent the private sector human health and social work activities as a whole.

According to the data, the number of establishments engaged in human health and social work activities in the private sector stands at 118,892. The output is Rs.255.543 billion and intermediate consumption is Rs.61.177 billion. The GVA for the 2015-16 base year stands at Rs.194.367 billion, which is extrapolated through the growth of health personnel at constant prices. The CPI (Health services) is used for inflating output and CPI (health, rent and energy) urban for IC.

4.9.2 Health and Social Work in the Public Sector

The output, intermediate consumption, and GVA of health and social work in the public sector, as described under the General Government part above, stands at Rs.255.731, 98.981 billion, and 156.750 billion respectively. For subsequent years, the GVA is compiled directly along with estimates of the general government.

4.9.3 Health and Social Work Activities by NGOs

The contribution of NGOs engaged in health and social work activities has been assessed through NGOs Survey 2015-16, described above in the education part. The non-market output has been estimated at Rs.161.331 billion whereas intermediate consumption is Rs.91.408 resulting in GVA of Rs.69.924 billion during 2015-16. The extrapolation of GVA is proposed to be linked with the growth in the number of health personnel engaged in health and social work activities at constant prices. The CPI (Health) is used as a deflator.

Effect of Rebasing

The effect of 2015-16 rebasing in health and social work activities is presented in the table below. The overall GVA of the industry has increased by 12.20% over the existing estimates on 2005-06 rebasing. A substantial increase i.e. 10.21% is noted in the GVA of the private sector whereas the public sector has increased by 23.77%, (which is mainly due to the better coverage). However, the GVA of NGOs engaged in health and social work has decreased by 3.23%.

Table 4.17: Output, IC and GVA in Health and Social Work Industry (Rs. Million)

| Institutional Sector | 2015-16 on 2005-06 base (current prices) | | | 2015-16 base | | | % change |
|---|---|---------|----------------|----------------|----------------|----------------|------------|
| | Output | IC | GVA | Output | IC | GVA | Col (7 /4) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Private corporations and households (Private sector) | 284,842 | 108,475 | 176,367 | 255,543 | 61,177 | 194,367 | 10.21 |
| General government (Public sector) | 199,222 | 72,572 | 126,650 | 255,731 | 98,981 | 156,750 | 23.77 |
| NPISH (NGOs) | | | 72,259 | 161,331 | 91,408 | 69,924 | -3.23 |
| Total (Health & social work) | | | 375,276 | 672,605 | 251,566 | 421,041 | 12.2 |

4.10 Other Private Services

Other Private Services (OPS) deals with diverse economic activities comprising of various industries (PSIC). The data sources vary accordingly. Activities have been picked up from components of different surveys/studies, covering different sections of the PSIC. The services described in this industry represent the remnants of the services as general government services, wholesale and retail trade services, transport services, financial services, owner-occupied dwellings, health, education and information & communication services covered in respective sections. Nevertheless, they represent a vibrant part of the economy of Pakistan.

In 2015-16 rebasing, Other Private Services will comprise of:

- Professional, scientific, and technical activities
- Administrative and support services
- Arts, entertainment and recreation
- Other service activities (activities of membership organizations, repair of computers and personal household goods and other personal service activities including washing, dry cleaning etc.)
- Activities of households as employers of domestic services.

4.10.1 Professional, Scientific and Technical Activities

The professional, scientific, and technical activities include specialized professional, scientific and technical activities, which require a high degree of training and make specialized knowledge and skills available to users. These are covered in the Section M of the PSIC and include Divisions 69- Legal & Accounting Activities, 70-71 Activities of Head Offices, Management Consultancy Services& Architects and engineers' activities, 72-Scientific research and development, 73- Advertising and market Research, 74-Other professional, scientific and technical activities and 75-Veterinary activities. In 2015-16 rebasing, the contribution of these activities has been assessed through studies briefly described in the following:-

a. Legal & Accounting Activities

A study was conducted to assess the contribution of accounting activities. The frame comprising of 641 establishments was obtained from the Institute of Cost and Management Accountants Pakistan (ICMAP) and data was collected from 490 establishments. The value-added share of legal activities has been estimated through input-output ratios of accounting activities and those

already in use in the existing GDP series. The combined output of legal and accounting activities have been estimated at Rs.267 billion whereas intermediate consumption is Rs.27 billion resulting in a GVA of Rs.239 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Punjab Bar Council Registered Advocates. However, accounting activities are extrapolated by the number of Chartered Accountants. CPI (General) has been used as an inflator for both of the activities.

b. Activities of Head Offices, Management Consultancy Services & Architects and Engineers activities

These activities are covered in the PSIC Division 70 – Activities of head offices; management consultancy activities and 71-Architectural and engineering activities; technical testing and analysis. In 2015-16 rebasing, the activities of head office have been estimated using input-output ratios of existing series whereas architectural and engineering activities; technical testing and analysis have been estimated through a study. A sampling frame was obtained from the Securities and Exchange Commission of Pakistan (SECP). The total output of the activities has been estimated at Rs.3, 186 billion whereas intermediate consumption is Rs.1,808 billion. The GVA of these activities is Rs.1,378 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Engineers registered with the Pakistan Engineering Council (PEC). CPI (General) is used as an inflator.

c. Scientific Research and Development

The contribution of scientific research and development has been estimated through a study for the year 2016-17 comprising of 109 establishments. The frame was developed through the internet as no other reliable source was available. The output of the activity has been estimated at Rs.7 billion whereas intermediate consumption is Rs.4 billion resulting in a GVA of Rs.3 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Engineers registered with the Pakistan Engineering Council (PEC). CPI (General) is used as an inflator.

d. Advertising and Market Research

The contribution of the advertising and market research industry has been assessed through a study in 2016-17 based on the frame of 791 establishments developed through the internet. The output of the industry has been estimated at Rs.15 billion whereas intermediate consumption is Rs.1 billion. The base year GVA of the industry stands at Rs.13 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Engineers registered with the Pakistan Engineering Council (PEC). CPI (General) for output and CPI (Rent) for Intermediate Consumption is used as an inflator.

e. Other professional, scientific, and technical activities

A study comprising 191 establishments was conducted to assess the contribution of other professionals, scientific and technical activities. The frame was developed through the internet and SECP. The study was conducted during 2016-17. The output, intermediate consumption, and GVA of these activities stand at Rs.0.23 billion, Rs. 0.04 billion, and Rs.0.19 billion respectively.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Engineers registered with the Pakistan Engineering Council (PEC). CPI (General) is used as an inflator.

f. Veterinary activities

The share of veterinary activities has been estimated through a study based on the frame of 107 establishments during 2016-17. The frame was developed through the internet and SECP. The output of these activities has been estimated at Rs.0.05 billion, intermediate consumption is Rs.0.02 billion and GVA is Rs.0.03 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of veterinary doctors and graduates registered with the Pakistan Veterinary Council (PVC). CPI (General) is used as an inflator.

4.10.2 Administrative and Support Service Activities

The administrative and support service activities, covered in the Section M of the PSIC-2010, include a variety of activities that support business operations. These activities differ from Professional, Scientific and Technical activities described in Section M above. This includes renting machinery, employment activities, private security services and office support activities. The coverage of these activities in 2015-16 rebasing is described in the following:

a. Rental and Leasing Activities

The renting of machinery and equipment has been covered in the Survey “Other Private Services 2016-17”. The survey results have been adjusted to the base year 2015-16. Overall, 25,555 establishments have been covered in the survey. The output and intermediate consumption of renting of machinery and equipment have been estimated at Rs.19.5 billion and Rs.4.9 billion respectively. The 2015-16 base year GVA stands at Rs.14.6 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of enrolment of vocational institutes obtained from the Social Statistics Section, PBS. CPI (General) for output and CPI (Rent and Energy) Urban for Intermediate Consumption has been used as an inflator.

b. Employment Activities

The contribution of establishments engaged in the provision of employment activities has been assessed through the Survey “Other Private Services 2016-17”. In the survey, 161 establishments have been enumerated. Output and Intermediate consumption of this activity stand at Rs.271 billion and Rs.108 billion respectively. The GVA of the industry has been worked out at Rs.163 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of enrolment of vocational institutes obtained from the Social Statistics Section, PBS. CPI (General) for output and CPI (Rent and Energy) Urban for Intermediate Consumption is used as an inflator.

c. Security and Investigation Activities

The private security services have been covered in Survey “Other Private Services 2016-17”. During the survey, 127 establishments have been covered. The output of the industry for the base year 2015-16 has been estimated at Rs.24.7 billion, whereas intermediate consumption is Rs.11.5 billion resulting in a GVA of Rs.13.2 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of enrolment of vocational institutes obtained from the Social Statistics Section, PBS. CPI (General) for output and CPI (Rent and Energy) Urban for Intermediate Consumption is used as an inflator.

d. Office Support Activities

The contribution of office support activities has been assessed through Survey “Other Private Services 2016-17”. The number of establishments covered was 16,375. The output and intermediate consumption of the industry for the base year 2015-16 have been estimated at Rs.24 billion and Rs.11 billion respectively. The GVA of the industry is Rs.13 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of enrolment of vocational institutes obtained from the Social Statistics Section, PBS. CPI (General) for output and CPI (Rent and Energy) Urban for Intermediate Consumption is used as an inflator.

4.10.3 Arts, Entertainment and Recreation

The arts, entertainment, and recreation activities are covered in the Section R of the PSIC 2010 and are comprised of Creative, arts and entertainment activities; Libraries, archives, museums and other cultural activities; Sports activities and amusement & recreation activities. The PSIC Divisions 91 and 92 are not covered in 2015-16 due to the non-availability of relevant frames. Divisions 90 and 93 have been covered in Survey “Other Private Services 2016-17” and results have been adjusted to the base year 2015-16. According to the data, the total number of establishments engaged in arts, entertainment, and recreation activities stands at 33,905. The output and Intermediate consumption are Rs.15 billion and Rs.5 billion respectively. The GVA of creative arts, entertainment, sports activities, amusement, and recreation activities stands at Rs.10 billion.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at current prices through growth in output and IC of TV channels (PTV, ATV and PBC). CPI (Recreation) for output and CPI (Rent and Energy) Urban for Intermediate Consumption is used as a deflator.

4.10.4 Other Service Activities

The other service activities are covered in Section S of the PSIC 2010 and are comprised of three Divisions i.e. 94-Activities of membership organizations, 95-Repair of computers and personal and households goods, and 96-Other personal service activities (Washing, dry-cleaning, hairdressing and other beauty treatment, shoe shiners, etc.). In 2015-16 rebasing, the contribution of activities falling under PSIC 95 and 96 has been assessed through Survey “Other Private Services 2016-17”. The detail follows.

a. Membership Organizations

The activities of membership organizations include PSIC classes’ 9411-Activities of business and employer’s membership organizations, 9412-Activities of professional membership organizations, 9420-Activities of trade unions, 9491-Activities of religious organizations, 9492-Activities of political organizations, and 9499- Activities of other membership organizations n.e.c. The contribution of activities of member organizations has been assessed through the cost of production approach. The output, intermediate consumption and GVA of membership organization for the base year 2015-16 stand at Rs.100 billion, Rs.51 billion and Rs.49 billion respectively.

Extrapolation and Deflator

Output and Intermediate Consumption of these activities are extrapolated at constant prices through a fixed growth rate of 3.01% based on inter-census urban population obtained from population censuses 2017 and 1998. The CPI (General) is used as an inflator.

b. Repair of Computers and Personal & Household Goods

The contribution of these activities has been assessed through the Survey “Other Private Services 2016-17” in which 271,129 establishments were covered. The results of the survey have been

adjusted to 2015-16. The output has been estimated at Rs.191 billion, intermediate consumption is Rs.53 billion and GVA is Rs.138 billion.

Extrapolation and Deflator

Output and intermediate consumption of these activities are extrapolated at constant prices with a fixed growth rate of 3.01% based on inter-census urban population obtained from population censuses 2017 and 1998. The CPI (General) is used as an inflator.

c. Other Personal Services

The Survey “Other Private Services 2016-17”, based on 246,343 establishments, provides estimates of the GVA of other personal service activities. The output, intermediate consumption, and GVA, adjusted to the base year 2015-16 of these activities stands at Rs.176 billion, Rs.36 billion and Rs.140 billion respectively.

Extrapolation and Deflator

Output and intermediate consumption of these activities are extrapolated at constant prices with the fixed growth rate of 3.01% based on inter-census urban population obtained from population censuses 2017 and 1998. The output is inflated by CPI (General) and IC by combined CPI (rent and energy) urban.

4.10.5 Activities of Households as Employers of Domestic Staff

The activities of households as employers are covered in Section T of the PSIC-2010 under Division 97-Activities of households as employers of domestic staff. The GVA of these activities is comprised of the compensation paid by households to their domestic staff and has been estimated at Rs.149 billion using the number of employees and average wage rate reported in the labour force survey.

Extrapolation and Deflator

The GVA is extrapolated at constant prices with the fixed growth rate of 3.01% based on inter-census urban population obtained from population censuses 2017 and 1998. The CPI (General) is used as an inflator.

Table 4.18: Results of Other Private Services for the year 2015-16

| PSIC-2010 | Name of Activity | Output | IC | GVA |
|------------------|---|------------------|------------------|------------------|
| 1 | 2 | 3 | 4 | 5 |
| 69 – 75 | Professional Scientific & Technical activities | 3,475,294 | 1,841,020 | 1,634,274 |
| 69 | Accounting and legal activities | 266,741 | 27,257 | 239,484 |
| 70 | Head offices, Management Consultancy activities | 62947 | 6871 | 56076 |
| 70 – 71 | Architecture & Engineering & Head offices activities | 3,123,376 | 1,801,108 | 1,322,268 |
| 72 | Scientific Research & Development | 7,347 | 4,366 | 2,981 |
| 73 | Advertising and Market research | 14,604 | 1,353 | 13,251 |
| 74 | Other professional scientific & technical activities(Photographic activities) | 231 | 44 | 187 |
| 75 | Veterinary activities | 49 | 22 | 27 |
| 77 – 82 | Administrative Support Services | 339,373 | 135,897 | 203,476 |
| 77 | Renting of machinery | 19,475 | 4,879 | 14,596 |
| 78 | Employment activities | 270,903 | 108,361 | 162,542 |
| 80 | Private security services | 24,722 | 11,466 | 13,256 |
| 82 | Office support activities | 24,273 | 11,191 | 13,081 |
| 90 – 93 | Arts, entertainment & recreation | 15,088 | 4,698 | 10,390 |
| 94 – 96 | Other Service Activities | 466,463 | 139,883 | 326,581 |
| 94 | Membership Organization | 99,543 | 51,159 | 48,384 |
| 95 | Repair of computers | 191,005 | 52,630 | 138,375 |
| 96 | Other personal Services activities | 175,915 | 36,094 | 139,821 |
| 97 | Activities of households as employees-Domestic staff | 148,744 | - | 148,744 |
| TOTAL | | 4,444,962 | 2121499 | 2323464 |

Effect of Rebasing

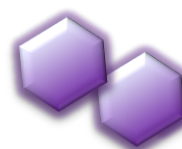
The comparison of overall GVA in Other Private Services sector for the base year 2005-06 and 2015-16 is given below:

Table 4.19: Comparison of GVA of Other Private Services for the year 2005-06 & 2015-16 Base (Rs. Million)

| PSIC 2010 | Name of activity | Base 2005-06 | | Base Year 2015-16 | Change in | | |
|------------------------------|---|------------------|------------------|-------------------------|-----------|---------|----------|
| | | 2005-06 Price | 2015-16 Price | | % | | Mill. Rs |
| | | | | | Col 5/3 | Col 5/4 | Col. |
| | | | | | | | 4-5 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 69-75 | Professional Scientific & Technical activities | 354,231 | 1,672,735 | 1,634,274 | 361.36 | -2.3 | -38461 |
| 69 | Accounting and legal activities | - | - | 239,484 | | | 239484 |
| 70 | Head offices, Management Consultancy activities | | | 56076 | | | 56076 |
| 70-71 | Architecture & Engineering & Head offices activities | 354,231 | 1,672,735 | 1,322,268 | 273.28 | -20.95 | -350467 |
| 72 | Scientific Research & Development | | - | 2,981 | | | 2981 |
| 73 | Advertising and Market research | | - | 13,251 | | | 13251 |
| 74 | Other professional scientific & technical activities(Photographic activities) | | - | 187 | | | 187 |
| 75 | Veterinary activities | | - | 27 | | | 27 |
| 77-82 | Administrative Support Services | 3,728 | 2,777 | 203,476 | 5358.05 | 7227.19 | 200699 |
| 77 | Renting of machinery | 3,728 | 2,777 | 14,596 | 291.52 | 425.6 | 11819 |
| 78 | Employment activities | | - | 162,542 | | | 162542 |
| 80 | Private security services | | - | 13,256 | | | 13256 |
| 82 | Office support activities | | - | 13,081 | | | 13081 |
| 90-93 | Arts, entertainment & recreation | 47,651 | 110,412 | 10,390 | -78.2 | -90.59 | -100022 |
| 94-96 | Other Service Activities | 75,012 | 312,217 | 326,581 | 335.37 | 4.6 | 14364 |
| 94 | Membership Organization | 3,091 | 12,866 | 48,384 | 1465.32 | 276.06 | 35518 |
| 95 | Repair of computers | | - | 138,375 | | | 138375 |
| 96 | Other personal Services activities | 71,920 | 299,351 | 139,821 | 94.41 | -53.29 | -159530 |
| 97 | Activities of household as employees-Domestic staff | 13,560 | 56,440 | 148,744 | 996.93 | 163.54 | 92304 |
| Total Other Private Services | | 494,181 | 2,154,581 | 2323464 | 370.16 | 7.84 | 168883 |

CHAPTER 5

Expenditure on Gross Domestic Product



EXPENDITURE ON GROSS DOMESTIC PRODUCT**5.1 Coverage**

The estimates of expenditure on the gross domestic product (GDP) are the total of final uses of goods and services measured in purchaser's value less the value of imports of goods and services. According to SNA 2008, the principal components of final uses of GDP are:

- i. Individual consumption expenditure (P31-Sector Households,S14)
- ii. Collective consumption expenditure (P32-Sector General Government,S13)
- iii. NPISH's individual consumption expenditure (P31-Sector NPISH,S15)
- iv. Gross fixed capital formation (P51)
- v. Changes in inventories (P52)
- vi. Acquisition less disposal of valuables (P53)
- vii. Exports (P6)
- viii. *Minus* Imports (P7)

The bracket indicates the SNA's transaction code ("P") and in some cases, the institutional sector code, the transactions by definition are allocated to. In a lot of countries, including Pakistan, the individual consumption expenditure of households and of Non-profit Institutions Serving Households (NPISH) cannot be calculated separately and is accordingly shown as a single aggregate. This aggregate also includes the acquisition of valuables/consumer durables such as gold and silver products, wristwatches, wall and table clocks, precious stones and metals etc. However, valuables have been estimated separately in 2015-16 rebasing for the first time in Pakistan. The expenditure on GDP is presented in the following equation:-

$$GDP (Expenditure) = P31 + P32 + P51 + P52 + P53 + P6 - P7$$

Where P31 is individual consumption expenditure, P32 is collective consumption expenditure, P51 is gross fixed capital formation, P52 is changes in inventories, P53 is valuables, P6 is exports of goods and services, P7, is imports of goods and services. The codes are those of the respective transactions in the SNA 2008. If the net factor income from the rest of the world (R) is added, it becomes the Gross National Income (GNI).

Moreover, in the SNA the term "sector" is reserved for the five institutional sectors of the domestic economy: non-financial corporations (S11), financial corporations (S12), general government (S13), household sector (S14) and non-profit institutions serving households (NPISH) (S15):

Changes in final uses of GDP determine the growth of real GDP in the short term. There are three target variables that governments try to influence with their fiscal and monetary policy instruments to maintain growth at a rate that keeps inflation and employment at the desired level:

- i. Individual consumption expenditure
- ii. Collective consumption expenditure and
- iii. Gross fixed capital formation.

Exports are also a major component of final uses which in this case is based on external demand. It is conventional to show external demand as being equal to exports minus imports, the result being known as net exports. In the SNA increases in inventories (stocks), however, are recorded as gross capital formation. Gross capital formation is the sum of gross fixed capital formation, changes in inventories and net acquisition of valuables.

It is important to note that the GDP viewed from the expenditure side captures uses only in case they are “final”. In the national accounts, the uses of resources are described as intermediate or final. Intermediate uses consist of goods and services that are consumed, used up or transferred in the production process within the economic territory during the accounting period. Final uses comprise all other goods and services which are used for final consumption, for capital formation or exports (net of imports). Most of the expenditure by the general government or NPISH is conventionally regarded as “final”, either as final consumption expenditure or as gross capital formation. Conversely, all spending by firms on goods and services is “intermediate” apart from capital formation. Exports are considered as “final” because they are final sales from the point of view of the exporting country.

Methodological issues and data resources are explained in the subsequent paragraphs. The estimates of the expenditure on GDP for the base year 2015-16 are given in table 32. In general, the methods, as well as the results are given in this chapter; do not differ substantially from those of the National Accounts about the previous base.

5.2 Household Final Consumption Expenditure

The final consumption of goods & services of households and non-profit institutions serving households (NPISHs) is made up of outlays on new durable and non-durable goods & services, reduced by net sales of second-hand goods, scraps and wastes and is estimated at purchasers’ value i.e. by including any taxes on products that may be payable at the time of purchase by households. Expenditures by residents abroad constitute imports, while expenditures by non-residents are exports.

In summary, the final consumption expenditure of the household generally includes;

- i. Purchases of the goods and services used by households to meet their everyday needs,
- ii. Partial payments for goods and services provided by the general government,
- iii. Payment to the general government for various types of licenses and permits for services
- iv. Owner occupier’s imputed rents
- v. Own-account consumption, i.e., the imputed value of consumption goods produced and consumed by households themselves
- vi. Income in kind, valued at their cost to the employer
- vii. Financial intermediation services indirectly measured (FISIM)

In principle, the aggregate on household final consumption expenditure can be measured in two ways:

- In a commodity flow approach, we would look at the domestic supply and import of products and delineate thereof those which are absorbed for the

final consumption purpose of households and NPISHs.

- In special surveys, we directly survey the consumption of households and NPISH by asking them. In Pakistan, this is done in the Household Integrated Economic Survey (HIES).

In Pakistan, as in some other countries, we apply a third variant which is an assessment of this aggregate as the residual of GDP. In other words, it is calculated as GDP as determined from the production side minus the aggregates which can be calculated on empirical evidence (final consumption of the government, capital formation and exports minus imports). The reason for refraining from the use of figures from HIES is that there are large gaps between HIES and the residual of GDP. A lot of countries face the problem that household surveys drastically understate the final consumption as defined in the SNA. Conceptual issues have been highlighted in the 2005-06 rebasing document.

A comparison of figures of households final consumption expenditure as reported in HIES surveys and those derived residually in the National Accounts, as per results of the base year 2005-06, is presented below:-

Table 5.1: Comparison of Household Final Consumption Expenditure in HIES and National Accounts (Rs. in Million)

| Financial Year | HIES Survey (Households only) | National Accounts (2005-06 base) | HIES % age of National Accounts |
|----------------|----------------------------------|----------------------------------|------------------------------------|
| | | (HHs + NPISH) | |
| 1 | 2 | 3 | 4 |
| 2007-08 | 3,169,577 | 8,709,574 | 0.36 |
| 2010-11 | 4,836,926 | 14,831,293 | 0.33 |
| 2013-14 | 8,362,474 | 20,391,214 | 0.41 |
| 2015-16 | 10,455,229 | 23,266,454 | 0.45 |
| 2018-19 | 15,055,810 | 31,547,687 | 0.48 |

Due to the huge gap in the household final consumption figures compiled through HIES surveys and in National Accounts, the estimates are derived through residual approach in 2015-16 rebasing as was being done in 2005-06 base.

5.3 Final Consumption Expenditure Of Non-Profit Institutions Serving Households (NPISH)

Non-Profit Institutions Serving Households (NPISH) is a small sector in the national accounts. NPISH are units formed by groups of households to supply services to them or other households on a non-commercial basis. Included are political parties, trade unions, religious organizations, sports clubs, cultural associations, charities associations with philanthropic aims and certain charitable foundations. NPISH do not include all institutions with non-commercial aims. To be defined as NPISH, the funding source should be the household's donations or regular subscriptions. Those non-profit institutions that are not directly financed by households but are financed and controlled by the enterprise (Chambers of commerce, professional associations, mutual insurance companies etc.) or government are classified as being in the respective sector. NPISH provide non-market services, hence their treatment is similar to that of the government.

By convention, NPISH consumes the services they produce. Therefore final consumption expenditure of NPISHs is equal to their operating costs and all being individual consumption expenditure in nature.

In Pakistan, NPISHs is comprised of NGOs and membership organizations. The final consumption expenditure of NPISHs is equal to their operating costs and all being individual consumption expenditure in nature. In 2015-16 rebasing, final consumption expenditure of NPISH has been estimated separately through the known values of output for the first time. Due to its non-market nature, the output of NPISH has been imputed through the intermediate consumption expenditure (e.g. electricity, gas, water, fuel, transport, rent, etc.), compensation of employees, and consumption of fixed capital reported by NGOs for the base year survey and membership organizations. The base year output of NPISH i.e. Rs.296.7 billion has been treated as the final consumption expenditure of the NPISH which accounts for 0.91% of the GDP for the new base estimates. The NPISH is extrapolated through the combined output of NGOs and membership organizations.

5.4 General Government Final Consumption Expenditure

5.4.1 Collective Consumption Expenditure (General Government)

For short, the collective consumption is the output of the general government which has neither been utilized for own-account capital formation (e.g. in-house produced software) nor has been sold. Thus, the calculation of the collective consumption expenditure of the general government is just a few steps further than the calculation of its output, its intermediate consumption and its value-added. Collective consumption expenditure is derived as follows:

The value of all types of output of general government,

- less* the value of output for own-account capital formation,
- less* the value of sales of goods and services at both economically insignificant prices and economically significant prices,
- plus* the value of goods and services purchased from market producers for delivery to households free or at economically insignificant prices.

The latter position is relevant for countries with a well-developed system of social security funds where these funds cater for health insurance by purchasing health services and medical goods on behalf of their member households who in return pay social contributions. These countries, most of the industrialized ones, make use of an option of recording a “social transfer in-kind” to shift these high amounts of expenditures from collective consumption to individual consumption of the households the medical goods and services are meant for. Similarly, some other services provided by the government (education) are also shifted this way. Especially for this option the SNA 2008 foresees a special deviation in the sequence of accounts and in the balancing items (“adjusted disposable income”). This option has not been chosen for Pakistan. Conceptual issues have been highlighted in the 2005-06 rebasing document. Chapters 9 and 10 of the SNA 2008 are referred for details. Though the calculation of collective consumption is straightforward some conceptual discussion and clarification are given in the following paragraphs.

Expenditures on a wide range of consumer goods and services are incurred by the general government, either on collective services or on selected individual goods or services. The

collective consumption expenditures can be classified in several ways. In particular, they may be classified:

- i. According to whether the goods or services have been produced by the market or non-market producers;
- ii. According to whether the expenditures are on collective services or individual goods or services;
- iii. By function or purpose according to the classification of the functions of government (COFOG); or
- iv. By type of good or service according to the CPC.

Options “ii” and “iv” are not materialized for Pakistan. Option “ii” stands for the above mentioned “social transfers in kind” while option “iv” cannot be applied due to lack of data and resource constraints.

For countries like Pakistan whose central banks are providing surveillance services and thus are producing non-market output, the new SNA foresees a special addition to collective consumption. According to SNA 2008 (6.153 and 8.130), a current transfer (“current transfer between the central bank and general government” under “miscellaneous current transfers”) has to be recorded. The underlying convention is a virtual transfer from the State Bank to the central government which enhances the government’s disposable income by the amount of the collective consumption dedicated to the surveillance service of the State Bank. In other words: with the provision of this virtual money from the State Bank, the government is in a position to virtually purchase the non-market output from the State Bank. As a result of these virtual transactions the balancing items saving and net lending both of general government as well as of State Bank remain unaffected. In the base year, 2015-16 the collective consumption resulting from the State Bank’s non-market activity was Rs.39,037 million.

Expenditures on the outputs of non-market producers that are provided free, or at prices that are not economically significant, to individual households or the community account for most of the collective consumption expenditure. The government may produce output for its own final use and some market output but most production by units of the general government is non-market. The value of the non-market output is estimated by the sum of the costs involved in production. Although government delivers some goods and services to individually identifiable persons, the costs of so doing are shown as collective consumption expenditure. The value of collective consumption expenditure on non-market goods and services is not necessarily exactly equal to the value of government output of these goods and services. The values of these expenditures are equal to the estimated values of all types of output less the value of production for own capital formation and less the values of any receipts from sales. These receipts may be derived from sales of some goods or services at prices that are not economically significant or from sales of a few goods or services at prices that are economically significant (sales of secondary market output). Examples for the latter cases are sales from statistical yearbooks or tickets of public museums and the like. These can safely be assumed as negligible as compared to the volume of non-market output. The results according to option “iii” are given below.

Table 5.2: Final Consumption Expenditure of the General Government for the Base Year 2015-16

| Functions of Government (COFOG) | Final Consumption Expenditure | Collective Consumption Expenditure | Individual Consumption Expenditure |
|--------------------------------------|-------------------------------|------------------------------------|------------------------------------|
| 1 | 2 | 3 | 4 |
| 01. General public service | 503,258 | 503,258 | - |
| 02. Defence | 640,552 | 640,552 | - |
| 03. Public order and Safety | 311,493 | 311,493 | - |
| 04. Economic Affair | 479,168 | 479,168 | - |
| 05. Environmental Protection | 29,363 | 29,363 | - |
| 06. Housing and community amenities | 29,642 | 29,642 | - |
| 07. Health | 255,729 | 25,706 | 230,023 |
| 08. Recreation, culture and religion | 22,028 | 17,039 | 4,989 |
| 09. Education | 643,016 | 15,320 | 627,696 |
| 10. Social Protection | 464,555 | 11,391 | 453,164 |
| Total | 3,378,806 | 2,062,935 | 1,315,872 |

Collective consumption expenditure is the second-largest final use after household consumption. Expenditures by the general government are, by convention, considered as forming part of the final uses (consumption or GFCF) of the general government itself. In accounting terms, final consumption expenditure by the government is equal to its cost, defined by the following sum:

Collective consumption expenditure = Compensation of employees of the government,

Plus purchases by the government of materials and other intermediate consumption items,

Plus consumption of government fixed capital,

Plus purchases of goods and services by the government for the benefit of households

Plus other taxes on production

minus partial payments by households or firms for services provided by the government

Plus non-market output of the central bank

5.5 Gross Fixed Capital Formation (GFCF)

Gross fixed capital formation (GFCF) is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditures on services that add to the value of non-produced assets. GFCF is precisely defined in the national accounts as the net acquisition of produced fixed assets, i.e. assets intended for use in the production of other goods and services for more than one year. The word fixed is used to indicate that additions to inventories are not included in GFCF. It does not mean that the equipment in question cannot move. The term "fixed" was chosen in contrast to "variable" capital which consists of inventories. The net acquisition signifies that GFCF records the purchases of fixed assets after the deduction of sales of fixed assets. The term produced assets signify that only

those assets are included in GFCF that are the result of a production process recognized by the national accounts. Transactions in non-produced assets are included in balance sheet accounts. Conceptual issues have been highlighted in the 2005-06 rebasing document. Chapter 10 of the 2008 SNA is referred for details.

GFCF can be broken down by the nature of the product or by investing industry or by type of asset. Their cross-classification may also be useful for analysis purposes. In Pakistan, we classify the GFCF by investing industry and by type of assets. The types of assets are:

a. Material fixed assets

- Dwellings,
- Other buildings and structures
- Machinery and equipment
- Cultivated assets

b. Intangible fixed assets

- Mineral exploration
- Research and development
- Software
- Literary and artistic originals

GFCF is valued at purchasers' prices, which for the capital goods include transportation and installation charges as well. For the measurement of GFCF in Pakistan all four possibilities or a mixture of them are exploited:

- i. Primary data from surveys by asking the investor
- ii. Secondary data (i.e. without special survey) by utilizing data that are already available (government budgets and government finance statistics, banking statistics, company reports)
- iii. Commodity flow approach: If information of the investor is not available the amount is derived from the domestic output or import of goods or services which presumably are an object of the capital formation.
- iv. Proxy estimates from variables that are considered to correlate strongly with capital formation: loans from banks and other sources.

This has been materialized in Pakistan in the questionnaire below which as a standard document is utilized for surveys on GFCF in various industries. This does not withstand the fact that for empirical reasons we also have classifications of assets that follow other criteria as, for example, in agriculture.

Questionnaire Applied for data Collection is Given Below:

Table 5.3: Data On Gross Fixed Capital Formation

| 1. Name and Address of establishment / Enterprise: | | | | 2. Major kind of activity: | | |
|--|---|---|--|--|--------------------------------|--------------|
| 3. Average number of persons engaged during the year: | | | | | | |
| Rs. "000" | | | | | | |
| Code | Type of assets | | Acquisition, addition, alteration & major improvements | Sale Proceeds of fixed assets disposed off | *Own account capital formation | GFCF |
| | | | | | | Col. (3-4+5) |
| 1 | 2 | | 3 | 4 | 5 | 6 |
| 10 | Dwellings (Residential buildings) | | | | | |
| 21 | Other buildings and structures | Buildings other than dwellings | | | | |
| 22 | | Other structures | | | | |
| 22-1 | | i. | | | | |
| 22-2 | | ii. | | | | |
| 22-3 | | iii. | | | | |
| 22-4 | | iv. Others n.e.c | | | | |
| 23 | Land improvements & cost of land transfer | | | | | |
| 31 | Machinery and equipment | Transport Equipment (vehicles etc.) | | | | |
| 32 | | ICT (computer hardware & telecommunication) equipment** | | | | |
| 33 | | Furniture & Fixture | | | | |
| 33a | | Other machinery & equipment | | | | |
| 50 | Cultivated biological resources (Animals / trees etc.)*** | | | | | |
| 71 | Intellectual Property Products | Research and Development | | | | |
| 72 | | Mineral exploration & evaluation **** | | | | |
| 73 | | Computer software and database | | | | |
| 74 | | Other intellectual property products | | | | |
| * Fixed assets produced for own use ** Information, Computer and Telecommunications *** for agriculture only | | | | | | |
| **** for mining only | | | | | | |
| Note: Assets, acquired on a financial lease, should be included in the respective category. | | | | | | |
| Name and Position: _____ | | | | Signature _____ | | |

5.6 Estimation of GFCF

Estimates of the private sector are computed by a combination of commodity flow, expenditure (survey method) and financial approaches. The commodity flow approach which uses the net availability of capital goods in value terms from domestic production and imports and exports duly adjusted for various margins is applied to the following three sectors.

- a. Agriculture (Crops in the private sector)
- b. Construction (Private sector)
- c. Transport (Private sector)

5.6.1 Expenditure Approach (Survey Method):

Expenditure approach is applied to following industries.

- i. Mining and quarrying
- ii. Large scale manufacturing industries (In-production units)
- iii. Small and household manufacturing industries
- iv. Electricity generation and distribution, gas distribution, Water supply
- v. Wholesale and retail trade
- vi. Accommodation and food service activities (Hotels and restaurants)
- vii. Warehousing and storage activities
- viii. Information and communication
- ix. Financial and insurance activities
- x. Real estate activities (Housing services ownership of dwellings)
- xi. Education
- xii. Human health and social work activities
- xiii. Other private services
- xiv. General government sector

A financial approach is used to estimate GFCF in under-construction large scale manufacturing industries and loans disbursed to different industries. Industry-wise detailed methodology is given below.

5.6.2 Results of GFCF by Industry

a. Agriculture, Forestry and Fishing

The GFCF estimates in the agriculture, forestry and fishing industry are compiled separately for crops (Private and public sectors), cotton ginning (new addition in 2015-16 rebasing), livestock, forestry and fishing. The details are discussed below:-

i. Crops

Because of different sources of data, GFCF in agriculture has been calculated for the private sector and for the public sector separately. The main components of GFCF in private sector agriculture are:

- i. Imports and domestic production of agriculture machinery
- ii. Tube wells installed
- iii. Cultivated Biological Resources (Animals, trees, crops and plants resources yielding repeat products)
- iv. Land improvement and cost of land transfer
- v. Farms and buildings
- vi. Wells and bundats
- vii. Farm transport
- viii. Water courses
- ix. Orchards and
- x. Non-monetized GFCF (Own account capital formation).

The public sector estimates are based on data supplied by the public sector organizations. Data on land improvement, farm buildings & sheds, wells & bundats, farm transport, watercourses and orchards have been taken from Agriculture Census 2010 and extrapolated by the growth rate of the respective items between the two censuses, i.e. 2000 and 2010 to have the constant estimates. It is converted into a current estimate by applying the deflator for agriculture. This estimate has been adopted for the base 2015-16. This practice is being continued for extrapolation in the new base.

To estimate GFCF expenditure on farm machinery and implements, in the private sector, the “commodity flow approach” is applied, using domestic production of agricultural machinery and implements, adjusted for imports and exports. As the values of this approach are at output prices of the respective manufacturers or at import values, respectively, the figures have to be enhanced by the trade margins to arrive at GFCF at purchasers’ prices. For this purpose, custom duty and sale tax has been worked out at 24% based on FBR publication “Pakistan Custom and Tariff 2015-16”. The handling charges and trade margins, adopted from 2005-06 rebasing, have been applied @ 3% and 37% respectively on the total value of imports, inclusive of all taxes. It is worth noting that handling charges are neither trade margin nor transport margin. These are the services rendered by special agents but not independently covered, so special cases are included over here. A flat rate of 43.7%, adopted from 2005-06 rebasing, of total (other) monetized GFCF was used to derive the non-monetized GFCF. In the SNA terminology, it is the own-account capital formation and is also a part of the output.

The GFCF in non-monetized i.e. own-account capital formation has been estimated using a ratio of 2005-06 rebasing. It has also been extrapolated like the above-mentioned items and the same practice is being continued in the base 2015-16. The primary activity is crop production in Pakistan, therefore, this component of GFCF has been allocated to crops part instead of distributing it between crops and livestock activities.

GFCF of plant nurseries has also been estimated in 2015-16 rebasing for the first time through the study on Plant Nurseries. The base year GFCF estimates for this industry stand at Rs.337.2 million. The detail for the base year is given below in the table.

Table 5.4: Gross Fixed Capital Formation (GFCF) in Agriculture Crops -Base 2015-16

| S No. | Heads | Value |
|---|--|----------------|
| | | Rs. Million |
| 1 | 2 | 3 |
| 1 | CIF value of Imports Agricultural Machinery | 8,884 |
| 2 | Add custom duty and sale tax (24%) | 1,954 |
| 3 | Less Exports (-) | 1,523 |
| 4 | Less Re-exports | 1 |
| 5 | Balance of Imported Equipment available for domestic use | 9,315 |
| 6 | Add. Handling Charge @3% (on item 1) | 267 |
| 7 | Trade Mark-up to Wholesale and Retail dealers @37% of value (on item 5) | 3,446 |
| 8 | Total (5 + 6+7) | 13,028 |
| 9 | Domestic Sale of Tractors & Agricultural Machinery | 26,323 |
| 10 | Trade Mark-up @32.5% (on item 9) | 8,555 |
| 11 | Total Value of Imported Equipment and Domestic Production under large scale (8+9+10) | 47,906 |
| 12 | Value of Production under Small Scale Mfg. | 340 |
| 13 | Trade Mark-up @ 66% under Small Scale Manufacturing (on item 12) | 224 |
| 14 | Total Value of Equipment, Imported and Domestic Production (11+12+13) | 48,470 |
| 15 | Value of Tube wells only | 25,707 |
| 16 | Total Value of Agricultural Machinery and Tube wells (14+15) | 74,177 |
| 17 | Miscellaneous GFCF in Agriculture | 102,108 |
| Components of "Miscellaneous GFCF" | | |
| 1 | Land Improvement (Monetized) | 39,470 |
| 2 | Farms, Building and Sheds | 17,556 |
| 3 | Wells and Bandit | 2,696 |
| 4 | Farm Transport | 2,272 |
| 5 | Water Courses | 2,842 |
| 6 | Orchards | 2,237 |
| 7 | Non-Monetized Investment | 28,608 |
| 8 | Tube wells construction | 6,427 |
| 9 | GFCF of nurseries | 337.2 |
| | Total Miscellaneous GFCF | 102,445 |
| | Private GFCF Crops | 176,622 |
| | Public GFCF crops | 205 |
| | Total GFCF Crops | 176,490 |

For subsequent years, GFCF in crops is estimated using the information on imported and domestically produced and sold machinery and equipment used for agriculture purposes. The imports and sales of tractors are estimated at current prices while the remaining components are estimated at constant prices. GFCF related to tube wells are extrapolated at constant prices using

growth in the number of tube wells obtained from M/O National Food Security & Research (NFS&R). The miscellaneous component is estimated at constant prices but by using inter-census growth rates. WPI (Machinery & equipment) is used as the deflator.

ii. Cotton Ginning

The GFCF of the cotton ginning industry has been estimated for the first time through a study conducted in 2016-17 under the umbrella of Rebasing of National Accounts. The study results have been adjusted and base year GFCF in the Cotton Ginning Industry stands at Rs.1042 million. The GFCF is be extrapolating at current prices by applying the growth of buildings reported in the crops sub-sector which is converted into constant prices by applying the WPI (Machinery and equipment).

iii. Livestock

The GFCF in livestock has been measured as the value of acquisitions less disposals. It is, therefore, equal to the total value of all mature animals and immature animals produced on own account, acquired by users of the livestock less the value of their disposals. Disposals consist of animals sold or otherwise disposed off including those sold for slaughter, plus those animals slaughtered by their owners. The GFCF has been valued separately for each species of livestock. The livestock part of the agriculture industry is referred to, detail is given below. For the base year 2015-16, the cultivated assets have been calculated species-wise. For the detailed method chapter 2, the livestock part where the output/ GVA have been estimated is referred. Comparative results show improvements.

Table 5.5: GFCF in Livestock, 2015-16 Base and 2005-06 Base at current prices (Rs. Million)

| Cultivated Assets 2015-16 base | | Cultivated Assets 2015-16 (2005-06 base) | Cultivated Assets 2005-06 |
|--------------------------------|----------------|---|------------------------------|
| 1 | 2 | 3 | 4 |
| Buffalo | 212,072 | 225,786 | 55,531 |
| Cattle | 215,870 | 231,634 | 54,477 |
| Sheep & Goats | 235,968 | 191,092 | 51,396 |
| Others | 24,389 | 24,577 | 7,127 |
| Total | 688,300 | 673,088 | 168,530 |
| Imports of animals | 866 | 866 | |
| Grand Total | 689,166 | 673,954 | 168,530 |

The GFCF in livestock in the following years will be estimated at constant prices using updated figures of stock of various species of livestock obtained from M/O NFS&R. A weighted-WPI (Milk and Meat) is used to derive GFCF figures at current prices.

iv. Forestry

The contribution of the forestry industry is estimated through an indirect approach due to the non-availability of data on establishments. Therefore, the benchmark estimates of GFCF in the forestry industry have been adopted by applying capital-output ratio from 2005-06 base which

stands at Rs.1392 million. Own account capital formation is like logging camps, temporary roads etc. developed by the contractors. The figures of GFCF are given below:

Table 5.6: GFCF in Forestry, 2015-16 Base and 2005-06 Base (Rs. Million)

| Fixed assets GFCF | 2015-16 Base | 2005-06 Base at prices of 2015-16 | 2005-06 Base |
|---|--------------|-----------------------------------|--------------|
| 1 | 2 | 3 | 4 |
| A) Buildings & structures (Construction) | 669 | 330 | 121 |
| i. Land Improvement & cost of land transfer | 266 | 131 | 48 |
| ii. Building and construction | 232 | 115 | 42 |
| iii. Other structure | 171 | 84 | 31 |
| B) Machinery & Equipment | 724 | 357 | 131 |
| i. Transport Equipment | 302 | 149 | 55 |
| ii. Furniture & fixture | 61 | 30 | 11 |
| iii. Other machinery & equipment | 360 | 178 | 65 |
| C) Cultivated biological resources | | | 0 |
| Total (A+B+C) | 1392 | 687 | 252 |

The extrapolation of GFCF in the forestry industry is made at constant prices by using inter-census growth of rural dwellings. WPI (Machinery and equipment) is used to derive GFCF figures at current prices.

v. Fishing

GFCF for the base 2015-16 has been taken from the inland and marine fishing studies. Fishing crafts, gears and equipment added annually are the major part of GFCF in fishing. GFCF for the new base year 2015-16 amounts to Rs.35824 million as compared to Rs.2950 million in the year 2015-16 for 2005-06 base. The detail is given below.

Table 5.7: GFCF in Fishing Sector, 2015-16 Base and 2005-06 Base (Rs. Million)

| Description | 2015-16 Base | 2005-06 Base at prices of 2015-16 | 2005-06 Base |
|----------------------------|---------------|-----------------------------------|--------------|
| 1 | 2 | 3 | 4 |
| A. Marine Fishing | 34,027 | 2,912 | 1,472 |
| B. Freshwater Fishing | 1,798 | 37 | 17 |
| Total Fishing (A+B) | 35,824 | 2,950 | 1,489 |

The extrapolation of GFCF in the fishing industry is carried out separately for inland and marine fishing activities at constant prices by using the information on fishing crafts obtained from M/O NFS&R. WPI (Machinery and equipment) is used to derive GFCF figures at current prices.

Table 5.8: GFCF in fishing by type of assets 2015-16 base (Rs. Millions)

| Fixed assets GFCF | 2015-16 Base | 2005-06 Base at prices of 2015-16 | 2005-06 Base |
|--|---------------|-----------------------------------|--------------|
| 1 | 2 | 3 | 4 |
| A)Buildings & structures (Construction) | 4,613 | 231 | 115 |
| i. Land Improvement & cost of land transfer | 577 | 16 | 7 |
| ii. Building and construction | 469 | 9 | 4 |
| iii. Other structure | 3,568 | 207 | 104 |
| B) Machinery & Equipment | 31,212 | 2,719 | 1,373 |
| i. Transport Equipment | 139 | 2 | 1 |
| ii. Furniture & fixture | 47 | - | - |
| iii. Other machinery & equipment | 31,025 | 2,717 | 1,372 |
| Total (A+B) | 35,824 | 2,950 | 1,489 |

The GFCF of the agriculture sector for 2015-16 has thus been estimated at Rs. 904,250 million as compared to Rs.850,088 million for the 2005-06 base methodology. The detail of GFCF by sector and by assets is given below:

Table 5.9: GFCF in Agriculture Forestry and Fishing, 2015-16 base and 2005-06 base (Rs. Million)

| Sector | 2015-16 Base | 2005-06 Base at prices of 2015-16 | 2005-06 Base |
|-----------------------|----------------|-----------------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Private sector | 904,045 | 849,943 | 254,746 |
| Crops (Exc. CG) | 176,622 | 172,352 | 84,348 |
| Cotton Ginning | 1,042 | | |
| Livestock | 689,165 | 673,954 | 168,657 |
| Forestry | 1,392 | 687 | 252 |
| Fishing | 35,824 | 2,950 | 1,489 |
| Public sector | 205 | 145 | 50 |
| Total | 904,250 | 850,088 | 254,796 |

Table 5.10: GFCF (By Assets) in agriculture for the year 2015-16 (Rs. Million)

| Assets | 2015-16 base | | | 2015-16 (2005-06 base) | | |
|-------------------|--------------|--------|---------|------------------------|--------|---------|
| | Private | public | Total | Private | public | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agriculture | 904,045 | 205 | 904,250 | 849,943 | 145 | 850,088 |
| Fixed assets | 211,784 | 205 | 211,989 | 173,038 | 145 | 173,183 |
| Cultivated assets | 692,261 | | 692,261 | 676,906 | | 676,906 |

This change is attributed to the following factors

- The private GFCF in the new base year 2015-16 has increased due to improvement in crops (2.3%), livestock (2.3%). A significant increase has been witnessed in fishing from Rs.2.950 billion to Rs.35.8 billion due to improved coverage.

- GFCF in cultivated assets has increased to Rs.692 billion in the new base year 2015-16 as compared to Rs. 677 billion in 2005-06bases.

b. Industrial Activities

The term “industrial sector” is well embedded in Pakistan’s common language of describing the economy. However, it is not a term used in the SNA or the classifications of the UN. On the contrary: it confuses as in the SNA the terms “industry” and “sector” have a very specific meaning. The term “industry” stands for a certain kind of major economic activity and is not confined to mining, quarrying, manufacturing, production of electricity and gas and water or construction. In the language of SNA and the UN classifications, even the services consist of “industries”. The term “sector” has already been specified as standing for the 5 institutional sectors of the economy. Nevertheless, for the convenience of the users, the respective industries are grouped here as if the familiar term “industrial sector” were still in place.

i. Mining and Quarrying

The estimates of GFCF for the new base year of this industry have been derived using the information from annual reports of the individual companies. GFCF has been estimated separately for coal, gas, oil and other minerals by capital assets (tangible & intangible) in line with SNA-2008. Acquisition of capital assets netting out their disposal at the current price has been recorded as changes in fixed assets. According to the SNA 2008, (10.107) exploration costs undertaken to discover new deposits of minerals are also treated as GFCF. Deflators are used to convert the estimates at constant prices. The GFCF in the mining and quarrying sector is given in table 5.11 while bifurcation by type of assets is given in table 5.12.

Table 5.11: GFCF in Mining and Quarrying, 2015-16 Base and 2005-06 Base (Rs. Million)

| Description | 2015-16 Base | 2005-06 Base at prices of 2015-16 | 2005-06 Base |
|----------------|----------------|-----------------------------------|---------------|
| 1 | 2 | 3 | 4 |
| Public Sector | 28,053 | 28,053 | 6,133 |
| Private Sector | 94,113 | 77,365 | 22,829 |
| Total | 122,165 | 105,418 | 28,962 |

The GFCF by type of asset in the mining and quarrying industry is presented below:-

Table 5.12: GFCF in Mining and Quarrying, 2015-16 Base and 2005-06 Base (Rs. Million)

| Fixed Assets | 2015-16 Base | 2005-06 Base at prices of 2015-16 | 2005-06 Base |
|---|----------------|-----------------------------------|---------------|
| 1 | 2 | 3 | 4 |
| Land & land improvement | 14 | 0 | 36 |
| Building (Residential) | 1,911 | 103 | 358 |
| Building (Non-Residential) | 709 | 688 | |
| Other Construction | 1,926 | 0 | 1,424 |
| Plant and Machinery | 43,625 | 40,075 | 5,091 |
| Transport & Equipment | 1,612 | 512 | 96 |
| Furniture & Fixture | 347 | 328 | 265 |
| Pipeline | 933 | 1,011 | |
| ICT Computer hardware & Telecom. Equipment) | 658 | 654 | |
| Intellectual Property Products (IPP) | 18,408 | 18,095 | 1,739 |
| Exploration cost | 52,022 | 42,964 | 19,953 |
| Other Fixed Assets | | 988 | |
| Total | 122,165 | 105,418 | 28,962 |

ii. Manufacturing

The total GFCF in the manufacturing industry in 2015-16 rebasing has been estimated at Rs.723,845 million as compared to Rs. 485,495 million for 2015-16 in 2005-06 rebasing, showing an increase of 49.1 per cent. The revised estimates consist of Rs. 633,494 million in large scale manufacturing (compared to 2005-06 based estimates at Rs.456,222 million) and Rs. 86,351 million in small scale manufacturing (compared to Rs. 29,238 million in 2005-06 rebasing). The GFCF in slaughtering in 2015-16 rebasing has been estimated as Rs. 4,000 million.

• Large Scale Manufacturing Industries

GFCF of LSMI has been estimated by using a combination of expenditure & financial approaches. The expenditure approach is applied for ‘in production’ units, i.e., the units which have started production. The estimates are prepared for the public and private sectors separately. The financing approach is applied for the units under construction and is not covered in the category of in production units.

- In production units

For the new base year, the GFCF by units in production has been estimated through the Census of Manufacturing Industries (CMI) 2015-16. For the subsequent years, the companies listed on Pakistan Stock Exchange are covered through a census approach. Non-listed companies are covered through a sample survey. The results of both segments are combined. The GFCF may be a balancing, modernizing and replacing (BMR) of the existing assets. The total GFCF by units in production has been computed Rs. 465,367 million whereas the largest share comes from plant and machinery followed by non-residential buildings.

- Under construction units

GFCF by under-construction units is estimated through financing approach i.e. loans disbursed by Development Financing Institutions (DFI's) / Scheduled Banks, Leasing & Modaraba companies. It is treated as new capacity building and expansion. The existing practice is to use 50% of these loans for GFCF purposes. Further, the equity equivalent to 50% loans was also assumed as part of GFCF in the 2005-06 rebasing. The same practice has been continued for the new base year 2015-16 as well. The rationale is that especially in LSMI the big chunk of capital formation is done during the start-up phase while production (and thus reporting to statistics) has not yet commenced.

The figures for the public sectors comprise of GFCF of public sector/state-owned enterprises like Heavy Electrical Complex Ltd, Heavy Mechanical Complex Limited, Pak Arab Refinery Ltd, etc. and others whose major activity is in manufacturing. The census approach is applied to the public sector. The deflator is being applied to compile the estimates at constant prices. Details are given in the following table.

Table 5.13: GFCF by Sector in LSMI (Rs. Million)

| Sectors | 2015-16 Base | 2005-06 Base at prices of 2015-16 | 2005-06 Base |
|---|----------------|-----------------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Private Sector | 632,161 | 454,508 | 277,719 |
| A. In Production* | 465,367 | 287,714 | 193,677 |
| B. Under construction (C+D+E) | 166,794 | 166,794 | 84,042 |
| C. Under Construction (bank loans startups, 50%) | 74,982 | 74,982 | 38,557 |
| D. Loan Disbursed by Leasing & Modarba Companies, (50%) | 8,415 | 8,415 | 3,464 |
| E. Self-financing / owners' equity (C+D) | 83,397 | 83,397 | 42,021 |
| Public Sector | 1,333 | 1,714 | 3,609 |
| Total | 633,494 | 456,222 | 281,328 |

* Source: CMI 2015-16

• Small and Household Manufacturing Industries

The estimates of GFCF in the small-scale manufacturing industry for the new base year 2015-16 have been derived from the survey on Small and Household Manufacturing Industries 2015 conducted for the change of base of National Accounts. The reference period of the SHMI was the calendar year i.e. 2015. Therefore, the survey results i.e. Rs.81,984 million have been adjusted to the base year 2015-16. For this purpose, 50% of the GFCF has been enhanced @ 10.655% i.e. the sum of the growth of weighted WPI (Food, beverage, textile and leather products) and growth rate of GFCF at constant prices between 2014-15 and 2015-16 (7.36%) in 2005-06 based series. Hence, the total GFCF for the new base year in small-scale manufacturing stands at Rs. 86,351million. Most of the GFCF i.e. Rs. 51,204 million (59.3%) pertain to non-residential buildings followed by Rs.26,714 million (30.9%) in machinery and equipment, Rs.2,576 million (2.98%) in furniture and fixtures, Rs.2,206 million (2.55%) on account of the improvement of land and cost of ownership transferred and Rs.1,929 million (2.23%) in residential buildings. The comparison of GFCF in 2015-16 and 2005-06 bases is presented below:-

Table 5.14: GFCF in SHMI (Rs. Million)

| Industry | 2015-16 Base | 2005-06 Base | 2005-06 Base | change | |
|----------|-------------------|--------------|-------------------|-----------------|-----------------|
| | At 2015-16 prices | | At 2005-06 prices | col. 2 / col. 3 | col. 2 / col. 4 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| SHMI | 86,351 | 29,238 | 6,084 | 195.34 | 1,319.32 |

For subsequent years, the annual estimates at constant prices are extrapolated by applying the constant growth rate of 9.67 %, an inter-survey annual average growth rate of GFCF between 2015-16 and 1999-2000. The estimates at constant prices are converted into current prices by applying the WPI deflator.

- **Slaughtering**

This industry is comprised of operations of slaughterhouses (formal part) and other activities relating to production, dressing, and packing of fresh, chilled, dried, salted, smoked or frozen meat carried out in the informal sector. This activity is described in the PSIC class 1010-Processing and preserving of meat and is covered in the CMI. However, figures relating to this class are deducted from CMI and LSM to avoid double counting (the GVA part is referred for details). The GFCF in slaughtering is made in the construction of buildings, transport equipment, furniture and fixtures, and machinery and equipment. In the absence of direct establishment-based data in the slaughtering industry, the GFCF (Rs.2,000 million) reported in the 2015-16 CMI under PSIC class 1010-Processing and preserving of meat has been doubled to account for the informal component of the industry. Hence, the total GFCF of the slaughtering industry has been at Rs. 4,000 million for the new base year 2015-16. Most of the GFCF i.e. Rs.3,736 million (93.4%) pertains to machinery and equipment whereas the remaining Rs.264 million relates to buildings. For subsequent years the estimates of GFCF at constant prices for the slaughtering subsector are extrapolated by using the growth rate of meat production. Deflator (WPI meat) is used to convert the constant prices GFCF estimates into current prices.

iii. Electricity generation and distribution, Gas distribution and Water supply

These industries cover expenditure on fixed assets by:

- WAPDA, K-Electric, IPPs, CPPs, small hydel-power plants, for electricity generation & distribution
- SNGPL, SSGC & Mari gas for gas distribution including for CNG.
- Water supply in the private sector

Note that the supply or distribution of natural gas to gas stations for compression through mains is a component of SNGPL and SSGC systems. However, the further distribution of CNG is a component of wholesale and retail trade. The other point to mention is that the GFCF of the general government sector cannot be bifurcated according to the functions because it is available for the total government. Therefore, the public sector GFCF of water supply cannot be taken separately. The rebased GFCF estimates for the year 2015-16 for electricity and gas industries

stand at Rs.178,264 million. The production of LPG is covered in the large scale manufacturing sector. The detailed GFCF estimates for the bases 2015-16 and 2005-06 are given below.

Table 5.15: GFCF in Electricity and gas, 2015-16 base and 2005-06 base (Rs. Million)

| Sector | 2015-16 Base (at 2015-16 prices) | | | 2005-06 Base (at 2015-16 prices) | | |
|--------------|----------------------------------|------------------|----------------|----------------------------------|------------------|----------------|
| | Electricity gen. & distribution | Gas distribution | Total | Electricity gen. & distribution | Gas distribution | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Public | 113,734 | 41,374 | 155,108 | 113,734 | 41,374 | 155,108 |
| Private | 23,156 | - | 23,156 | 23,156 | - | 23,156 |
| Total | 136,890 | 41374 | 178,264 | 136,890 | 41374 | 178,264 |

Water Supply in the Private Sector

In the 2005-06 base series, the GDP estimates of this industry were included in the General Government Services. In 2015-16 rebasing, the contribution of this industry in the private sector has been estimated separately. The 2005-06 rebasing document contains information on GFCF by type of assets, which has been used to derive the GFCF estimates using existing capital-output ratios. The GFCF estimates for the new base year 2015-16 stands at Rs.23,387 million. Most of the GFCF i.e. Rs.21,680 million (92.7%) pertains to PSIC Division 36-Water collection, treatment and supply and the remaining Rs.1707 million (7.3%) relates to PSIC Divisions 37-39 Sewerage, Waste collection, treatment and disposal activities. The detail of GFCF in the water supply industry in the private sector by type of assets is presented in table 5.16 below:-

Table 5.16: GFCF in Water Supply, 2015-16 base (Rs. Million)

| Year | Dwellings (Residential buildings) | Buildings other than dwellings | Other structures | Transport Equipment (vehicles etc.) | ICT (computer hardware & telecomm.) equipment | Furniture & Fixture | Other machinery and equipment | Total |
|---------|-----------------------------------|--------------------------------|------------------|-------------------------------------|---|---------------------|-------------------------------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 2015-16 | 118 | 26 | 22,397 | 10 | 442 | 57 | 338 | 23,387 |

The GFCF estimates in the electricity, gas and water supply & sanitation by type of fixed assets are as under.

Table 5.17: GFCF in Electricity, Gas & Water Supply Sector, 2015-16 & 2005-06 bases (Rs. Million)

| Asset type | 2015-16 Base (at 2015-16 prices) | | | 2005-06 base (at 2015-16 prices) | | |
|---------------------------------|----------------------------------|---------------|----------------|----------------------------------|---------------|----------------|
| | Public | Private | Total | Public | Private | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Land improvement | 461 | 1 | 462 | 461 | 1 | 462 |
| Residential Building | 4,200 | 118 | 4,318 | 4200 | 0 | 4,200 |
| Non- Residential Building | 1,909 | 426 | 2,335 | 1909 | 401 | 2,310 |
| Transmission Dispatch Equipment | 31,811 | 22,396 | 54,207 | 31811 | 0 | 31,811 |
| Telecom | 350 | 0 | 350 | 350 | 21 | 371 |
| Pipelines | 10,616 | 594 | 11,210 | 10616 | 0 | 10,616 |
| Other Construction | 221 | 0 | 221 | 221 | 1 | 222 |
| Transport Vehicle/Equipment | 2,039 | 1 | 2,040 | 2039 | 184 | 2,223 |
| Machinery & Equipment | 101,715 | 194 | 101,909 | 101715 | 22321 | 124,036 |
| Furniture & Fixture | 466 | 22,659 | 23,125 | 466 | 82 | 548 |
| IPPs | 0 | 139 | 139 | 0 | 14 | 14 |
| Computers | 1,126 | 14 | 1,140 | 1126 | 131 | 1,257 |
| Other Fixed Assets | 194 | 0 | 194 | 194 | 0 | 194 |
| Total | 155,108 | 46,543 | 201,651 | 155,108 | 23,156 | 178,264 |

For subsequent years, GFCF of electricity and gas industries at current prices based on annual data provided by the sources are converted into constant prices by applying WPI (metal product, machinery & equipment). GFCF of the water supply industry is extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which are converted into constant prices through WPI (general).

iv. Construction

GFCF in the construction industry is computed separately for private and public sectors. GFCF estimates of public sector construction include GFCF by capital assets i.e., expenditure on land improvement, machinery & transport equipment, furniture & fixture from reported on an annual basis by autonomous bodies such as development authorities e.g. Capital Development Authority, Lahore Development Authority, Karachi Development Authority, etc. and National Construction Company, Indus Basin, etc. The Public Sector estimates of GFCF in the construction sector amounts to Rs 5,178 million.

In the 2005-06 rebasing, the private sector GFCF was used to be estimated through the commodity flow approach due to the non-availability of data at the establishment level. In 2015-16 rebasing, the private sector GFCF has been estimated through the Construction Survey 2014-15 (Establishment part). The GFCF reported by establishments engaged in the construction activity during the reference period i.e. 2014-15 was Rs.52, 558 million which, have been adjusted to the base year 2015-16 by applying the growth of GFCF at current prices between 2014-15 and 2015-16 and stands at Rs. 64,882 Million. As the public sector, GFCF is estimated directly based on annual data on construction expenditure reported by development authorities, therefore, public sector GFCF amounting to Rs.5178 million has been deducted from the survey-based estimates of Rs.64,882 million. Hence, private sector GFCF for the base year 2015-16 has been estimated at Rs.59,704 million.

Total GFCF for the new base year 2015-16 in the construction industry has been estimated at Rs.64,882 million against 2005-06 based estimates of Rs.49,009 million as shown in the table below along with by a type of assets.

Table 5.18: GFCF in Construction, 2015-16 Base & 2005-06 Base (Rs. Million)

| Description | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|-------------------|---------------|---------------------------|---------------|
| 1 | 2 | 3 | 4 |
| Private | 59,704 | 43,831 | 14,597 |
| Public | 5,178 | 5,178 | 6,375 |
| Total GFCF | 64,882 | 49,009 | 20,972 |

Table 5.19: GFCF in Construction by type of assets 2015-16 Base (Rs. Million)

| Asset Type | | Public | Private | Total |
|--|---|--------------|---------------|---------------|
| 1 | | 2 | 3 | 4 |
| Dwellings (Residential buildings) | | | 2,578 | 2,578 |
| Other Buildings and structures | Buildings other than dwellings | 1,082 | 6,934 | 8,016 |
| | Other structures | | 142 | 142 |
| | i. Telephone/Power lines, Cables etc. | 3,245 | 6,336 | 9,581 |
| | ii. Others n.e.c | | 15,250 | 15,250 |
| | Land improvements & cost of land transfer | 74 | 1,824 | 1,898 |
| Machinery and Equipment | Transport Equipment (vehicles etc.) | 303 | 1,637 | 1,940 |
| | ICT (computer hardware & telecommunication) equipment | | 194 | 194 |
| | Furniture & Fixture | 58 | 44 | 102 |
| | Other machinery and equipment | 373 | 24,557 | 24,930 |
| Intellectual Property Products | Research and Development | | - | |
| | Computer software and database | 43 | 207 | 250 |
| | Other intellectual property products | | - | |
| Total (GFCF) Current | | 5,178 | 59,704 | 64,882 |

For subsequent years the estimates of GFCF for the construction industry is compiled at current prices by using the information on imported machinery and equipment for construction purposes. The GFCF of the public sector is compiled at current prices through the annual census of development authorizes e.g. Capital Development Authority (CDA), Lahore Development Authority (LDA), etc. following the practice of 2005-06 rebasing. WPI (Building material) is used to convert the current GFCF estimates into constant prices.

c. Services

i. Wholesale, Retail Trade

The GFCF in this industry is comprised of wholesale and retail trade (WRT) and the repair and maintenance of motor vehicles. The GFCF estimates of repair and maintenance of motor vehicles have been estimated through Survey on “Other Private Services 2016-17” and stands at Rs.6252 million. The survey figures have been adjusted to the base year i.e. 2015-16 and stand at Rs.4031 million for repair and maintenance of motor vehicles. The GFCF estimates of wholesale and retail trade part in the new base year 2015-16 have been derived using GFCF (excluding machinery and equipment) to a value-added ratio of warehouse and storage industry obtained from the specifically conducted study for the change of base of national accounts from 2005-06 to 2015-16. The GFCF in wholesale trade has been estimated at Rs.59,351 million whereas, in retail trade, it has been worked out at Rs. 13,954 million. Thus the total GFCF for WRT including repair and maintenance of vehicles for the base year 2015-16 stands at Rs. 202,799 million as compared to Rs.63,419 million for 2015-16 in 2005-06 rebasing as shown in the table below.

Table 5.20: GFCF in wholesale, retail trade bases 2015-16 & 2005-06 (Rs. Million)

| Activities | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|--|-----------------|---------------------------|-----------------|
| 1 | 2 | 3 | 4 |
| Repair and Maintenance of Motor Vehicles (Exc. Sales) | 3,494 | 8,355 | 2383 |
| Wholesale Trade (Inc. sale of motor vehicles) | 59,351 | 16,397 | 4677 |
| Retail Trade (Inc. sale of motor vehicles) | 139,954 | 38,666 | 11029 |
| Wholesale & Retail Trade | 202,799 | 63,419 | 18,089 |

For subsequent years the estimates of GFCF of WRT industry are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which are converted into constant prices through WPI (general).

ii. Accommodation and Food Service Activities (Hotels and Restaurants)

The GFCF of accommodation and food service activities was used to be included in the WRT in 2005-06 rebasing, which has now been estimated separately through a survey. The total GFCF for the new base year 2015-16 of this industry stands at Rs.74,922 million out of which Rs.42,250 million (56%) pertains to hotels, motels, inns, and hostels and Rs.32,672 million relates to restaurants, cafes, canteens and other eating & drinking places. The details are given in the below table.

Table 5.21: GFCF in Hotels & Restaurants, bases 2015-16 & 2005-06 (Rs. Million)

| Activities | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|---|---------------|---------------------------|--------------|
| 1 | 2 | 3 | 4 |
| Hotels, Motels, Inns, Hostels, etc. | 42,250 | 12,072 | 3443 |
| Restaurants, Cafes, Canteens & other eating & drinking places | 32,672 | 1,971 | 562 |
| Total (Hotels and Restaurants) | 74,922 | 14,043 | 4,005 |

For subsequent years the estimates of GFCF of accommodation and food service activities are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which is converted into constant prices through WPI (general).

iii. Transportation and Storage

This industry has witnessed a structural change in 2015-16 rebasing. The communication, which was used to be included under the heading of “Transport, storage and communication” has been grouped with information as per PSIC 2010. The GFCF in the transportation and storage industry has been estimated at Rs.416,691 million (up by 10% over the estimates of Rs.381,876 million for 2015-16 in 2005-06 rebasing at current prices) including public sector GFCF of Rs.26,905 million and private sector GFCF of Rs. 389,786 million constituting mainly in the acquisition of machinery and equipment relating to transportation activities. The summary is shown below in the table.

Table 5.22: GFCF in Transportation and Storage, 2015-16 base and 2005-06 base (Rs. Million)

| Sector | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|-----------------------|----------------|---------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Private Sector | 389,786 | 354,972 | 110,281 |
| Public sector | 26,905 | 26,904 | 52,171 |
| Total | 416,691 | 381,876 | 162,452 |

The methodology for the compilation of GFCF in the transportation and storage industry is presented in the table below:-

Table 5.23: GFCF in Transport and Storage for the base year 2015-16 (Rs. Millions)

| Sr. No. | Description | Value |
|---|--|----------------|
| 1 | 2 | 3 |
| Private Sector | | |
| 1 | CIF value of imports of transport machinery | 33,010 |
| 2 | Add Custom Duty and sale tax (61.71 %) | 20,371 |
| 3 | Less exports | 1,005 |
| 4 | Less re-exports | 568 |
| 5 | Balance of imported equipment available for domestic use | 51,808 |
| 6 | Add handling charges @ 3 % of value (on item 5) | 990 |
| 7 | Trade mark-up to wholesale and retail dealers @ 37 % of value (on item 5) | 19,169 |
| 8 | Total (5+6+7) | 71,967 |
| 9 | Domestically produced under LSMI transport machinery | 206,748 |
| 10 | Trade mark-up @ 32.5% (on item 9) | 67,193 |
| 11 | Total value of imported equipment and domestic production under large scale (8+9+10) | 345,908 |
| 12 | Value of production under small scale manufacturing | 2,619 |
| 13 | Trade mark-up @ 66% under small scale manufacturing (on item 12) | 1,729 |
| 14 | Other private enterprises (including warehouses & storage) | 39,530 |
| Total value of equipment, imported and domestic production (11+12+13+14) | | 389,786 |
| Public sector (Transport) | | |
| 1 | Pakistan Railways | 5,825 |
| 2 | National Logistic Cell | 1,207 |
| 3 | Pakistan International Airline | 1,224 |
| 4 | Civil Aviation Authority | 1,606 |
| 5 | Pakistan National Shipping Corporation | 376 |
| 6 | Port Qasim Authority | 34 |
| 7 | Karachi Port Trust | 16,204 |
| 8 | National Highway Authority | 314 |
| 9 | Pak Arab Refinery Ltd.(Pipeline) | 114 |
| 10 | Post Office | 0 |
| Total | | 26,905 |
| Total Transport and Storage (Public + Private) | | 416,691 |

The detail of GFCF in Transportation and storage by type of assets is given in the table below:-

Table 5.24: GFCF in Transport and Storage bases 2015-16 & 2005-06 (Rs. Millions)

| Description | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|-------------------------------------|----------------|---------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Private Sector | 389,786 | 354,972 | 110,282 |
| Transport & storage | 42,379 | 7,298 | 4,397 |
| Transport | 9,998 | 6,209 | 3,939 |
| Storage | 28,894 | 0 | 0 |
| Postal & Courier activities | 637 | 1,089 | 458 |
| Imports & Domestic Production | 350,256 | 347,674 | 105,885 |
| Public Sector | | | |
| Transport & storage | 26,905 | 26,905 | 52,171 |
| Transport | 26,905 | 26,905 | 52,064 |
| Storage | 0 | 0 | 0 |
| Postal & Courier activities | 0 | 0 | 107 |
| Transport (Public + Private) | 416,691 | 381,876 | 162,453 |

Table 5.25: GFCF in Transport and Storage bases 2015-16 & 2005-06 (Rs. Millions)

| Fixed Assets | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|--------------------------------------|----------------|---------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Land Improvements | 1,093 | 772 | 712 |
| Buildings | 6,528 | 4,160 | 639 |
| Other Constructions | 11,163 | 10,972 | 26,526 |
| Transport Equipment | 361,669 | 355,927 | 79,516 |
| Machinery and Equipment | 29,181 | 5,861 | 34,966 |
| Computers | 2,419 | 1,096 | 18,769 |
| Others | 2,022 | 1,458 | 602 |
| Furniture & Fixture | 2,616 | 1,632 | 720 |
| Total GFCF (Public + Private) | 416,691 | 381,878 | 162,450 |

For subsequent years the estimates of GFCF for the transportation and storage activities are compiled at current prices by using the information on imported and domestically produced and sold machinery and equipment for transportation purposes. The GFCF of other private enterprises including warehouses and storage is extrapolated at current prices by applying growth of financing for fixed investment to private businesses engaged in the same industry compiled by SBP. The GFCF of the public sector is compiled at current prices through the annual census of enterprises/establishments following the practice of 2005-06 rebasing. WPI (General) is used to convert the current GFCF estimates into constant prices.

iv. Information and Communication

The information and communication industry is comprised of publishing activities, motion pictures, programming and broadcasting, telecommunications, computer programming, consultancy, and information service activities. In 2005-06 rebasing, the information part was used to cover under “Other Private Services” whereas communication was covered under “Transport, storage and communication”. The activities have been re-arranged following the demand of users and industry stakeholders in the wake of the growing importance of IT and allied services as well as the structure of the PSIC 2010. The GFCF in the information and communication industry has been estimated at Rs.158,037 million including public sector GFCF of Rs.28,307 million and private sector GFCF of Rs.129,730 million. The summary table of GFCF is presented below:

Table 5.26: GFCF in Information and Communication, 2015-16 base and 2005-06 base (Rs. Million)

| Sector | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|----------------|----------------|---------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Private Sector | 129,730 | 128,245 | 110,456 |
| Public sector | 28,307 | 14,077 | 27,932 |
| Total | 158,037 | 142,322 | 138,387 |

The details are discussed below.

- **Publishing activities**

The separate contribution of the industry has been assessed through OPS Survey 2016-17 for the first time and stands at Rs.1,837 million. The GFCF for software publishing activities has been covered in the study on computer-related activities and stands at Rs. 652 million. Results of two sources have been combined after adjustment for the base year 2015-16 and stand at Rs.1,887 million. For subsequent years the estimates of GFCF of publishing activities are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which is converted into constant prices through WPI (General).

- **Motion Pictures, Programming, and Broadcasting**

The GFCF contribution of motion pictures, programming, and broadcasting activities has been assessed through annual reports of establishments and stands at Rs.4770 million for the new base year 2015-16. For subsequent years the estimates of GFCF of motion pictures, programming and broadcasting activities are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which are converted into constant prices through WPI (General).

- **Computer Programming, consultancy, and information service activities**

The GFCF contribution of this industry has been assessed through the study on “Computer-related activities 2016-17” and stands at Rs.33,094 million. The survey results have been adjusted by applying the growth of financing for fixed investment to private businesses of the

same industry and stands at Rs.25,086 million for the new base year 2015-16. For subsequent years the estimates of GFCF of computer programming, consultancy and information service activities are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which is converted into constant prices through WPI (General).

- **Telecommunications**

The GFCF of this industry is compiled directly from data provided by PTCL, other major telecom companies, and mobile phone companies on annual basis separately for private and public sectors. The contribution of cable operators and internet service providers (ISPs) has been assessed through a separate study. The GFCF in the private sector for the telecommunication industry has been estimated at Rs.97,987 million while for the public sector the GFCF is Rs.28,307 million. In the private sector, major contributors are mobile phone companies while Pakistan Telecommunication Company Ltd. and Pak Telecom Mobile (U-Phone) are leading contributors in the public sector. The summary is presented below:

Table 5.27: GFCF in Telecommunication bases 2015-16 & 2005-06 (Rs. Millions)

| Description | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|--------------------------------|----------------|---------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Private Sector | 97,987 | 111,903 | 104,347 |
| Public Sector | 28,307 | 14,077 | 27,932 |
| Total Telecommunication | 126,294 | 125,980 | 132,279 |

The detail of GFCF by sources in the private and public sectors is presented in the following table:-

Table 5.28: GFCF in Telecommunication for the base year 2015-16 (Rs. Millions)

| Sr. No. | Description | Value |
|-------------------------------------|---|----------------|
| 1 | 2 | 3 |
| Private Sector | | 97,987 |
| 1 | Mobile Phones(Telenor + Jazz + Zong) | 87,666 |
| | Cable Operator & Internet Service Providers | 9,115 |
| 2 | Others (World call + Telecard + Wateen + Wise communicaton etc.,) | 1,206 |
| Public sector | | 28,307 |
| 1 | Pakistan Telecommunication Company Ltd. | 13,644 |
| 2 | Pak Datacom | 18 |
| 3 | National Telecommunication Corporation | 389 |
| 4 | Telecom Foundation | 11 |
| 5 | Pak Telecom Mobile (U-Phone) | 14,230 |
| 6 | Pakistan Telecommunication Authority | 15 |
| Total GFCF (Private +Public) | | 126,294 |

The GFCF by type of fixed assets in the telecommunication is presented in the below table:-

Table 5.29: GFCF in Telecommunications base 2015-16 & 2005-06 (Rs. Millions)

| Fixed Assets | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|-------------------------|----------------|------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Land Improvements | 702 | 545 | 57 |
| Buildings | 3,208 | 3,247 | 1,786 |
| Other Constructions | 6,390 | 6,390 | 4,388 |
| Transport Equipment | 1,545 | 263 | 469 |
| Machinery and Equipment | 84,317 | 88,021 | 121,440 |
| Computers | 13,742 | 12,708 | 1,511 |
| Others | 14,173 | 14,022 | 489 |
| Furniture & Fixture | 2,216 | 784 | 2,139 |
| Total GFCF | 126,294 | 125,980 | 132,278 |

v. Financial and Insurance Activities

The composition of the Financial Corporate Sector has been highlighted in the GVA estimation. GFCF of Financial corporations (private & public) is estimated through the census of establishments/enterprises annually at current prices. The GFCF for the 2015-16 base year of the industry has been estimated at Rs. 56,520 million. The comparative GFCF estimates of financial corporations regarding existing and incipient bases are given below in the table.

Table 5.30: GFCF in financial Corporation 2015-16 Base and 2005-06 Base

| Description | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|----------------|--------------|------------------------|--------------|
| 1 | 2 | 3 | 4 |
| Private Sector | 49556 | 50811 | 20360 |
| Public Sector | 6964 | 6964 | 1878 |
| Total | 56520 | 57775 | 22238 |

The detail of GFCF by sources is presented in the following table:-

Table 5.31: GFCF in Financial sector for the base year 2015-16 (Rs. Million)

| Sr. No. | Sub-sector | Value |
|-------------------|---|---------------|
| 1 | 2 | 3 |
| 1 | State Bank of Pakistan | 1,184 |
| 2 | Banks | 44,956 |
| | <i>a. Scheduled</i> | 42,872 |
| | <i>b. Non-scheduled</i> | 2,084 |
| 3 | Other credit granting | 4,992 |
| 4 | Insurance, Reinsurance and Pension funding except compulsory social security | 3,870 |
| 5 | Activities auxiliary to financial service activities and insurance activities | 1,518 |
| Total GFCF | | 56,520 |

The detail of GFCF in the Financial Corporate Sector by type of assets is given in the table below:-

Table 5.32: GFCF in Financial Corporations, 2015-16 Base and 2005-06 Base (Rs. Million)

| Fixed Assets | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|---|---------------|---------------------------|---------------|
| 1 | 2 | 3 | 4 |
| Land | 911 | 911 | 479 |
| Building | 8,542 | 9,163 | 6,053 |
| Other Constructions | 5,085 | 5,260 | 193 |
| Transport Equipment | 11,389 | 11,527 | 3,935 |
| ICT (Computer Hardware & telecommunication equipment) | 3,187 | 3,139 | 2,883 |
| Machinery and Equipment | 13,396 | 13,563 | 4,342 |
| Furniture & Fixture | 8,170 | 8,378 | 3,256 |
| Others | 5,840 | 5,835 | 1,097 |
| Total GFCF | 56,520 | 57,776 | 22,238 |

vi. Real Estate Activities (Housing Services)

Real estate activities are comprised of two sub-sectors i.e. Housing services (Ownership of Dwellings) and activities of real estate agents. GFCF of this sector is compiled through expenditure on following by type of fixed assets.

- i. New Buildings
- ii. Cost of ownership transferred
- iii. Alterations/Additions
- iv. Major Repair & Maintenance

The methodology for the compilation of Gross Fixed Capital Formation in each component of the housing services is explained below. Other types of assets like computers, furniture and fixture etc. are components acquired by the real estate and cooperative housing societies and have been included in these sub-components.

• Housing Services (Ownership of Dwellings)

The estimates of GFCF for the new base year 2015-16 for the ownership of dwellings have been developed by using the information from Construction Survey 2014-15 (Household part) conducted by the Pakistan Bureau of Statistics for the change of base of National Accounts from 2005-06 to 2015-16. The ratios have been developed from the said survey. The detail of the methodology is given below in the table.

Table 5.33: GFCF in Ownership of Dwellings 2014-15 (Rs. Million)

| S No. | Items | Value |
|-------|---|----------------|
| 1 | 2 | 3 |
| 1 | New Construction | 345,367 |
| 2 | New Construction for Residential Buildings, Flats & Structures @ 87.74% | 303,025 |
| 3 | Purchase of Buildings | 31,839 |
| 4 | Cost of ownership transferred @ 10% of purchase of buildings | 3,184 |
| 5 | Alterations/Additions | 125,361 |
| 6 | Repair and Maintenance | 44,789 |
| 7 | GFCF 2014-15 (2+4+5+6) | 476,359 |

The GFCF for the survey year 2014-15 at current prices stands at Rs.476,359 million, which have been adjusted for the base year 2015-16 by applying the growth rate of aggregate construction expenditure reported by industries at current prices. The GFCF estimates for the new base year 2015-16 stands at Rs.522,947 million. The detail is given in the table below:-

Table 5.34: GFCF Ownership of Dwellings, 2015-16 base and 2005-06 base (Rs. Million)

| Activity | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|----------------------------|----------------|---------------------------|----------------|
| 1 | 2 | 3 | 4 |
| New Construction | 332,661 | | 123,011 |
| Cost of ownership transfer | 3,495 | | 606 |
| Alterations/ Additions | 137,621 | | 44,504 |
| Repair and Maintenance | 49,169 | | 15,900 |
| Total | 522,947 | 577,278 | 184,021 |

The GFCF of housing services is extrapolated at constant prices by applying the growth rate of inter-census dwellings with 2 rooms and more and is converted into current prices by using the WPI building material deflator.

- Activities of Real Estate Agents**

The estimates of GFCF for the new base year 2015-16 for the Real Estate Agents have been developed by using the information from Survey of Survey on “Other Private Services 2016-17” conducted for the change of base of National Accounts from 2005-06 to 2015-16. The GFCF in the year 2016-17 stands at Rs.1257 million, which has been adjusted to the base year by applying growth of financing for fixed investment to private businesses and stands at Rs.872 million.

The total GFCF in Real Estate Activities (Housing Services including ownership of dwellings) for the new base year 2015-16 stands at Rs.523, 819 million.

For subsequent years the estimates of GFCF of activities of real estate agents are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which is converted into constant prices through WPI (building material).

vii. Education

Education was used to be covered under “Other Private Services” in 2005-06 rebasing. However, in 2015-16 rebasing, it has been assessed separately under i) Education provided in the private sector on a market basis estimated through Survey on “Other Private Services 2016-17” ii) Public sector education estimated through budget documents of federal, provincial, and district governments iii) Education provided by non-profit institutions estimated through “NGOs Survey 2015-16” purely on the non-market basis. The GFCF of autonomous bodies, estimated through a census, having market output has been combined with the private sector and those with non-market output have been added to the general government. The combined GFCF of the education industry by institutional sectors is presented in the below table:-

Table 5.35: GFCF in Education Industry 2015-16 base and 2005-06 base (Rs. Million)

| Institutional sector | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|--|----------------|---------------------------|---------------|
| 1 | 2 | 3 | 4 |
| Private corporations and households (Private sector) | 82,122 | 7,705 | 2,495 |
| NPISH (NGOs) | 17,466 | 31,837 | 7,649 |
| Private Section (Inc. NGOs) | 99,588 | 39,542 | 10,144 |
| General government (Public sector) | 80,403 | 80,253 | 16,680 |
| Total | 179,991 | 119,795 | 26,824 |

The total GFCF in the education industry for the new base year 2015-16 stands Rs.179,991 million with a major contribution from private sector enterprises at Rs.82,122 million followed by the public sector at Rs.80,403 million and Rs.17466 million by the NGOs. The GFCF in private and NGOs are extrapolated by applying the growth of several persons engaged in the same industry at constant prices which will be converted into current prices by applying WPI (Building material). For the public sector, GFCF is estimated at current prices through budget documents of federal, provincial and district governments and WPI (General) is used as the deflator.

viii. Human Health and Social Work Activities

The GFCF in human health and social work activities, which was part of “Other Private Services” in 2005-06 rebasing, has been estimated separately in 2015-16 rebasing under three distinct categories i.e. i) Private sector providing human health and social work activities on market basis covered through the survey on “Other Private Services 2016-17”, ii) Public sector covered through government budget documents, iii) NGOs engaged in the provision of human health and social work activities on non-market basis. The GFCF of autonomous bodies, covered through a separate census, has been combined with private and public sectors depending on the nature of the output. The GFCF of autonomous bodies, estimated through a census, having market output has been combined with the private sector and those with non-market output have been added to the general government. The combined GFCF of human health and social work industry by institutional sectors is presented in the below table:-

Table 5.36: GFCF in Human Health and Social Work Activities 2015-16 base and 2005-06 base (Rs. Million)

| Institutional sector | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|--|---------------|---------------------------|---------------|
| 1 | 2 | 3 | 4 |
| Private corporations and households (Private sector) | 27,785 | 30,323 | 8,200 |
| NPISH (NGOs) | 27,357 | 53,964 | 12,965 |
| Private Sector (Inc. NGOs) | 55,142 | 84,287 | 21,165 |
| General government (Public sector) | 37,389 | 31,261 | 6,569 |
| Total | 92,531 | 115,548 | 27,734 |

The total GFCF in human health and social work activities for the new base year 2015-16 stands Rs. 92,531 million with Rs. 37,389 million in the public sector, Rs. 27,785 million by private sector enterprises, and Rs.27,357 million by NGOs. The GFCF in private and NGOs are extrapolated by applying the growth of several persons engaged in the same industry at constant prices which are converted into current prices by applying WPI (General). For the public sector, GFCF is estimated at current prices through budget documents of federal, provincial and district governments and WPI (General) is used as the deflator.

ix. Other Private Services

In 2005-06 rebasing, “Other Private Services” were comprised of Renting of Machinery and Equipment, Computer Related Activities (Software Export Board and PASHA), Other Business Activities, Education, Health & Social work, Membership Organizations, NGO’s, Recreational, Cultural and Sporting Activities and Other Services activities. In 2015-16 rebasing, Computer Related Activities (Software Export Board and PASHA) and activities of TV Channels have been covered under “Information and Communication” whereas “Education” and “Human health and social work activities” including contributions from NGOs have also been covered separately under specific headings (described above). Hence, in 2015-16 rebasing “Other Private Services” include the Professional, scientific and technical activities (Other Business Activities), Administrative and support service activities, Arts, entertainment and recreation (Creative, arts, and entertainment activities and Sports activities and amusement and recreation activities), and Other service activities (Membership organizations, Repair of computers and personal and households goods, and Other personal service activities such as washing, dry-cleaning, hairdressing, and other beauty treatment, shoe shiners, etc.).

• Professional, Scientific and Technical Activities

The professional, scientific, and technical activities include legal & accounting Activities, activities of head offices, management consultancy services, architects and engineers’ activities, scientific research and development, advertising and market research, other professional, scientific and technical activities, and veterinary activities. The GFCF of these activities has been estimated through various studies conducted for the change of base of national accounts from 2005-06 to 2015-16. The results of studies have been adjusted to the base year and the combined GFCF of these activities stands at Rs.84,728 million for the new base year 2015-16. The GFCF of the industry except veterinary activities are extrapolated by applying the growth of engineers engaged in the same industry at constant prices which are converted into current prices by

applying WPI (General). The GFCF of veterinary activities is extrapolated at constant prices by applying the growth rate of veterinary doctors which is converted into current prices through WPI (General).

- **Administrative and Support Service Activities**

The administrative and support service activities include renting machinery, employment activities, travel agency, tour operator, reservation service and related activities, private security services, and office support activities. The GFCF estimates for these activities have been derived from the Survey on “Other Private Services 2016-17” conducted for the change of base of national accounts from 2005-06 to 2015-16. The GFCF of renting of machinery industry has been estimated at Rs.1757 million after the adjustment for the base year 2015-16 which is extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the same industry. The base year GFCF for office support activities has been estimated at Rs.19,728 billion using the information on financing for fixed investment to private businesses of the industry. The extrapolation of the GFCF for this industry is made at current prices through financing for fixed investment compiled by the SBP. Hence the total GFCF for the base year 2015-16 for administrative and support service activities stands at Rs.21,485 million. WPI (General) is used to convert the current price estimates into constant prices.

- **Arts, Entertainment and Recreation**

This industry includes creative arts, entertainment, sports, amusement, and recreation activities. The GFCF estimates for these activities have been derived from the Survey on “Other Private Services 2016-17” conducted for the change of base of national accounts from 2005-06 to 2015-16. The survey figures of GFCF i.e. Rs.1,851 million have been adjusted for the base year 2015-16 and stands at Rs.1,403 million. The GFCF estimates are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the same industry which is converted into constant prices through WPI (General).

- **Other services activities**

Other service activities are comprised of membership Organizations, repair of computers and personal and household goods and other personal services activities (washing, dry-cleaning to textile and fur products, hairdressing and other beauty treatment, funeral and related activities, astrological and spiritual activities, marriage bureaus, shoe shiners, etc.). The GFCF estimates for Membership Organizations have been derived using GFCF to output ratio of NGOs Survey 2015-16 conducted for change of base of national accounts from 2005-06 to 2015-16 as both activities falls under the same institutional sector i.e. “Non-Profit Institutions Serving Households”. The GFCF for the new base year 2015-16 stands at Rs.22,628 million. The GFCF estimates are extrapolated at constant prices by applying the inter-census growth of urban dwellings having two or more rooms. WPI (General) is used as the deflator.

The GFCF of repair of computers and personal and household goods and other services activities in 2015-16 rebasing has been estimated through a survey on “Other Private Services 2016-17”. The survey results have been adjusted to the base year and stand at Rs.2,669 million. For this industry, the extrapolations of GFCF at constant prices are made by applying the growth rates of

inter-census dwellings at constant prices which are converted into current prices through WPI (General).

The base year GFCF for Other Personal Service Activities has been estimated based on financing for fixed investment reported provided to private businesses and stands at Rs.9,883 million. The GFCF of this industry will be extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which are converted into constant prices through WPI (General).

The total GFCF in Other Private Services in 2015-16 rebasing stands at Rs.142,796 million which was estimated at Rs.205,216 at current prices in 2005-06 rebasing. The decline in GFCF in 2015-16 rebasing is due to i) improved coverage under relevant industries and ii) overestimation of GFCF in professional, scientific and technical activities used to be covered under the title of “Other business activities” and estimated through fixed growth rates from 1999-2000 onwards. A comparative table of GFCF of two benchmarks is placed below.

Table 5.37: GFCF in Other Private Services 2015-16 base and 2005-06 base (Rs. Million)

| Activities | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|--|----------------|---------------------------|---------------|
| 1 | 2 | 3 | 4 |
| Professional, scientific and technical activities | 126,888 | 190,995 | 40,447 |
| Administrative and support service activities | 21,485 | 503 | 675 |
| Arts, entertainment and recreation | 1,403 | 6,138 | 2,649 |
| Activities of membership organizations | 22,628 | 3,163 | 760 |
| Repair of computers and personal and household goods | 2,676 | 2,210 | 531 |
| Other personal services activities | 9,883 | 2,207 | 530 |
| Total (Other private services) | 184,962 | 205,216 | 45,592 |

x. General Government

GFCF by the general government consists of the acquisitions less disposal of fixed assets during an accounting period. The expenditure made by Federal, Provincial, local governments and defence services on fixed assets during the year is accounted as gross fixed capital formation by the institutional sector General Government. The expenditure made on residential construction for military personnel are included as part of fixed capital formation.

Data on GFCF has been taken from published budget documents. GFCF at current prices has been worked out based on these budgets at Rs. 867,876 million for the year 2015-16. The GFCF of the institutional sector General Government has been further disaggregated into three relevant PSIC sections i.e. 84-Public administration and defence (Rs. 750,084 million), 85-Education (Rs. 80,403 million) and 86-88 Human health and social work activities (Rs. 37,389 million) as presented in the table given below.

Table 5.38: GFCF in General Government 2015-16 Base and 2005-06 Base (Rs. Million)

| Description | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base |
|---|----------------|---------------------------|----------------|
| 1 | 2 | 3 | 4 |
| Buildings | 271,390 | 271,390 | 45,258 |
| Other Construction | 334,115 | 334,115 | 83,479 |
| i. Telephone/Power lines, Cables etc. | | | |
| ii. Canals | | | |
| iii. Drainage | 13,396 | 13,396 | |
| iv. Gas Pipelines | | | |
| v. Railway Tracks/Runways | | | |
| vi. Roads, Streets Highways | 144,437 | 144,437 | |
| vii. Tube wells | 66,977 | 66,977 | |
| viii. Other works n.e.c. | 109,305 | 109,305 | |
| Transport equipment | 16,996 | 16,996 | 10,728 |
| Computers | 5,781 | 5,781 | 985 |
| Telecommunication | 796 | 796 | - |
| Furniture and Fixture | 7,849 | 7,849 | 4,839 |
| Machinery & Equipment | 106,914 | 106,914 | 12,399 |
| Intellectual property products | 902 | 902 | - |
| Other assets | 5,342 | 5,342 | 17,142 |
| Total (Public administration) | 750,084 | 750,084 | 174,829 |
| Education | 80,403 | 80,253 | 16,680 |
| Health & Social Work | 37,389 | 31,261 | 6,569 |
| Grand Total (General Government) | 867,876 | 861,598 | 198,078 |

Table 5.39: GFCF comparison, Private, Public and General Government Sectors Bases 2015-16 & 2005-06 (Rs. Million)

| Sr. No. | Industries/ Sectors | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | Change (%) | |
|-----------|---|-------------------|---------------------------|-------------------|--------------|---------------|
| | | At 2015-16 prices | | At 2005-06 prices | Col. (3 / 4) | Col. (3 / 5) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Total GFCF(A+B+C) | 4,657,149 | 4,095,630 | 1,456,889 | 13.71 | 219.66 |
| A. | Private Sector | 3,537,220 | 2,995,889 | 1,109,205 | 18.07 | 218.9 |
| B. | Public Sector | 252,053 | 238,143 | 149,606 | 5.84 | 68.48 |
| C. | General Government | 867,876 | 861,598 | 198,078 | 0.73 | 338.15 |
| | Private & Public Sector (A+B) | 3,789,273 | 3,234,032 | 1,258,811 | 17.17 | 201.02 |
| 1 | Agriculture, forestry and fishing | 904,250 | 850,088 | 254,796 | 6.37 | 254.89 |
| 2 | Mining and quarrying | 122,166 | 105,418 | 28,962 | 15.89 | 321.81 |
| 3 | Manufacturing | 723,845 | 485,495 | 287,117 | 49.09 | 152.11 |
| | i. Large Scale | 633,494 | 456,222 | 281,328 | 38.86 | 125.18 |
| | ii. Small Scale (including Slaughtering) | 90,351 | 29,273 | 5,789 | 208.65 | 1,460.77 |
| 4 | Electricity, gas, and water supply | 201,651 | 178,264 | 54,765 | 13.12 | 268.21 |
| 5 | Construction | 64,882 | 49,009 | 20,972 | 32.39 | 209.37 |
| 6 | Wholesale and retail trade | 202,799 | 63,419 | 18,089 | 219.78 | 1,021.12 |
| 7 | Accommodation and food service activities (Hotels and restaurants) | 74,922 | 14,043 | 4,005 | 433.52 | 1,770.71 |
| 8 | Transportation and storage | 416,691 | 381,876 | 162,452 | 9.12 | 156.5 |
| 9 | Information and communication | 158,036 | 142,322 | 138,387 | 11.04 | 14.2 |
| 10 | Financial and insurance activities | 56,520 | 57,775 | 22,238 | -2.17 | 154.16 |
| 11 | Real estate activities (OD) | 523,819 | 577,278 | 190,127 | -9.26 | 175.51 |
| 12 | Public administration and social security | 750,084 | 750,084 | 174,829 | - | 329.04 |
| 13 | Education | 179,991 | 119,795 | 26,824 | 50.25 | 571.01 |
| 14 | Human health and social work activities | 92,531 | 115,548 | 27,734 | -19.92 | 233.64 |
| 15 | Other Private Services | 184,962 | 205,216 | 45,592 | -9.87 | 305.69 |

Table 5.40: GFCF comparison Private Sector Bases 2015-16 & 2005-06 (Rs. Million)

| Sr. No. | Industries/ Sectors | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | Change (%) | |
|-----------|---|-------------------|---------------------------|-------------------|--------------|--------------|
| | | At 2015-16 prices | | At 2005-06 prices | Col. (3 / 4) | Col. (3 / 5) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| A. | Private Sector | 3,537,220 | 2,995,889 | 1,109,205 | 18.07 | 218.9 |
| 1 | Agriculture, forestry and fishing | 904,045 | 849,943 | 254,746 | 6.37 | 254.88 |
| | Crops | 176,622 | 172,352 | 84,348 | 2.48 | 109.4 |
| | Cotton Ginning | 1,042 | | | | |
| | Livestock | 689,165 | 673,954 | 168,657 | 2.26 | 308.62 |
| | Forestry | 1,392 | 687 | 252 | 102.57 | 452.38 |
| | Fishing | 35,824 | 2,950 | 1,489 | 1,114.52 | 2,305.91 |
| 2 | Mining and quarrying | 94,113 | 77,365 | 22,829 | 21.65 | 312.25 |
| 3 | Manufacturing | 722,512 | 483,781 | 283,508 | 49.35 | 154.85 |
| | i. Large Scale | 632,161 | 454,508 | 277,719 | 39.09 | 127.63 |
| | ii. Small Scale (including Slaughtering) | 90,351 | 29,273 | 5,789 | 208.65 | 1,460.77 |
| 4 | Electricity, gas, and water supply | 46,543 | 23,156 | 3,307 | 101 | 1,307.49 |
| 5 | Construction | 59,704 | 43,831 | 14,597 | 36.21 | 309.02 |
| 6 | Wholesale and retail trade | 202,799 | 63,419 | 18,089 | 219.78 | 1,021.12 |
| 7 | Accommodation and food service activities (Hotels and restaurants) | 74,922 | 14,043 | 4,005 | 433.52 | 1,770.71 |
| 8 | Transportation and storage | 389,786 | 354,972 | 110,281 | 9.81 | 253.45 |
| 9 | Information and communication | 129,729 | 128,245 | 110,456 | 1.16 | 17.45 |
| 10 | Financial and insurance activities | 49,556 | 50,811 | 20,360 | -2.47 | 143.4 |
| 11 | Real estate activities (OD) | 523,819 | 577,278 | 190,127 | -9.26 | 175.51 |
| 12 | Education | 99,588 | 39,542 | 10,144 | 151.86 | 881.77 |
| 13 | Human health and social work activities | 55,142 | 84,287 | 21,165 | -34.58 | 160.53 |
| 14 | Other Private Services | 184,962 | 205,216 | 45,592 | -9.87 | 305.69 |

Table 5.41: GFCF comparison Public and General Government Sectors Bases 2015-16 & 2005-06 (Rs. Million)

| Sr. No. | Industries/ Sectors | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | Change (%) | |
|-----------|--|-------------------|---------------------------|-------------------|--------------|---------------|
| | | At 2015-16 prices | | At 2005-06 prices | Col. (3 / 4) | Col. (3 / 5) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Public & General Govt. (B+C) | 1,119,929 | 1,099,741 | 347,684 | 1.84 | 222.11 |
| B. | Public Sector (Autonomous & Semi-Autonomous -Bodies) | 252,053 | 238,143 | 149,606 | 5.84 | 68.48 |
| 1 | Agriculture, forestry and fishing | 205 | 145 | 50 | 41.38 | 310 |
| 2 | Mining and quarrying | 28,053 | 28,053 | 6,133 | - | 357.41 |
| 3 | Manufacturing (Large scale) | 1,333 | 1,714 | 3,609 | -22.23 | -63.06 |
| 4 | Electricity, gas, and water supply | 155,108 | 155,108 | 51,458 | - | 201.43 |
| 5 | Construction | 5,178 | 5,178 | 6,375 | - | -18.78 |
| 6 | Transportation and storage | 26,905 | 26,904 | 52,171 | - | -48.43 |
| | a. Railways | 5,825 | 5,825 | 4,754 | - | 22.53 |
| | b. Post Offices & PTCL | - | 13,644 | 15,232 | -100 | -100 |
| | c. Others | 21,080 | 7,435 | 32,185 | 183.52 | -34.5 |
| 7 | Information and communication | 28,307 | 14,077 | 27,932 | 101.09 | 1.34 |
| 8 | Financial and insurance activities | 6,964 | 6,964 | 1,878 | - | 270.82 |
| C. | General Government | 867,876 | 861,598 | 198,078 | 0.73 | 338.15 |
| | i. Federal | 235,406 | 229,128 | 37,307 | 2.74 | 531 |
| | ii. Provincial | 527,461 | 527,461 | 122,774 | - | 329.62 |
| | iii. District Governments | 105,009 | 105,009 | 37,997 | - | 176.36 |
| | General Government (By industries) | 867,876 | 861,598 | 198,078 | 0.73 | 338.15 |
| | Public administration and defense; compulsory social security | 750,084 | 750,084 | 174,829 | - | 329.04 |
| | Education | 80,403 | 80,253 | 16,680 | 0.19 | 382.03 |
| | Human health and social work activities | 37,389 | 31,261 | 6,569 | 19.6 | 469.17 |

Table 5.42: Summary of Gross Fixed Capital Formation by type of assets (AN11) for 2015-16 and 2005-06 base years

| Type of asset | Rs. Mill. | | Share (%) | |
|--|------------------|------------------|--------------|--------------|
| | 2015-16 base | 2005-06 base | 2015-16 base | 2005-06 base |
| 1 | 2 | 3 | 4 | 5 |
| AN111 Dwellings (Residential buildings) | 432,316 | 47,307 | 9.28 | 3.25 |
| AN112 Other Buildings and structures | 1,500,329 | 550,953 | 32.22 | 37.82 |
| AN113 Machinery and Equipment | 1,909,546 | 662,832 | 41 | 45.5 |
| AN114 Weapons systems* | | | | |
| AN115 Cultivate Biological Resources | 694,108 | 170,184 | 14.9 | 11.68 |
| AN116 Cost of ownership transfer on non-produced assets* | | | | |
| AN117 Intellectual Property Products | 120,850 | 25,613 | 2.59 | 1.76 |
| AN11 | 4,657,149 | 1,456,889 | 100 | 100 |

* It is merged with AN111 and AN112 whereas AN114 is not collected

Table 5.43: GFCF by type of assets (AN11) for the base year 2015-16 and 2005-06 (Rs. in Million)

| Type of asset | 2015-16 base | 2005-06 base |
|--|------------------|----------------|
| 1 | 2 | 3 |
| AN111 Dwellings (Residential buildings) | 432,316 | 47,307 |
| AN112 Other Buildings and structures | 1,500,329 | 550,953 |
| AN1121 Buildings other than dwellings | 872,549 | 273,417 |
| AN1122 Other structures | 532,104 | 241,563 |
| i. Telephone/Power lines, Cables etc. | 12,469 | 7,423 |
| ii. Canals | - | 14,268 |
| iii. Drainage | 80,373 | 13,100 |
| iv. Gas Pipelines | 43,367 | 1,568 |
| v. Railway Tracks/Runways | 219 | - |
| vi. Roads, Streets Highways | 144,540 | 92,760 |
| vii. Tubewells | 6,427 | 3,777 |
| viii. Others n.e.c. | 244,709 | 108,666 |
| AN1123 Land improvements & cost of land transfer | 95,676 | 35,973 |
| AN113 Machinery and Equipment | 1,909,546 | 662,832 |
| AN1131 Transport Equipment (vehicles etc.) | 464,569 | 117,301 |
| AN1132 ICT (computer hardware & telecommunication) equipment** | 53,225 | 24,368 |
| AN1133 Other machinery and equipment | 1,391,753 | 521,163 |
| i. Electrical | 45,742 | 273,239 |
| ii. Non-electrical | 9,023 | 172,733 |
| iii. Furniture & Fixture | 93,476 | 33,501 |
| iv. Other machinery and equipment n.e.c. | 1,243,512 | 41,690 |

| Type of asset | 2015-16 base | 2005-06 base |
|--|------------------|------------------|
| 1 | 2 | 3 |
| AN114 Weapons systems | | |
| AN115 Cultivate Biological Resources | 694,108 | 170,184 |
| AN1151 Animals resources yielding repeat products | 689,163 | 168,656 |
| AN1152 Tree, crop and plant resources yielding repeat products | 4,945 | 1,528 |
| AN116 Cost of ownership transfer on non-produced assets | | |
| AN117 Intellectual Property Products | 120,850 | 25,613 |
| AN1171 Research and Development | 7,255 | 4,457 |
| AN1172 Mineral exploration & evaluation | 70,430 | 19,953 |
| AN1173 Computer software and database | 18,944 | 1,130 |
| AN1174 Entertainment, literary or artistic originals | | |
| AN1179 Other intellectual property products | 24,221 | 73 |
| Total | 4,657,149 | 1,456,889 |

5.6.3 Changes in inventories and acquisition less disposal of valuables

a. Changes in inventories

Changes in inventories' refer to the value of physical change in the stocks of raw material, work-in-progress and finished goods held by industries and producers of government services as per details given below:

- Goods-producing industries
 - Material and supplies
 - Work-in-progress
 - Livestock except for breeding stock, dairy cattle and the like (which forms GFCF, instead)
 - Finished goods
- Wholesale & retail trade
- Other industries
- Producers of government services

Inventories consist of stocks of outputs that are still held by the units that produced them before their being further processed, sold, delivered to other units or used in other ways and stocks of products acquired from other units that are intended to be used for intermediate consumption or resale without further processing. Inventories of services consist of work-in-progress or finished products, for example, architectural drawings, which are in the process of completion or are completed and waiting for the building to which they relate to being started. Inventories held by the government include, but are not limited to, inventories of strategic materials, grain and other commodities of special importance to the nation.

Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the

accounting period. When a good is entered into inventories it is acquired as an asset by the enterprise in its capacity as owner either by purchase (or barter) or by an internal transaction with itself as the producer. Conversely, a good leaving inventory represents the disposal of an asset by the owner either by sale or other use, by an internal transfer to the producer or possibly as a result of recurrent losses (recurrent wastage, accidental damage or pilfering).

In Pakistan, it is not directly estimated. Its estimation is the continuity of the previous bases. Fresh estimation is needed, a study is recommended.

b. Valuables

Valuables are not used primarily for purposes of production or consumption but are held as stores of value over time. Valuables are expected to appreciate or at least not to decline in real value, nor to deteriorate over time under normal conditions. They consist of precious metals and stones, jewelry, works of art, etc. Valuables may be held by all sectors of the economy. Costs of ownership transfer, such as values and auctioneers' margins, are treated as gross capital formation and included in the value of the items.

Precious metals and stones are treated as valuables when they are not held by enterprises for sale or use as inputs into processes of production nor are held as monetary gold and are not held as a financial asset in the form of unallocated metal accounts. Paintings, sculptures, etc., recognized as works of art and antiques are treated as valuables when they are not held by enterprises for sale. In principle, museum exhibits are included under valuables. Other valuables not elsewhere classified include such items as collections of stamps, coins, books etc. that have a recognized market value and fine jewelry, fashioned out of precious stones, and metals of significant and realizable value.

The category of valuables has been introduced in the SNA 1993. It was argued that this category should fill the gap in the system as jewelry etc. indeed, is neither a consumption of goods nor physical asset in a production process. For the conceptual purity and beauty and comprehensiveness of the System of National Accounts, it is reasonable to include this item though in most countries the amount is negligible and difficult to estimate.

In Pakistan, valuables are mainly held by households. In the 2005-06 rebasing, valuables were not included in the expenditure side of the GDP due to the non-availability of relevant data by households and other institutional sectors. For inclusion in the national income accounting framework, the annual amount of net additions to valuables is essentially required. This information on purchases and sales of values is reported in the expenditure and assets and liabilities module of the HIES surveys respectively. Therefore, in 2015-16 rebasing, valuables have been estimated separately for the year 2015-16 by using information from Section 4-M relating to the yearly expenditure of the household on the purchase of durable goods. While the product-wise information on purchases of valuables was available, the figures related to values sold were available at an aggregated level in Section 6-M, which were allocated to products using the product and region-specific proportions of purchases. Resultantly, net additions by-products have been derived by subtracting the value of sales from respective purchases. The expenditure on purchase, sales and net additions of gold products, silver products, and precious stones and metals, as reported by households during the reference period i.e. 2015-16, has been aggregated as per following details:-

Table 5.44: Valuables by Province (Rs. in Million)

| Valuable Type | KP | Punjab | Sindh | Balochistan | Total |
|--------------------------------------|--------------|---------------|--------------|--------------------|---------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Purchases during 2015-16 | | | | | |
| Gold products | 8,583 | 37,305 | 1,997 | 720 | 48,605 |
| Silver products | 81 | 600 | 131 | 124 | 936 |
| Precious stones and metals | 10 | 100 | 8 | 19 | 137 |
| Total-Purchases | 8,673 | 38,005 | 2,137 | 863 | 49,678 |
| Valuables sold during 2015-16 | | | | | |
| Gold products | 1,806 | 9,885 | 2,706 | 540 | 14,937 |
| Silver products | 16 | 152 | 180 | 107 | 455 |
| Precious stones and metals | 3 | 28 | 10 | 15 | 56 |
| Total-Sold | 1,825 | 10,064 | 2,896 | 663 | 15,448 |
| Net Additions during 2015-16 | | | | | |
| Gold products | 6,777 | 27,419 | -709 | 180 | 33,668 |
| Silver products | 65 | 448 | -48 | 17 | 482 |
| Precious stones and metals | 7 | 73 | -2 | 4 | 81 |
| Total-Net Addition | 6,849 | 27,940 | -759 | 201 | 34,231 |

The total value of purchases of valuables held by households has been estimated at Rs.49.7 billion during 2015-16 which are mostly held by households belonging to Punjab province i.e. Rs.38.0 billion followed by households in KP (Rs.8.7 billion), Sindh Rs.2.1 billion) and Balochistan (Rs.0.9 billion). The total values of sales of valuables have been estimated at Rs.15.4 billion. Most of the sales of valuables have been estimated for households in Punjab i.e. Rs.10.1 billion followed by those in Sindh province (Rs.2.9 billion), KP (Rs.1.8 billion) and Balochistan (Rs.0.7 billion). Hence, the net additions of valuables for the base year 2015-16 have been estimated at Rs.34.2 billion with a major contribution from Punjab province i.e. Rs.27.9 billion followed by KP (Rs.6.8 billion). While the net addition of valuables for households in Balochistan has been estimated at Rs.201 million, a negative net addition (Rs.-759 million) has been reported by households in Sindh province. Further, the amount of valuables held by rural households stands at Rs.30.5 billion whereas the remaining Rs.19.1 billion is held by urban households.

Table 5.45: Valuables by Urban/ Rural Areas (Rs. in Million)

| Valuable Type | Rural | Urban | Total |
|--------------------------------------|---------------|---------------|---------------|
| 1 | 2 | 3 | 4 |
| Purchases during 2015-16 | | | |
| Gold products | 29,841 | 18,764 | 48,605 |
| Silver products | 640 | 296 | 936 |
| Precious stones and metals | 60 | 77 | 195 |
| Total-Purchases | 30,541 | 19,137 | 49,736 |
| Valuables sold during 2015-16 | | | |
| Gold products | 7,094 | 7,843 | 14,937 |
| Silver products | 181 | 274 | 455 |
| Precious stones and metals | 20 | 36 | 56 |
| Total-Sold | 7,295 | 8,153 | 15,448 |
| Net Additions during 2015-16 | | | |
| Gold products | 22,747 | 10,921 | 33,668 |
| Silver products | 459 | 22 | 482 |
| Precious stones and metals | 40 | 41 | 81 |
| Total-Net Addition | 23,246 | 10,984 | 34,231 |

The extrapolation of figures about valuables is an issue as the regular HIES surveys do not provide information in detail. The 2015-16 HIES was an exception as it was conducted to cater for the additional needs of the Family Budget Survey. The ratios of valuables to total GDP expenditure at current and constant prices are used for extrapolation. Further, valuables may also be included as a separate module along with GFCF in future surveys to obtain information from establishments.

5.6.4 Exports and Imports of Goods and Services

Like in the balance of payments (BOP), imports and exports of goods are recorded in the SNA at border values i.e. free-on-board (at the exporter's customs frontier). Following the recommendation of the World Bank experts on national accounts, BOP figures of exports and imports of goods and services compiled by the SBP, have been used in the compilation of expenditure on GDP in the new base estimates. Exports of goods and services have been estimated at Rs.2859 billion i.e.8.74% of the GDP in new base estimates for the year 2015-16 as compared to Rs.2659 billion i.e. 9.15% of the GDP in old base estimates. Imports of goods and services have been estimated at Rs. 5225 billion i.e.15.94% of the GDP in new base estimates for the year 2015-16 as compared to Rs. 4699 billion i.e. 16.16% of the GDP in old base estimates. The imports are deflated by the imports price index and the exports by the exports price index to bring the same at constant prices.

The comparison of exports and imports of goods and services is presented in below tables:-

**Table 5.46: Comparison of Exports and Imports of Goods and Services in 2015-16 base and 2005-06 base
(Rs. Million)**

| Items | 2015-16 Base | 2015-16 (2005-06 Base) | 2005-06 Base | Change (%) | |
|--|-------------------|---------------------------|-----------------|--------------|---------------|
| | | | | Col. (2 / 3) | Col. (2 / 4) |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Exports of Services | 568,733 | 510,907 | 177,043 | 11.32 | 221.24 |
| Exports of Goods | 2,290,361 | 2,148,271 | 984,226 | 6.61 | 132.71 |
| Exports of Goods and Services | 2,859,095 | 2,659,178 | 1,161,269 | 7.52 | 146.2 |
| Imports of Services | 938,368 | 594,998 | 322,800 | 57.71 | 190.7 |
| Imports of Goods | 4,286,140 | 4,103,771 | 1,447,599 | 4.44 | 196.09 |
| Imports of Goods and Services | 5,224,509 | 4,698,769 | 1,770,400 | 11.19 | 195.1 |
| Net Exports of Goods and Services | -2,365,414 | -2,039,590 | -609,131 | 15.97 | 288.33 |

**Table 5.47: Comparison of Expenditure on GDP base 2015-16 and 2005-06 for the year 2015-16 and 2005-06
(Rs. Million)**

| Description | 2015-16 Base | 2005-06 Base | 2005-06 Base | Change (%) | | Diff. Col. (2-3) |
|--|-------------------|--------------|----------------------|------------|------------|---------------------|
| | At 2015-16 prices | | At 2005-06 prices | Col. (2/3) | Col. (2/4) | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Household final consumption expenditure | 26,106,974 | 23,266,454 | 6,379,481 | 12.21 | 309.23 | 2,840,520 |
| NPISH final consumption expenditure | 296,722 | | | | | 296,722 |
| General government final consumption expenditure | 3,471,786 | 3,287,930 | 857,461 | 5.59 | 304.89 | 183,856 |
| Gross fixed capital formation | 4,657,149 | 4,095,630 | 1,456,889 | 13.71 | 219.66 | 561,519 |
| Changes in inventories | 523,601 | 465,210 | 131,459 | 12.55 | 298.3 | 58,391 |
| Valuables | 34,231 | | | | | 34,231 |
| Exports of goods and services | 2,859,095 | 2,659,178 | 1,161,269 | 7.52 | 146.2 | 199,917 |
| Less imports of goods and services | 5,224,509 | 4,698,769 | 1,770,399 | 11.19 | 195.1 | 525,740 |
| Expenditure on gross domestic product (at MP) | 32,725,049 | 29,075,633 | 8,216,160 | 12.55 | 298.3 | 3,649,416 |

Table 5.48: Comparison of Expenditure on GDP base 2015-16 and 2005-06 for the year 2015-16 and 2005-06
(Rs. Million)

| Description | 2015-16 Base | 2005-06 Base | 2005-06 Base | % share | | |
|--|-------------------|--------------|----------------------|------------------------------|------------------------------|---------|
| | At 2015-16 prices | | At 2005-06 prices | 2015-16 (2015-16 base) | 2015-16 (2005-06 base) | 2005-06 |
| 1 | 2 | 3 | 4 | 7 | 8 | 9 |
| Household final consumption expenditure | 26,106,974 | 23,266,454 | 6,379,481 | 79.78 | 80.02 | 77.65 |
| NPISH final consumption expenditure | 296,722 | | | 0.91 | - | - |
| General government final consumption expenditure | 3,471,786 | 3,287,930 | 857,461 | 10.61 | 11.31 | 10.44 |
| Gross fixed capital formation | 4,657,149 | 4,095,630 | 1,456,889 | 14.23 | 14.09 | 17.73 |
| Changes in inventories | 523,601 | 465,210 | 131,459 | 1.6 | 1.6 | 1.6 |
| Valuables | 34,231 | | | 0.1 | - | - |
| Exports of goods and services | 2,859,095 | 2,659,178 | 1,161,269 | 8.74 | 9.15 | 14.13 |
| Less imports of goods and services | 5,224,509 | 4,698,769 | 1,770,399 | 15.96 | 16.16 | 21.55 |
| Expenditure on gross domestic product (at MP) | 32,725,049 | 29,075,633 | 8,216,160 | 100 | 100 | 100 |

5.6.5 Net Primary Income (previously called “Net Factor Income”)

According to SNA (2008), “Gross national income (GNI) is defined as GDP plus compensation of employees receivable from abroad plus property income receivable from abroad plus taxes less subsidies on production receivable from abroad less compensation of employees payable abroad less property income payable abroad and less taxes plus subsidies on production payable abroad.” (p.333).

Table 5.49: Net Primary Income from abroad (Rs. in million)

| Item | Base Year 2005-2006 | | Base Year 2015-16 | % Increase | |
|--------------------------------------|---------------------|-------------------|-------------------|--------------|--------------|
| | 2005-2006 Price | At 2015-16 prices | | Col. 4 / 2 | Col. 4 / 3 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| (A) TOTAL RECEIPTS | 362,554 | 2,424,791 | 2,134,125 | 488.6 | -12 |
| i) Compensation of Employees | 313,985 | 2,366,652 | 2,075,986 | 561.2 | -12.3 |
| ii) Investment Income | 46,590 | 56,056 | 56,056 | 20.3 | - |
| iii) Other primary Income | 1,979 | 2,083 | 2,083 | 5.3 | - |
| (B) TOTAL PAYMENTS | 212,653 | 641,930 | 641,930 | 201.9 | - |
| i) Compensation of Employees | - | 3,126 | 3,126 | | - |
| ii) Investment Income | 206,552 | 619,731 | 619,731 | 200 | - |
| iii) Other primary Income | 5,922 | 19,073 | 19,073 | 222.1 | - |
| NPI (At Current Prices) (A-B) | 149,901 | 1,782,860 | 1,492,194 | 895 | -16.3 |

5.7 Limitations

Despite making all-out efforts, the 2015-16 rebasing of national accounts is subject to some limitations due to resource/data constraints as follow:

- Use of projected livestock population
- Compilation of GVA of WRT through functional approach due to non-availability of data at the establishment level
- Application of fixed growth rates in small scale manufacturing, accommodation and food service activities, real estate activities (housing services) and some components of services due to non-availability of relevant indicators
- Although double deflation i.e. relevant CPI and WPI, has been applied in many industries, however, single deflation has also to be used in some industries such as LSM, SSM, construction, housing, etc. due to non-availability of industry-wise output and input deflators.

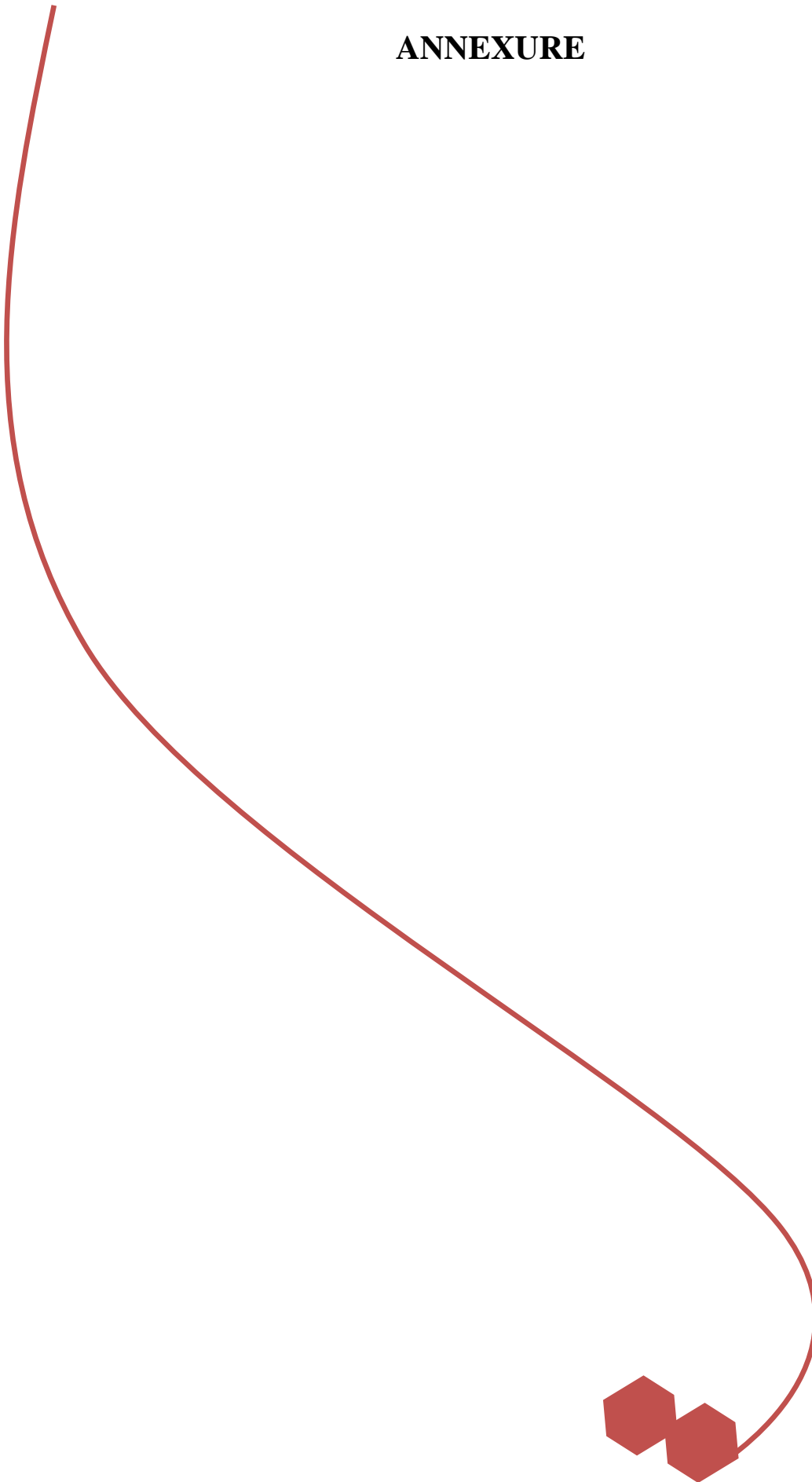
5.7.1 Areas for further improvement

Keeping in view the aforementioned limitations/data constraints, the areas for further improvements are as under:-

- Use of an-updated Business Register through an Economic Census for the census/surveys/studies of establishments for the next re-basing of national accounts.
- Use of actual livestock population obtained through fresh livestock/agriculture census.
- Compilation of GVA of WRT through establishment approach using specifically conducted surveys.
- Finalization of the base year GVA on the basis of balanced Supply and Use Tables (SUTs)

- v. Use of SUTs as a compilation tool for the annual GDP
- vi. Use of relevant indicators for projection of GVA of small scale manufacturing, accommodation and food service activities, real estate activities (housing services) and other services
- vii. Application of double deflation using industry-specific input and output Producer's Price Index (PPIs) or CPI should be compiled separately for goods and services.

ANNEXURE



ANNEXURES

Area of Crops (000 Hect.)

Annexure-I

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------|---------|-------|-------|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 1 | Wheat-Released | 4843.5 | 800.5 | 703.8 | 355.7 | 6703.6 |
| 2 | Wheat-Procured | 2070.4 | 354.1 | 68.5 | 27.2 | 2520.2 |
| 3 | Maize | 716.1 | 3.7 | 468.5 | 2.9 | 1191.2 |
| 4 | Rice-Basmati | 1251.5 | 51.7 | 15.7 | 33.9 | 1352.8 |
| 5 | Rice-Irri | 186.5 | 389.9 | 23.3 | 139.5 | 739.1 |
| 6 | Rice-Others | 342.2 | 278.3 | 25.7 | 1.4 | 647.5 |
| 7 | Barley | 23.1 | 8.3 | 23.3 | 11.4 | 66 |
| 8 | Bajra | 433.7 | 45.1 | 4 | 3.3 | 486.1 |
| 9 | Jowar(Sorghum) | 231.1 | 13.1 | 8.3 | 21.1 | 273.6 |
| 11 | Gram | 854.9 | 14.8 | 32.9 | 36.9 | 939.5 |
| 12 | Mash | 15.3 | 0.2 | 0.7 | 2.9 | 19.2 |
| 13 | Masoor | 11.3 | 1.4 | 3.5 | 1.7 | 17.9 |
| 14 | Moong | 133.1 | 2.2 | 7.4 | 3.5 | 146.3 |
| 15 | Mattar | 13 | 21.2 | 1.2 | 9.9 | 45.3 |
| 16 | Other K. Pulses | 1.4 | 0.3 | 1.3 | 1.3 | 4.3 |
| 17 | Other R. Pulses | 0.2 | 0.1 | 0.1 | 0 | 0.4 |
| 18 | Potato | 165.5 | 0.6 | 9.4 | 1.9 | 177.3 |
| 19 | Sweet Potato | 0.5 | 1 | 0 | 0 | 1.6 |
| 20 | Peas & Garden Peas | 17.6 | 2.4 | 1.9 | 1.1 | 22.9 |
| 21 | Beans | 0.4 | 0.8 | 0 | 0.6 | 1.7 |
| 22 | Tinda | 6.7 | 2.1 | 1.1 | 0.8 | 10.7 |
| 23 | Lady finger | 5.9 | 4.9 | 2.1 | 2.6 | 15.5 |
| 24 | Bitter Gourd | 4.2 | 0.6 | 1.2 | 0.7 | 6.7 |
| 25 | Bottle Gourd | 3.9 | 0.3 | 0.5 | 0.7 | 5.5 |
| 26 | Brinjal (eggplant) | 4.5 | 1.4 | 0.9 | 1.6 | 8.4 |
| 27 | Arum | 0.9 | 0.2 | 1.3 | 0 | 2.5 |
| 28 | Luffa | 1.3 | 0.4 | 0 | 0.4 | 2 |
| 29 | Pursilano | 0 | 0.1 | 0 | 0 | 0.1 |
| 30 | Field vetch | 0 | 0.5 | 0 | 0 | 0.5 |
| 31 | Cauliflower | 7.1 | 2.1 | 1.4 | 2 | 12.6 |
| 32 | Cabbage | 2.6 | 1.1 | 0.5 | 0.7 | 4.9 |
| 33 | Spinach | 3.5 | 2 | 1.7 | 1.4 | 8.7 |
| 34 | Knol Kohl | 0 | 0.1 | 0 | 0 | 0.1 |
| 35 | Fenu Greek | 0 | 0.2 | 0 | 0 | 0.2 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------------|---------|-------|------|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 36 | Lettuce | 0 | 0.4 | 0 | 0 | 0.4 |
| 37 | Other K. Vegetables | 15.2 | 0.1 | 5.8 | 0.5 | 21.5 |
| 38 | Other R. Vegetables | 31.5 | 0.3 | 3.1 | 0.4 | 35.3 |
| 39 | Onion | 44.7 | 51.7 | 12.2 | 27.3 | 135.9 |
| 40 | Carrot | 8.2 | 1.5 | 0.6 | 3.1 | 13.4 |
| 41 | Radish | 6.2 | 1.1 | 1.1 | 1.4 | 9.8 |
| 42 | Lotus roots | 0 | 0.1 | 0 | 0 | 0.1 |
| 43 | Sugar beet Vegetable | 2.1 | 0.5 | 0 | 0 | 2.7 |
| 44 | Turnip | 9.2 | 1.7 | 3.4 | 1 | 15.2 |
| 45 | Mango | 107 | 62.3 | 0.3 | 0.6 | 170.3 |
| 46 | Banana | 0.2 | 26.7 | 0.7 | 1.1 | 28.7 |
| 47 | Guava | 57.6 | 8.5 | 3.4 | 0.5 | 70 |
| 48 | Dates | 5.8 | 36.5 | 1.6 | 53.2 | 97.1 |
| 49 | Figs | 0 | 0 | 0.1 | 0 | 0.1 |
| 50 | Coconut | 0 | 0.4 | 0 | 1.1 | 1.5 |
| 51 | Orange | 9.1 | 0.7 | 0 | 0 | 9.8 |
| 52 | Kino | 153.8 | 0.1 | 0 | 0 | 153.9 |
| 53 | Lemon | 4.7 | 3.7 | 0 | 0 | 8.4 |
| 54 | Grape fruit | 0.3 | 0.3 | 0 | 0 | 0.6 |
| 55 | Mandrine | 1.1 | 0 | 0 | 0 | 1.1 |
| 56 | Musambi | 7.1 | 0.1 | 0 | 0 | 7.1 |
| 57 | Sure lime | 0.7 | 0 | 0 | 0 | 0.7 |
| 58 | Sweet lime | 3.8 | 0 | 0 | 0 | 3.8 |
| 59 | Soure orange | 0.1 | 0 | 0 | 0 | 0.1 |
| 60 | Other Citrus | 1.1 | 0 | 3.9 | 1.6 | 6.7 |
| 61 | Grapes | 0 | 0 | 0.1 | 14.6 | 14.8 |
| 62 | Water melon | 18.3 | 6.1 | 4.1 | 8.2 | 36.7 |
| 63 | Garma | 0 | 0 | 0 | 0.3 | 0.3 |
| 64 | Sarda | 0 | 0 | 0 | 0.3 | 0.3 |
| 65 | Pumpkin & Melon Pumpkin | 2.2 | 0.1 | 0.8 | 0.6 | 3.8 |
| 66 | Long Melon | 0.3 | 0.2 | 0 | 0 | 0.5 |
| 67 | Tomatoes | 8.2 | 27.9 | 13.6 | 12.9 | 62.5 |
| 68 | Cucumber | 1.8 | 0.7 | 0 | 0.9 | 3.4 |
| 69 | Apple | 0.4 | 0 | 7.7 | 88.8 | 96.9 |
| 70 | Plums | 0 | 0 | 2.9 | 4 | 6.9 |
| 71 | Peaches | 0 | 0 | 8 | 5.8 | 13.8 |
| 72 | Pomegranates | 1.4 | 0 | 0.2 | 7.4 | 9 |
| 73 | Appricots | 0 | 0 | 2.7 | 23 | 25.7 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------|---------|-------|------|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 74 | Pear | 0 | 0 | 1.6 | 0.2 | 1.8 |
| 75 | Jaman | 0.8 | 0.2 | 0 | 0 | 1 |
| 76 | Litchi | 0.3 | 0 | 0 | 0 | 0.3 |
| 77 | Phalsa | 0.5 | 0.6 | 0 | 0 | 1.2 |
| 78 | Chikoo | 0 | 1.1 | 0 | 0.6 | 1.7 |
| 79 | Papaya | 0 | 0.6 | 0 | 0.8 | 1.4 |
| 80 | Cherry | 0 | 0 | 0 | 1.1 | 1.1 |
| 81 | Ber | 1.2 | 3.9 | 0 | 0 | 5.1 |
| 82 | Loquat | 0.8 | 0 | 0.6 | 0 | 1.4 |
| 83 | Mulbery | 0.2 | 0 | 0.2 | 0 | 0.4 |
| 84 | Percimen | 0 | 0 | 3.2 | 0 | 3.2 |
| 85 | Other K. Fruits | 3.6 | 0 | 0.4 | 0.8 | 4.9 |
| 86 | Other R. Fruits | 1.7 | 0.5 | 1.2 | 0.8 | 4.3 |
| 87 | Almond | 0 | 0 | 0.2 | 10.3 | 10.5 |
| 88 | Walnuts | 0 | 0 | 1.6 | 0 | 1.6 |
| 89 | Pistachio | 0 | 0 | 0 | 0.2 | 0.2 |
| 90 | Soya Beans | 0 | 0 | 0 | 0 | 0 |
| 91 | Groundnuts | 84 | 0.5 | 7.3 | 0 | 91.9 |
| 92 | Sunflower | 16.2 | 65.9 | 0.2 | 0.3 | 82.6 |
| 93 | Sesamum | 65.7 | 7 | 0.1 | 5.8 | 78.5 |
| 94 | Safflower | 0 | 0 | 0 | 0 | 0 |
| 95 | Rape & Mustard | 123.7 | 50.2 | 12.9 | 14.2 | 201 |
| 96 | Canola | 7.1 | 2.8 | 0.5 | 3.4 | 13.8 |
| 97 | Castor seed | 0 | 0.4 | 0 | 1.4 | 1.8 |
| 98 | Lin seed | 0.7 | 2.4 | 0 | 0 | 3 |
| 99 | Flowers & F. Buds | 0 | 0 | 0 | | 0 |
| 100 | Corriander | 0.5 | 2.8 | 0.2 | 1.8 | 5.3 |
| 101 | Cumin seeds | 0 | 0 | 0 | 5.4 | 5.4 |
| 102 | Dil seed | 0 | 0.3 | 0 | 0 | 0.3 |
| 103 | Chillies | 5.7 | 54.6 | 0.4 | 4.1 | 64.8 |
| 104 | Ajwan | 0 | 0.4 | 0 | 0 | 0.4 |
| 105 | Fennel (Sounf) | 0 | 0.7 | 0 | 0 | 0.7 |
| 106 | Turmeric | 5.3 | 0.3 | 0.3 | 0 | 5.9 |
| 107 | Garlic | 3.1 | 1.3 | 2.6 | 0.9 | 7.9 |
| 108 | Ginger | 0 | 0.3 | 0 | 0 | 0.3 |
| 109 | Other spices | 0 | 0.4 | 0 | 0 | 0.4 |
| 110 | Tobaccoo | 18.3 | 0.2 | 33.2 | 1 | 52.7 |
| 111 | Sugar beet Crop | 0 | 0 | 0.6 | 0 | 0.6 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------------|---------|-------|------|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 112 | Sugar cane-Released | 225.7 | 3.1 | 37.2 | 0.7 | 266.7 |
| 113 | Sugar cane-Procured | 479.6 | 309.7 | 75.5 | 0 | 864.8 |
| 114 | Fodders Green | 3185 | 136.7 | 99.6 | 35 | 3456.3 |
| 115 | Guarseed | 95.5 | 95.9 | 0.6 | 6.6 | 198.6 |
| 116 | Fodders Dry-Wheat | | | | | |
| 117 | Fodders Dry-Maize-Stalks | | | | | |
| 118 | Fodders Dry-Maize-Piths | | | | | |
| 119 | Rice-Straw | | | | | |
| 120 | FD-Barley | | | | | |
| 121 | FD-Bajra | | | | | |
| 122 | FD-Jowar(Sorghum) | | | | | |
| 123 | FD-Gram | | | | | 0 |
| 124 | Fodders Dry-S.cane | | | | | 0 |
| 125 | Fodders Dry-Sesamum | | | | | 0 |
| 126 | Fodders Dry-R&Mustard | | | | | 0 |
| 127 | Cotton-Upland (Phutti) | 2211.2 | 619.4 | 0.4 | 37.6 | 2868.6 |
| 128 | Cotton-Desi (Phutti) | 31.6 | 1.8 | | | 33.4 |
| 129 | Hemp | 0.1 | 0 | 0 | 0 | 0.1 |
| 130 | Cotton Sticks | | | | | |

Production of Crops (000 M. Tons)**Annexure II**

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------|---------|--------|--------|-------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 1 | Wheat-Released | 14818.7 | 2739.6 | 1397.5 | 871.3 | 19827 |
| 2 | Wheat-Procured | 4708 | 1095 | 3 | 0 | 5806 |
| 3 | Maize | 4391.2 | 3.6 | 873 | 3.1 | 5270.9 |
| 4 | Rice-Basmati | 2279.2 | 84.8 | 41.1 | 101.3 | 2506.5 |
| 5 | Rice-Irri | 460.8 | 1044.6 | 56.2 | 468.6 | 2030.2 |
| 6 | Rice-Others | 762 | 1443.3 | 56.5 | 2.7 | 2264.5 |
| 7 | Barley | 20.1 | 5.2 | 20.3 | 15 | 60.5 |
| 8 | Bajra | 271.9 | 23.2 | 2.5 | 1.9 | 299.5 |
| 9 | Jowar(Sorghum) | 126.1 | 12.3 | 4.8 | 17.3 | 160.5 |
| 11 | Gram | 227.2 | 14.4 | 14.1 | 30.5 | 286.2 |
| 12 | Mash | 4.9 | 0.1 | 0.9 | 2.6 | 8.5 |
| 13 | Masoor | 4 | 0.9 | 1.8 | 1.1 | 7.8 |
| 14 | Moong | 93.9 | 0.9 | 4.8 | 2.5 | 102.1 |
| 15 | Mattar | 10.1 | 13.1 | 1.1 | 5.5 | 29.7 |
| 16 | Other K. Pulses | 0.7 | 0.1 | 0.8 | 1.6 | 3.2 |
| 17 | Other R. Pulses | 0.1 | 0 | 0.1 | 0 | 0.2 |
| 18 | Potato | 3811.1 | 4.9 | 132.8 | 28.8 | 3977.6 |
| 19 | Sweet Potato | 8.6 | 4 | | | 12.5 |
| 20 | Peas & Garden Peas | 112.3 | 8.4 | 12.5 | 12.3 | 145.4 |
| 21 | Beans | 1 | 1.3 | | 5.4 | 7.7 |
| 22 | Tinda | 66.9 | 13 | 12.7 | 5.3 | 98 |
| 23 | Lady finger | 67.1 | 19 | 16.8 | 16.1 | 119 |
| 24 | Bitter Gourd | 45.4 | 2.2 | 12.1 | 5.3 | 65 |
| 25 | Bottle Gourd | 44.3 | 1.2 | 4.6 | 5.5 | 55.6 |
| 26 | Brinjal (eggplant) | 54.2 | 8.2 | 9.1 | 12.3 | 83.8 |
| 27 | Arum | 10.6 | 0.9 | 17.9 | | 29.4 |
| 28 | Luffa | 13.5 | 1.5 | | 2.3 | 17.3 |
| 29 | Pursilano | | 0.2 | | | 0.2 |
| 30 | Field vetch | | 1.8 | | | 1.8 |
| 31 | Cauliflower | 147.2 | 20.3 | 16.7 | 32.6 | 216.7 |
| 32 | Cabbage | 50.4 | 12.2 | 4.2 | 10.4 | 77.3 |
| 33 | Spinach | 52.9 | 10.4 | 19.1 | 24.7 | 107 |
| 34 | Knol Kohl | | 0.4 | | | 0.4 |
| 35 | Fenu Greek | | 0.5 | | | 0.5 |
| 36 | Lettuce | | 0.4 | | | 0.4 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|----------------------------|---------|-------|-------|-------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 37 | Other K. Vegetables | 184.5 | 0.3 | 59.5 | 3.1 | 247.5 |
| 38 | Other R. Vegetables | 512.2 | 0.6 | 35 | 5.1 | 552.9 |
| 39 | Onion | 328.2 | 692.3 | 201.3 | 514.6 | 1736.4 |
| 40 | Carrot | 150.6 | 17.5 | 7.8 | 53.2 | 229.1 |
| 41 | Radish | 116.8 | 6.6 | 12.9 | 24.2 | 160.6 |
| 42 | Lotus roots | | 0.2 | | | 0.2 |
| 43 | Sugar beet Vegetable | 106.2 | 4.3 | | 1.1 | 111.7 |
| 44 | Turnip | 176 | 19.7 | 50.4 | 16.1 | 262.3 |
| 45 | Mango | 1228 | 404.2 | 3.1 | 1.2 | 1636.5 |
| 46 | Banana | 1.4 | 112.4 | 12.9 | 7.9 | 134.6 |
| 47 | Guava | 414.6 | 63.5 | 41.8 | 2.6 | 522.6 |
| 48 | Dates | 42.9 | 201.2 | 12.3 | 211.3 | 467.8 |
| 49 | Figs | | | 0.4 | 0.1 | 0.4 |
| 50 | Coconut | | 1.3 | | 8.7 | 10 |
| 51 | Orange | 78.1 | 9.6 | | | 87.7 |
| 52 | Kino | 2065.8 | 0.5 | | | 2066.3 |
| 53 | Lemon | 26.1 | 17.4 | | | 43.5 |
| 54 | Grape fruit | 2.4 | 1.5 | | | 3.9 |
| 55 | Mandrine | 8.3 | | | | 8.3 |
| 56 | Musambi | 55.7 | 0.4 | | | 56.2 |
| 57 | Sure lime | 3.5 | 0 | | | 3.5 |
| 58 | Sweet lime | 27.4 | 0.1 | | | 27.5 |
| 59 | Soure orange | 0.8 | | | | 0.8 |
| 60 | Other Citrus | 7.9 | | 31.7 | 6.8 | 46.3 |
| 61 | Grapes | | 0 | 0.6 | 65.2 | 65.9 |
| 62 | Water melon | 344.4 | 42 | 48.7 | 95.9 | 531.1 |
| 63 | Garma | | | | 3.2 | 3.2 |
| 64 | Sarda | | | | 2.9 | 2.9 |
| 65 | Pumpkin & Melon Pumpkin | 28.2 | 0.5 | 7 | 5.8 | 41.5 |
| 66 | Long Melon | 2.5 | 0.7 | | | 3.2 |
| 67 | Tomatoes | 106.2 | 206.5 | 130 | 144.4 | 587.1 |
| 68 | Cucumber | 44.9 | 2.6 | | 6.8 | 54.3 |
| 69 | Apple | 3.5 | | 89.3 | 527.6 | 620.5 |
| 70 | Plums | 0.2 | | 25.4 | 29 | 54.6 |
| 71 | Peaches | 0.2 | | 52 | 18.5 | 70.8 |
| 72 | Pomegranates | 9.3 | | 1.7 | 29 | 40.1 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------|---------|-------|------|-------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 73 | Appricots | 0.3 | | 10.8 | 161.9 | 172.9 |
| 74 | Pear | 0.1 | | 16.1 | 0.4 | 16.6 |
| 75 | Jaman | 4.9 | 0.6 | | | 5.5 |
| 76 | Litchi | 1.8 | | | | 1.8 |
| 77 | Phalsa | 2.2 | 1.7 | | | 3.8 |
| 78 | Chikoo | | 3.6 | | 3.2 | 6.8 |
| 79 | Papaya | | 2.6 | | 3.6 | 6.2 |
| 80 | Cherry | | | | 2.1 | 2.1 |
| 81 | Ber | 8.6 | 15.7 | | | 24.3 |
| 82 | Loquat | 4.2 | | 5.7 | 0.1 | 9.9 |
| 83 | Mulberry | 0.9 | 0.1 | 1.1 | | 2.1 |
| 84 | Percimen | | | 26.9 | | 26.9 |
| 85 | Other K. Fruits | 14.6 | 0.1 | 3.7 | 2.4 | 20.8 |
| 86 | Other R. Fruits | 10 | 1.7 | 12.4 | 2.4 | 26.6 |
| 87 | Almond | 0 | | 1 | 20.4 | 21.5 |
| 88 | Walnuts | | | 13.8 | | 13.8 |
| 89 | Pistachio | | | | 0.7 | 0.7 |
| 90 | Soya Beans | | 0 | 0 | | 0 |
| 91 | Groundnuts | 80.6 | 1.2 | 9.9 | | 91.7 |
| 92 | Sunflower | 31.1 | 54.1 | 0.4 | 0.5 | 86.1 |
| 93 | Sesamum | 24.8 | 3.2 | 0 | 3.7 | 31.8 |
| 94 | Safflower | | 0 | | | 0 |
| 95 | Rape & Mustard | 117.6 | 52.7 | 6 | 8.8 | 185 |
| 96 | Canola | 9.2 | 3.4 | 0.3 | 2.3 | 15.2 |
| 97 | Castor seed | 0 | 0.2 | | 1.6 | 1.9 |
| 98 | Lin seed | 0.5 | 1.7 | | | 2.2 |
| 99 | Flowers & F. Buds | | | | | |
| 100 | Corriander | 0.3 | 1.5 | 0.1 | 1 | 2.9 |
| 101 | Cumin seeds | | | | 2.5 | 2.5 |
| 102 | Dil seed | | 0.1 | | | 0.1 |
| 103 | Chillies | 9.1 | 126.5 | 0.4 | 6.1 | 142.2 |
| 104 | Ajwan | | 0.2 | | | 0.2 |
| 105 | Fennel (Sounf) | | 0.5 | | | 0.5 |
| 106 | Turmeric | 69.8 | 0.3 | 3.1 | | 73.2 |
| 107 | Garlic | 24.1 | 6.8 | 32.2 | 7.8 | 70.9 |
| 108 | Ginger | | 0.1 | | | 0.1 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------------|---------|---------|--------|--------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 109 | Other spices | | 0.2 | | | 0.2 |
| 110 | Tobacco | 32 | 0.2 | 81.9 | 1.4 | 115.6 |
| 111 | Sugar beet Crop | | | 21.4 | | 21.4 |
| 112 | Sugar cane-Released | 13429.8 | 179.8 | 1814.4 | 31.7 | 15455.8 |
| 113 | Sugar cane-Procured | 28538.3 | 17804.4 | 3683.8 | 0 | 50026.6 |
| 114 | Fodders Green | 131160 | 3691.1 | 2122 | 1109.5 | 138083 |
| 115 | Guarseed | 44 | 75.2 | 1.1 | 4.3 | 124.6 |
| 116 | Fodders Dry- Wheat | 19526.7 | 3834.6 | 1400.5 | 871.3 | 25633 |
| 117 | Fodders Dry-Maize-Stalks | 6586.8 | 5.4 | 1309.5 | 4.6 | 7906.4 |
| 118 | Fodders Dry-Maize-Piths | 2195.6 | 1.8 | 436.5 | 1.5 | 2635.5 |
| 119 | Rice-Straw | 4902.8 | 3601.9 | 215.3 | 801.8 | 9521.7 |
| 120 | FD-Barley | 20.1 | 5.2 | 20.3 | 15 | 60.5 |
| 121 | FD-Bajra | 815.7 | 69.6 | 7.5 | 5.8 | 898.6 |
| 122 | FD-Jowar(Sorghum) | 466.6 | 45.3 | 17.9 | 63.9 | 593.7 |
| 123 | FD-Gram | 227.2 | 14.4 | 14.1 | 30.5 | 286.2 |
| 124 | Fodders Dry-S.cane | 8393.6 | 3596.9 | 1099.6 | 6.3 | 13096.5 |
| 125 | Fodders Dry-Sesamum | 49.6 | 6.4 | 0.1 | 7.4 | 63.6 |
| 126 | Fodders Dry-R&Mustard | 117.6 | 52.7 | 6 | 8.8 | 185 |
| 127 | Cotton-Upland (Phutti) | 3216.6 | 1772.2 | 0.6 | 49.8 | 5039.2 |
| 128 | Cotton-Desi (Phutti) | 20 | 1.3 | 0 | 0 | 21.3 |
| 129 | Hemp | 0 | | 0 | | 0 |
| 130 | Cotton Sticks | 12946.6 | 7094 | 2.5 | 199.2 | 20242.2 |

Harvest Prices of Crops (Rs/ M.Ton)

Annexure III

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------|---------|--------|-------|--------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 1 | Wheat-Released | 31068 | 31745 | 30768 | 35127 | 32177 |
| 2 | Wheat-Procured | 32500 | 32500 | 32500 | 32500 | 32500 |
| 3 | Maize | 26525 | 30096 | 26015 | 32646 | 28821 |
| 4 | Rice-Basmati | 37248 | 39208 | 45089 | 58812 | 45089 |
| 5 | Rice-Irri | 24505 | 17644 | 48275 | 24505 | 28732 |
| 6 | Rice-Others | 24505 | 17644 | 48275 | 24505 | 28732 |
| 7 | Barley | 31911 | 34487 | 33507 | 35103 | 33752 |
| 8 | Bajra | 28487 | 35873 | 29894 | 25322 | 29894 |
| 9 | Jowar(Sorghum) | 39683 | 67299 | 28689 | 45224 | 45224 |
| 11 | Gram | 88675 | 91230 | 84083 | 86606 | 87648 |
| 12 | Mash | 90810 | 105018 | 80930 | 146563 | 105830 |
| 13 | Masoor | 85765 | 87066 | 61784 | 116584 | 87800 |
| 14 | Moong | 74000 | 85271 | 70041 | 129908 | 89805 |
| 15 | Mattar | 73039 | 70525 | 91651 | 118964 | 88545 |
| 16 | Other K. Pulses | 68047 | 95208 | 50870 | 137998 | 88031 |
| 17 | Other R. Pulses | 38611 | 54864 | 46866 | | 46780 |
| 18 | Potato | 17126 | 20846 | 24832 | 20580 | 20846 |
| 19 | Sweet Potato | 13015 | 8563 | | | 10789 |
| 20 | Peas & Garden Peas | 38604 | 44052 | 70438 | 41328 | 48605 |
| 21 | Beans | 19554 | 24220 | | 38511 | 27428 |
| 22 | Tinda | 29331 | 20443 | 38663 | 29479 | 29479 |
| 23 | Lady finger | 27553 | 40885 | 36441 | 40885 | 36441 |
| 24 | Bitter Gourd | 39996 | 22887 | 32886 | 32886 | 32164 |
| 25 | Bottle Gourd | 15110 | 19332 | 17221 | 18098 | 17440 |
| 26 | Brinjal (eggplant) | 16887 | 16517 | 16665 | 15999 | 16517 |
| 27 | Arum | 13332 | 17056 | 17056 | | 15815 |
| 28 | Luffa | 13332 | 20443 | | 16887 | 16887 |
| 29 | Pursilano | | 52964 | | | 52964 |
| 30 | Field vetch | | 48027 | | | 48027 |
| 31 | Cauliflower | 14221 | 19076 | 14951 | 11555 | 14951 |
| 32 | Cabbage | 19221 | 20665 | 19221 | 17776 | 19221 |
| 33 | Spinach | 9888 | 17776 | 13832 | 13832 | 13832 |
| 34 | Knol Kohl | | 19301 | | | 19301 |
| 35 | Fenu Greek | | 86437 | | | 86437 |
| 36 | Lettuce | | 63737 | | | 63737 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------------|---------|--------|--------|--------|----------|
| | | Punjab | Sindh | KP | Balo. | Pakistan |
| 37 | Other K. Vegetables | 23319 | 25796 | 28273 | 26841 | 26057 |
| 38 | Other R. Vegetables | 21331 | 29597 | 37863 | 24664 | 28364 |
| 39 | Onion | 21375 | 46440 | 24442 | 29257 | 30379 |
| 40 | Carrot | 14554 | 15776 | 13332 | 9039 | 13175 |
| 41 | Radish | 16887 | 13777 | 17332 | 7110 | 13777 |
| 42 | Lotus roots | | 50271 | | | 50271 |
| 43 | Sugar beet Vegetable | 14812 | 14812 | | 13473 | 14366 |
| 44 | Turnip | 12139 | 13017 | 12139 | 11261 | 12139 |
| 45 | Mango | 40194 | 38876 | 37279 | 44429 | 40194 |
| 46 | Banana | 29733 | 31528 | 77884 | 53835 | 48245 |
| 47 | Guava | 37594 | 37071 | 29904 | 43716 | 37071 |
| 48 | Dates | 59763 | 48274 | 79204 | 51811 | 59763 |
| 49 | Figs | | | 324735 | 181340 | 253037 |
| 50 | Coconut | | 111923 | | 182959 | 147441 |
| 51 | Orange | 22204 | 43879 | | | 33042 |
| 52 | Kino | 17943 | 35458 | | | 26700 |
| 53 | Lemon | 26914 | 41439 | | | 34176 |
| 54 | Grape fruit | 19737 | 41012 | | | 30374 |
| 55 | Mandrine | 14130 | | | | 14130 |
| 56 | Musambi | 17943 | 35458 | | | 26700 |
| 57 | Sure lime | 26914 | 58506 | | | 42710 |
| 58 | Sweet lime | 18391 | 32799 | | | 25595 |
| 59 | Soure orange | 19737 | 39004 | | | 29370 |
| 60 | Other Citrus | 15700 | | 26065 | 36430 | 26065 |
| 61 | Grapes | | 71469 | 73603 | 79460 | 74844 |
| 62 | Water melon | 17373 | 22001 | 15593 | 14525 | 17373 |
| 63 | Garma | | | | 51811 | 51811 |
| 64 | Sarda | | | | 51811 | 51811 |
| 65 | Pumpkin & Melon Pumpkin | 24778 | 24564 | 24351 | 24564 | 24564 |
| 66 | Long Melon | | 34907 | | | 34907 |
| 67 | Tomatoes | 32361 | 34123 | 34123 | 35885 | 34123 |
| 68 | Cucumber | 17943 | 17943 | | 25632 | 20506 |
| 69 | Apple | 46046 | 48433 | 53208 | 46046 | 48433 |
| 70 | Plums | 69207 | | 67712 | 68460 | 68460 |
| 71 | Peaches | 53768 | | 82031 | 73479 | 69759 |
| 72 | Pomegranates | 75081 | | 66430 | 83732 | 75081 |
| 73 | Appricots | 59467 | | 101034 | 105733 | 88745 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------|---------|--------|--------|--------|----------|
| | | Punjab | Sindh | KP | Balo. | Pakistan |
| 74 | Pear | 33698 | | 33322 | 53835 | 40285 |
| 75 | Jaman | 37167 | 45747 | | | 41457 |
| 76 | Litchi | 91678 | | | | 91678 |
| 77 | Phalsa | 62372 | 42720 | | | 52546 |
| 78 | Chikoo | | 62030 | | 80146 | 71088 |
| 79 | Papaya | | 22215 | | 53026 | 37620 |
| 80 | Cherry | | | | 92276 | 92276 |
| 81 | Ber | 41131 | 32040 | | | 36586 |
| 82 | Loquat | 51265 | | 29904 | 40073 | 40414 |
| 83 | Mulbery | 42866 | 55569 | 49217 | | 49217 |
| 84 | Percimen | | | 112865 | | 112865 |
| 85 | Other K. Fruits | 42720 | 32307 | 37514 | 58288 | 42707 |
| 86 | Other R. Fruits | 23043 | 25329 | 55859 | 40478 | 36177 |
| 87 | Almond | 542838 | | 479563 | 606114 | 542838 |
| 88 | Walnuts | 191492 | | 244222 | | 217857 |
| 89 | Pistachio | | | | 622423 | 622423 |
| 90 | Soya Beans | | 95905 | 70117 | | 83011 |
| 91 | Groundnuts | 83437 | 93987 | 88712 | | 88712 |
| 92 | Sunflower | 39916 | 52747 | 38138 | 34727 | 41382 |
| 93 | Sesamum | 88386 | 86010 | 83407 | 83407 | 85303 |
| 94 | Safflower | | 53670 | | | 53670 |
| 95 | Rape & Mustard | 73180 | 51083 | 39679 | 39059 | 50750 |
| 96 | Canola | 66527 | 79134 | 46200 | 47130 | 59748 |
| 97 | Castro seed | 70319 | 62270 | | 66294 | 66294 |
| 98 | Lin seed | 139707 | 108107 | | | 123907 |
| 99 | Flowers & F. Buds | | | | | |
| 100 | Corriander | 71522 | 85231 | 104709 | 87154 | 87154 |
| 101 | Cumin seeds | | 0 | | 283705 | 141852 |
| 102 | Dil seed | | 87734 | | | 87734 |
| 103 | Chillies | 78674 | 113840 | 114734 | 102416 | 102416 |
| 104 | Ajwan | | 109667 | | | 109667 |
| 105 | Fennel (Sounf) | | 66897 | | | 66897 |
| 106 | Turmeric | 101073 | 80880 | 101073 | | 94342 |
| 107 | Garlic | 115628 | 103807 | 121886 | 73906 | 103807 |
| 108 | Ginger | | 148599 | | | 148599 |
| 109 | Other spices | | 82251 | | | 82251 |
| 110 | Tobaccoo | 114793 | 133314 | 151836 | 127441 | 131846 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------------|---------|-------|-------|-------|----------|
| | | Punjab | Sindh | KP | Balo. | Pakistan |
| 111 | Sugar beet Crop | | | 4834 | | 4834 |
| 112 | Sugar cane-Released | 5247 | 5247 | 5247 | 11544 | 6821 |
| 113 | Sugar cane-Procured | 4500 | 4300 | 4500 | 0 | 3325 |
| 114 | Fodders Green | 3250 | 7396 | 7986 | 10952 | 7396 |
| 115 | Guarseed | 34479 | 61606 | 48043 | 48043 | 48043 |
| 116 | Fodders Dry-Wheat | 7015 | 5011 | 9822 | 7015 | 7216 |
| 117 | Fodders Dry-Maize-Stalks | 6325 | 4846 | 7958 | 6376 | 6376 |
| 118 | Fodders Dry-Maize-Piths | 4970 | 4999 | 7294 | 5754 | 5754 |
| 119 | Rice-Straw | 2941 | 3293 | 3117 | 2697 | 3012 |
| 120 | FD-Barley | 3191 | 2597 | 2894 | 3478 | 3040 |
| 121 | FD-Bajra | 5275 | 3429 | 4352 | 4352 | 4352 |
| 122 | FD-Jowar(Sorghum) | 5363 | 3486 | 6167 | 5005 | 5005 |
| 123 | FD-Gram | 5886 | 2737 | 4311 | 4835 | 4442 |
| 124 | Fodders Dry-S.cane | 3358 | 3043 | 4198 | 4198 | 3699 |
| 125 | Fodders Dry-Sesamum | 5702 | 4277 | 4469 | 4469 | 4729 |
| 126 | Fodders Dry-R&Mustard | 3560 | 3560 | 4469 | 4469 | 4015 |
| 127 | Cotton-Upland (Phutti) | 66564 | 58446 | 66564 | 61693 | 63317 |
| 128 | Cotton-Desi (Phutti) | 56823 | 56011 | | | 56417 |
| 129 | Hemp | 27600 | | 27600 | | 27600 |
| 130 | Cotton Sticks | 2273 | 3555 | 2273 | 2273 | 2594 |

Output of Crops (Million Rs.)**Annexure IV**

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------|---------|-------|-------|-------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 1 | Wheat-Released | 460392 | 86968 | 42997 | 30606 | 620963 |
| 2 | Wheat-Procured | 153010 | 35588 | 98 | 0 | 188695 |
| 3 | Maize | 116477 | 109 | 22712 | 101 | 139399 |
| 4 | Rice-Basmati | 84895 | 3327 | 1852 | 5959 | 96034 |
| 5 | Rice-Irri | 11291 | 18431 | 2713 | 11484 | 43919 |
| 6 | Rice-Others | 18674 | 25465 | 2726 | 67 | 46932 |
| 7 | Barley | 641 | 178 | 679 | 527 | 2026 |
| 8 | Bajra | 7746 | 832 | 75 | 49 | 8702 |
| 9 | Jowar(Sorghum) | 5004 | 825 | 139 | 781 | 6748 |
| 11 | Gram | 20147 | 1313 | 1183 | 2642 | 25284 |
| 12 | Mash | 447 | 11 | 70 | 381 | 908 |
| 13 | Masoor | 347 | 76 | 110 | 128 | 661 |
| 14 | Moong | 6946 | 80 | 338 | 319 | 7684 |
| 15 | Mattar | 736 | 921 | 101 | 655 | 2413 |
| 16 | Other K. Pulses | 48 | 9 | 39 | 219 | 315 |
| 17 | Other R. Pulses | 5 | 2 | 3 | 0 | 10 |
| 18 | Potato | 65267 | 101 | 3299 | 593 | 69260 |
| 19 | Sweet Potato | 111 | 34 | 0 | 0 | 145 |
| 20 | Peas & Garden Peas | 4334 | 368 | 881 | 508 | 6090 |
| 21 | Beans | 20 | 31 | 0 | 206 | 257 |
| 22 | Tinda | 1962 | 266 | 492 | 157 | 2877 |
| 23 | Lady finger | 1848 | 777 | 613 | 659 | 3896 |
| 24 | Bitter Gourd | 1817 | 50 | 397 | 173 | 2438 |
| 25 | Bottle Gourd | 669 | 24 | 79 | 100 | 872 |
| 26 | Brinjal (eggplant) | 916 | 136 | 152 | 196 | 1400 |
| 27 | Arum | 142 | 15 | 306 | 0 | 463 |
| 28 | Luffa | 180 | 31 | 0 | 39 | 250 |
| 29 | Pursilano | 0 | 9 | 0 | 0 | 9 |
| 30 | Field vetch | 0 | 84 | 0 | 0 | 84 |
| 31 | Cauliflower | 2093 | 387 | 250 | 377 | 3106 |
| 32 | Cabbage | 969 | 252 | 81 | 186 | 1489 |
| 33 | Spinach | 523 | 185 | 264 | 341 | 1313 |
| 34 | Knol Kohl | 0 | 8 | 0 | 0 | 8 |
| 35 | Fenu Greek | 0 | 41 | 0 | 0 | 41 |
| 36 | Lettuce | 0 | 28 | 0 | 0 | 28 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------------|---------|-------|------|-------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 37 | Other K. Vegetables | 4302 | 8 | 1683 | 83 | 6077 |
| 38 | Other R. Vegetables | 10926 | 18 | 1326 | 127 | 12396 |
| 39 | Onion | 7015 | 32149 | 4921 | 15055 | 59140 |
| 40 | Carrot | 2192 | 276 | 104 | 481 | 3053 |
| 41 | Radish | 1973 | 91 | 224 | 172 | 2460 |
| 42 | Lotus roots | 0 | 10 | 0 | 0 | 10 |
| 43 | Sugar beet Vegetable | 1573 | 64 | 0 | 15 | 1652 |
| 44 | Turnip | 2137 | 257 | 612 | 181 | 3187 |
| 45 | Mango | 49357 | 15713 | 115 | 55 | 65240 |
| 46 | Banana | 41 | 3543 | 1008 | 426 | 5019 |
| 47 | Guava | 15588 | 2356 | 1250 | 112 | 19307 |
| 48 | Dates | 2566 | 9711 | 976 | 10950 | 24202 |
| 49 | Figs | 0 | 0 | 117 | 11 | 128 |
| 50 | Coconut | 0 | 144 | 0 | 1601 | 1745 |
| 51 | Orange | 1733 | 422 | 0 | 0 | 2155 |
| 52 | Kino | 37066 | 17 | 0 | 0 | 37083 |
| 53 | Lemon | 704 | 720 | 0 | 0 | 1423 |
| 54 | Grape fruit | 47 | 63 | 0 | 0 | 110 |
| 55 | Mandrine | 117 | 0 | 0 | 0 | 117 |
| 56 | Musambi | 1000 | 16 | 0 | 0 | 1016 |
| 57 | Sure lime | 95 | 0 | 0 | 0 | 96 |
| 58 | Sweet lime | 504 | 2 | 0 | 0 | 506 |
| 59 | Soure orange | 16 | 0 | 0 | 0 | 16 |
| 60 | Other Citrus | 123 | 0 | 826 | 248 | 1197 |
| 61 | Grapes | 0 | 3 | 43 | 5183 | 5229 |
| 62 | Water melon | 5983 | 924 | 760 | 1393 | 9060 |
| 63 | Garma | 0 | 0 | 0 | 167 | 167 |
| 64 | Sarda | 0 | 0 | 0 | 152 | 152 |
| 65 | Pumpkin & Melon Pumpkin | 698 | 13 | 170 | 142 | 1024 |
| 66 | Long Melon | 0 | 25 | 0 | 0 | 25 |
| 67 | Tomatoes | 3438 | 7047 | 4435 | 5182 | 20101 |
| 68 | Cucumber | 806 | 47 | 0 | 174 | 1026 |
| 69 | Apple | 161 | 0 | 4753 | 24296 | 29210 |
| 70 | Plums | 13 | 0 | 1722 | 1987 | 3721 |
| 71 | Peaches | 11 | 0 | 4266 | 1363 | 5639 |
| 72 | Pomegranates | 702 | 0 | 115 | 2432 | 3249 |
| 73 | Appricots | 15 | 0 | 1089 | 17118 | 18222 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------|---------|-------|-------|-------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 74 | Pear | 3 | 0 | 536 | 21 | 560 |
| 75 | Jaman | 182 | 26 | 0 | 0 | 208 |
| 76 | Litchi | 161 | 0 | 0 | 0 | 161 |
| 77 | Phalsa | 136 | 71 | 0 | 0 | 207 |
| 78 | Chikoo | 0 | 224 | 0 | 254 | 478 |
| 79 | Papaya | 0 | 58 | 0 | 190 | 248 |
| 80 | Cherry | 0 | 0 | 0 | 197 | 197 |
| 81 | Ber | 354 | 503 | 0 | 0 | 858 |
| 82 | Loquat | 213 | 0 | 169 | 3 | 386 |
| 83 | Mulbery | 40 | 5 | 54 | 0 | 100 |
| 84 | Percimen | 0 | 0 | 3034 | 0 | 3034 |
| 85 | Other K. Fruits | 623 | 2 | 140 | 143 | 908 |
| 86 | Other R. Fruits | 231 | 44 | 695 | 99 | 1068 |
| 87 | Almond | 5 | 0 | 479 | 12391 | 12875 |
| 88 | Walnuts | 0 | 0 | 3358 | 0 | 3358 |
| 89 | Pistachio | 0 | 0 | 0 | 439 | 439 |
| 90 | Soya Beans | 0 | 2 | 2 | 0 | 3 |
| 91 | Groundnuts | 6722 | 114 | 877 | 0 | 7712 |
| 92 | Sunflower | 1240 | 2855 | 15 | 16 | 4127 |
| 93 | Sesamum | 2194 | 276 | 4 | 311 | 2784 |
| 94 | Safflower | 0 | 1 | 0 | 0 | 1 |
| 95 | Rape & Mustard | 8604 | 2691 | 237 | 343 | 11875 |
| 96 | Canola | 614 | 272 | 13 | 106 | 1005 |
| 97 | Castro seed | 1 | 15 | 0 | 106 | 122 |
| 98 | Lin seed | 71 | 182 | 0 | 0 | 253 |
| 99 | Flowers & F. Buds | 6269 | 3134 | 836 | 209 | 10448 |
| 100 | Corriander | 23 | 128 | 11 | 87 | 249 |
| 101 | Cumin seeds | 0 | 0 | 0 | 705 | 705 |
| 102 | Dil seed | 0 | 12 | 0 | 0 | 12 |
| 103 | Chillies | 714 | 14403 | 51 | 627 | 15795 |
| 104 | Ajwan | 0 | 24 | 0 | 0 | 24 |
| 105 | Fennel (Sounf) | 0 | 36 | 0 | 0 | 36 |
| 106 | Turmeric | 7057 | 22 | 314 | 0 | 7394 |
| 107 | Garlic | 2792 | 701 | 3925 | 578 | 7996 |
| 108 | Ginger | 0 | 19 | 0 | 0 | 19 |
| 109 | Other spices | 0 | 19 | 0 | 0 | 19 |
| 110 | Tobaccoo | 3676 | 30 | 12434 | 183 | 16323 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------------|---------|--------|-------|-------|----------|
| | | Punjab | Sindh | KPK | Balo. | Pakistan |
| 111 | Sugar beet Crop | 0 | 0 | 104 | 0 | 104 |
| 112 | Sugar cane-Released | 70468 | 944 | 9521 | 366 | 81298 |
| 113 | Sugar cane-Procured | 128423 | 76559 | 16577 | 0 | 221559 |
| 114 | Fodders Green | 426270 | 27300 | 16947 | 12152 | 482668 |
| 115 | Guarseed | 1516 | 4634 | 51 | 207 | 6408 |
| 116 | Fodders Dry-Wheat | 136988 | 19215 | 13755 | 6113 | 176071 |
| 117 | Fodders Dry-Maize-Stalks | 41663 | 26 | 10421 | 30 | 52139 |
| 118 | Fodders Dry-Maize-Piths | 10912 | 9 | 3184 | 9 | 14114 |
| 119 | Rice-Straw | 14417 | 11863 | 671 | 2163 | 29114 |
| 120 | FD-Barley | 64 | 13 | 59 | 52 | 188 |
| 121 | FD-Bajra | 4303 | 239 | 33 | 25 | 4600 |
| 122 | FD-Jowar(Sorghum) | 2502 | 158 | 110 | 320 | 3090 |
| 123 | FD-Gram | 1337 | 39 | 61 | 147 | 1585 |
| 124 | Fodders Dry-S.cane | 28187 | 10946 | 4616 | 27 | 43776 |
| 125 | Fodders Dry-Sesamum | 283 | 27 | 0 | 33 | 344 |
| 126 | Fodders Dry-R&Mustard | 419 | 188 | 27 | 39 | 672 |
| 127 | Cotton-Upland (Phutti) | 214110 | 103579 | 42 | 3072 | 320802 |
| 128 | Cotton-Desi (Phutti) | 1139 | 72 | 0 | 0 | 1211 |
| 129 | Hemp | 1 | 0 | 0 | 0 | 1 |
| 130 | Cotton Sticks | 29426 | 25223 | 6 | 453 | 55107 |

Seeds of Crops
Annexure V

| S.No | Crop/Item | Average Use of Seed (kg/Acre) | | | | | Average Price of Seed (Rs/Kg) | | | | |
|------|--------------------|-------------------------------|-------|-----|---------|----------|-------------------------------|-------|------|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 1 | Wheat-Released | 50 | 54 | 49 | 51 | 51 | 40 | 42 | 38 | 34 | 38 |
| 2 | Wheat-Procured | 50 | 54 | 49 | 51 | 51 | 59 | 59 | | | 59 |
| 3 | Maize | 19 | 21 | 21 | 20.3 | 20.3 | 62 | 56 | 52 | 39 | 52 |
| 4 | Rice-Basmati | 6 | 7 | 5 | 5 | 5.8 | 77 | 77 | 77 | 77 | 77 |
| 5 | Rice-Irri | 5 | 7 | 7 | 7 | 6.5 | 49 | 49 | 49 | 49 | 49 |
| 6 | Rice-Others | 7 | 7 | 7 | 7 | 7 | 49 | 49 | 49 | 49 | 49 |
| 7 | Barley | 40 | 35 | 46 | 76 | 49.3 | 57 | 50 | 38 | 26 | 43 |
| 8 | Bajra | 7 | 5 | 7 | 8 | 6.8 | 208 | 36 | 64 | 24 | 83 |
| 9 | Jowar(Sorghum) | 15 | 6 | 23 | 59 | 25.8 | 61 | 58 | 96 | 21 | 59 |
| 11 | Gram | 25 | 20 | 26 | 77 | 37 | 112 | 79 | 166 | 101 | 115 |
| 12 | Mash | 10 | 11 | 15 | 11 | 11.8 | 102 | 136 | 193 | 185 | 154 |
| 13 | Masoor | 7 | 11 | 11 | 11 | 10 | 109 | 139 | 139 | 139 | 132 |
| 14 | Moong | 10.3 | 10 | 10 | 10 | 10.1 | 98 | 152 | 127 | 127 | 126 |
| 15 | Mattar | 30 | 25 | 8 | 28 | 22.8 | 218 | 232 | 232 | 248 | 232 |
| 16 | Other K. Pulses | 11 | 11 | 7 | 11 | 10 | 129 | 152 | 472 | 139 | 223 |
| 17 | Other R. Pulses | 11 | 5 | 11 | 11 | 9.5 | 129 | 48 | 142 | 0 | 80 |
| 18 | Potato | 1354 | 867 | 570 | 880 | 917.8 | 35 | 16 | 32 | 325 | 102 |
| 19 | Sweet Potato | 281 | 40 | | | 160.5 | 48 | 24 | | | 36 |
| 20 | Peas & Garden Peas | 30 | 22 | 16 | 10 | 19.5 | 222 | 134 | 612 | 189 | 289 |
| 21 | Beans | 7 | 2 | 12 | 8 | 7.3 | 160 | 70 | 0 | 105 | 84 |
| 22 | Tinda | 2 | 2 | 1 | 2 | 1.8 | 4362 | 923 | 3337 | 537 | 2290 |
| 23 | Lady finger | 9 | 18 | 7 | 9 | 10.8 | 483 | 763 | 651 | 416 | 578 |
| 24 | Bitter Gourd | 2 | 2 | 5 | 3 | 3 | 755 | 1046 | 1572 | 1583 | 1239 |
| 25 | Bottle Gourd | 1 | 2 | 6 | 2 | 2.8 | 2135 | 1132 | 354 | 335 | 989 |
| 26 | Brinjal (eggplant) | 0.3 | 0.3 | 5 | 3 | 2.2 | 3775 | 643 | 538 | 212 | 1292 |
| 27 | Arum | 480 | 800 | 100 | | 460 | 19 | 27 | 57 | 0 | 26 |
| 28 | Luffa | 2 | 2 | 1 | | 1.7 | 1408 | 1276 | 2273 | 99 | 1264 |

| S.No | Crop/Item | Average Use of Seed (kg/Acre) | | | | | Average Price of Seed (Rs/Kg) | | | | |
|------|----------------------|-------------------------------|-------|-----|---------|----------|-------------------------------|-------|------|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 29 | Pursilano | | 1 | | | 1 | | 236 | | | 236 |
| 30 | Field vetch | | 5 | | | 5 | 133 | 54 | 120 | | 102 |
| 31 | Cauliflower | 1 | 1 | 5 | 3 | 2.5 | 755 | 1610 | 767 | 248 | 845 |
| 32 | Cabbage | 1 | 1 | 1 | 3 | 1.5 | 849 | 1730 | 1817 | 330 | 1182 |
| 33 | Spinach | 8 | 10 | 8 | 10 | 9 | 210 | 151 | 404 | 97 | 215 |
| 34 | Knol Kohl | | 1 | | | 1 | | 1310 | | | 1310 |
| 35 | Fenu Greek | 40 | 2 | | | 21 | 196 | 283 | | | 240 |
| 36 | Lettuce | | 0.2 | | | 0.2 | | 671 | | | 671 |
| 37 | Other K. Vegetables | 4 | 4 | 4 | 4 | 4 | 542 | 547 | 564 | 550 | 551 |
| 38 | Other R. Vegetables | 7 | 7 | 7 | 7 | 7 | 711 | 725 | 725 | 725 | 721 |
| 39 | Onion | 4 | 6 | 6 | 6 | 5.5 | 1416 | 952 | 861 | 409 | 909 |
| 40 | Carrot | 7 | 11 | 8 | 11 | 9.3 | 629 | 101 | 4530 | 435 | 1424 |
| 41 | Radish | 2 | 4 | 3 | 17 | 6.5 | 2162 | 644 | 590 | 388 | 946 |
| 42 | Lotus roots | | 6 | | | 6 | | 81 | | | 81 |
| 43 | Sugar beet Vegetable | | 2 | | 2 | 2 | | 156 | | | 156 |
| 44 | Turnip | 2 | 1 | 2 | 1 | 1.5 | 1403 | 708 | 708 | 708 | 882 |
| 45 | Mango | | | | | | | | | | |
| 46 | Banana | | | | | | | | | | |
| 47 | Guava | | | | | | | | | | |
| 48 | Dates | | | | | | | | | | |
| 49 | Figs | | | | | | | | | | |
| 50 | Coconut | | | | | | | | | | |
| 51 | Orange | | | | | | | | | | |
| 52 | Kino | | | | | | | | | | |
| 53 | Lemon | | | | | | | | | | |
| 54 | Grape fruit | | | | | | | | | | |
| 55 | Mandrine | | | | | | | | | | |
| 56 | Musambi | | | | | | | | | | |

| S.No | Crop/Item | Average Use of Seed (kg/Acre) | | | | | Average Price of Seed (Rs/Kg) | | | | |
|------|-------------------------|-------------------------------|-------|-----|---------|----------|-------------------------------|-------|-------|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 57 | Sure lime | | | | | | | | | | |
| 58 | Sweet lime | | | | | | | | | | |
| 59 | Soure orange | | | | | | | | | | |
| 60 | Other Citrus | | | | | | | | | | |
| 61 | Grapes | | | | | | | | | | |
| 62 | Water melon | 1 | 3 | 2 | 2 | 2 | 24166 | 23016 | 11325 | 12740 | 17812 |
| 63 | Garma | | | | 3 | 3 | | | | 201 | 201 |
| 64 | Sarda | | | | 3 | 3 | | | | 201 | 201 |
| 65 | Pumpkin & Melon Pumpkin | 3 | 0.1 | 1 | 2 | 1.5 | 2123 | 891 | 472 | 231 | 929 |
| 66 | Long Melon | | 1 | | | | | 939 | | | 939 |
| 67 | Tomatoes | 0.3 | 0.3 | 0.3 | 1 | 0.4 | 22166 | 4816 | 12049 | 6661 | 11423 |
| 68 | Cucumber | 0.4 | 0.3 | 3 | 2 | 1.4 | 832 | 566 | 1075 | 3220 | 1423 |
| 69 | Apple | | | | | | | | | | |
| 70 | Plums | | | | | | | | | | |
| 71 | Peaches | | | | | | | | | | |
| 72 | Pomegranates | | | | | | | | | | |
| 73 | Appricots | | | | | | | | | | |
| 74 | Pear | | | | | | | | | | |
| 75 | Jaman | | | | | | | | | | |
| 76 | Litchi | | | | | | | | | | |
| 77 | Phalsa | | | | | | | | | | |
| 78 | Chikoo | | | | | | | | | | |
| 79 | Papaya | | | | | | | | | | |
| 80 | Cherry | | | | | | | | | | |
| 81 | Ber | | | | | | | | | | |
| 82 | Loquat | | | | | | | | | | |
| 83 | Mulbery | | | | | | | | | | |
| 84 | Percimen | | | | | | | | | | |

| S.No | Crop/Item | Average Use of Seed (kg/Acre) | | | | | Average Price of Seed (Rs/Kg) | | | | |
|------|---------------------|-------------------------------|-------|------|---------|----------|-------------------------------|-------|-----|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 85 | Other K. Fruits | | | | | | | | | | |
| 86 | Other R. Fruits | | | | | | | | | | |
| 87 | Almond | | | | | | | | | | |
| 88 | Walnuts | | | | | | | | | | |
| 89 | Pistachio | | | | | | | | | | |
| 90 | Soya Beans | | 40 | 40 | | 40 | | 944 | 77 | | 510 |
| 91 | Groundnuts | 29 | 12 | 73 | | 38 | 199 | 178 | 196 | | 191 |
| 92 | Sunflower | 3 | 2 | 3 | 3 | 2.8 | 665 | 3190 | | | 1928 |
| 93 | Sesamum | 4 | 3 | 1 | 1 | 2.3 | 207 | 225 | 163 | 231 | 206 |
| 94 | Safflower | | 5 | | | 5 | | 64 | | | 64 |
| 95 | Rape & Mustard | 2 | 2 | 6 | 2 | 3 | 100 | 97 | 283 | 103 | 146 |
| 96 | Canola | 4 | 2 | 2 | 2 | 2.5 | 283 | 115 | 87 | 110 | 149 |
| 97 | Castro seed | 5 | 5 | | 5 | 5 | 51 | 51 | | 51 | 51 |
| 98 | Lin seed | 7 | 7 | | | 7 | 95 | 95 | | | 95 |
| 99 | Flowers & F. Buds | | | | | | | | | | |
| 100 | Corriander | 8 | 10 | 8 | 8 | 8.5 | 294 | 94 | 189 | 238 | 204 |
| 101 | Cumin seeds | | 14 | | 14 | 14 | | 170 | | 565 | 368 |
| 102 | Dil seed | | 5 | | | 5 | | 396 | | | 396 |
| 103 | Chillies | 1 | 1 | 1 | 2 | 1.3 | 1627 | 4930 | 795 | 330 | 1921 |
| 104 | Ajwan | | 3 | | | 3 | | 247 | | | 247 |
| 105 | Fennel (Sounf) | | 5 | | | 5 | | 178 | | | 178 |
| 106 | Turmeric | 613 | 640 | 640 | | 631 | 21 | 208 | | | 114 |
| 107 | Garlic | 244 | 200 | 136 | 102 | 170.5 | 198 | 236 | 158 | 233 | 206 |
| 108 | Ginger | | 160 | 12 | | 86 | | 346 | 283 | | 315 |
| 109 | Other spices | | 3 | | | 3 | | 594 | | | 594 |
| 110 | Tobaccoo | 3 | 118 | 21 | 0.3 | 35.6 | 35 | 132 | 141 | 113 | 105 |
| 111 | Sugar beet Crop | 2 | | 2 | | 2 | 11 | | 174 | | 93 |
| 112 | Sugar cane-Released | 2421 | 3850 | 2492 | 2921 | 2921 | 5 | 6 | 6 | 6 | 5 |

| S.No | Crop/Item | Average Use of Seed (kg/Acre) | | | | | Average Price of Seed (Rs/Kg) | | | | |
|------|--------------------------|-------------------------------|-------|------|---------|----------|-------------------------------|-------|-----|---------|----------|
| | | Punjab | Sindh | KPK | Baloch. | Pakistan | Punjab | Sindh | KPK | Baloch. | Pakistan |
| 113 | Sugar cane-Procured | 2421 | 3850 | 2492 | 2921 | 2921 | 5 | 6 | 6 | 6 | 5 |
| 114 | Fodders Green | 8 | 9 | 30 | 12 | 14.8 | 307 | 245 | 48 | 195 | 199 |
| 115 | Guarseed | 11 | 7 | 10 | 10 | 9.5 | 40 | 38 | 144 | 144 | 91 |
| 116 | Fodders Dry-Wheat | | | | | | | | | | |
| 117 | Fodders Dry-Maize-Stalks | | | | | | | | | | |
| 118 | Fodders Dry-Maize-Piths | | | | | | | | | | |
| 119 | Rice-Straw | | | | | | | | | | |
| 120 | FD-Barley | | | | | | | | | | |
| 121 | FD-Bajra | | | | | | | | | | |
| 122 | FD-Jowar(Sorghum) | | | | | | | | | | |
| 123 | FD-Gram | | | | | | | | | | |
| 124 | Fodders Dry-S.cane | | | | | | | | | | |
| 125 | Fodders Dry-Sesamum | | | | | | | | | | |
| 126 | Fodders Dry-R&Mustard | | | | | | | | | | |
| 127 | Cotton-Upland (Phutti) | 9 | 9 | 9 | 9 | 9 | 260 | 202 | 214 | 266 | 236 |
| 128 | Cotton-Desi (Phutti) | 9 | 7 | | | 8 | 175 | 243 | | 116 | 178 |
| 129 | Hemp | 13 | | 13 | | 13 | 83 | | 83 | | 83 |
| 130 | Cotton Sticks | | | | | | | | | | |

Value of Seed of Crops (Million Rs)
Annexure VI

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------|---------|--------|--------|-------------|----------|
| | | Punjab | Sindh | KPK | Balochistan | Pakistan |
| 1 | Wheat-Released | 23720.5 | 4435.4 | 3217.1 | 1523.2 | 32896.2 |
| 2 | Wheat-Procured | 15028.7 | 2775.8 | 0 | 0 | 17804.6 |
| 3 | Maize | 2096.7 | 10.6 | 1270.3 | 5.7 | 3383.2 |
| 4 | Rice-Basmati | 1436 | 69.2 | 15 | 32.4 | 1552.6 |
| 5 | Rice-Irri | 113.1 | 331 | 19.8 | 118.4 | 582.2 |
| 6 | Rice-Others | 290.4 | 236.2 | 21.8 | 1.2 | 549.7 |
| 7 | Barley | 129.3 | 35.6 | 99.8 | 56.5 | 321.2 |
| 8 | Bajra | 1557.6 | 20 | 4.4 | 1.5 | 1583.5 |
| 9 | Jowar(Sorghum) | 525.5 | 11.2 | 45.4 | 63.7 | 645.8 |
| 11 | Gram | 5931.4 | 57.8 | 351.5 | 708.3 | 7049.1 |
| 12 | Mash | 38.6 | 0.9 | 5.3 | 14.4 | 59.2 |
| 13 | Masoor | 21.3 | 5.3 | 13.2 | 6.5 | 46.4 |
| 14 | Moong | 333.1 | 8.4 | 23.3 | 11.1 | 375.8 |
| 15 | Mattar | 210 | 303.2 | 5.7 | 169.9 | 688.9 |
| 16 | Other K. Pulses | 5 | 1.1 | 10.9 | 4.9 | 21.9 |
| 17 | Other R. Pulses | 0.6 | 0.1 | 0.5 | 0 | 1.1 |
| 18 | Potato | 19330.8 | 19.3 | 423.3 | 1349.1 | 21122.6 |
| 19 | Sweet Potato | 18.2 | 2.3 | 0 | 0 | 20.6 |
| 20 | Peas & Garden Peas | 290.1 | 17.4 | 44.8 | 5 | 357.3 |
| 21 | Beans | 1 | 0.3 | 0 | 1.2 | 2.4 |
| 22 | Tinda | 145 | 9.4 | 8.9 | 2.2 | 165.6 |
| 23 | Lady finger | 63.5 | 166.9 | 23.5 | 24.3 | 278.1 |
| 24 | Bitter Gourd | 15.7 | 3 | 23.8 | 7.8 | 50.4 |
| 25 | Bottle Gourd | 20.7 | 1.8 | 2.8 | 1.2 | 26.4 |
| 26 | Brinjal (eggplant) | 12.5 | 0.7 | 5.8 | 2.6 | 21.5 |
| 27 | Arum | 21 | 12.3 | 18.8 | 0 | 52.1 |
| 28 | Luffa | 9 | 2.3 | 0 | 0 | 11.3 |
| 29 | Pursilano | 0 | 0 | 0 | 0 | 0 |
| 30 | Field vetch | 0 | 0.4 | 0 | 0 | 0.4 |
| 31 | Cauliflower | 13.3 | 8.2 | 13.7 | 3.7 | 38.9 |
| 32 | Cabbage | 5.5 | 4.7 | 2.3 | 1.6 | 14.2 |
| 33 | Spinach | 14.7 | 7.6 | 13.5 | 3.4 | 39.3 |
| 34 | Knol Kohl | 0 | 0.3 | 0 | 0 | 0.3 |
| 35 | Fenu Greek | 0 | 0.2 | 0 | 0 | 0.2 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------------|---------|--------|-------|-------------|----------|
| | | Punjab | Sindh | KPK | Balochistan | Pakistan |
| 36 | Lettuce | 0 | 0.1 | 0 | 0 | 0.1 |
| 37 | Other K. Vegetables | 81.3 | 0.7 | 32.1 | 2.6 | 116.7 |
| 38 | Other R. Vegetables | 387.3 | 3.3 | 38.9 | 5 | 434.5 |
| 39 | Onion | 625 | 730.1 | 156.3 | 165.1 | 1676.6 |
| 40 | Carrot | 89.6 | 4.2 | 50.2 | 36.3 | 180.3 |
| 41 | Radish | 66.3 | 6.9 | 4.6 | 23 | 100.9 |
| 42 | Lotus roots | 0 | 0.1 | 0 | 0 | 0.1 |
| 43 | Sugar beet Vegetable | 0 | 0.4 | 0 | 0 | 0.4 |
| 44 | Turnip | 64 | 2.9 | 11.7 | 1.7 | 80.3 |
| 45 | Mango | | | | | |
| 46 | Banana | | | | | |
| 47 | Guava | | | | | |
| 48 | Dates | | | | | |
| 49 | Figs | | | | | |
| 50 | Coconut | | | | | |
| 51 | Orange | | | | | |
| 52 | Kino | | | | | |
| 53 | Lemon | | | | | |
| 54 | Grape fruit | | | | | |
| 55 | Mandrine | | | | | |
| 56 | Musambi | | | | | |
| 57 | Sure lime | | | | | |
| 58 | Sweet lime | | | | | |
| 59 | Soure orange | | | | | |
| 60 | Other Citrus | | | | | |
| 61 | Grapes | | | | | |
| 62 | Water melon | 1090.3 | 1034.3 | 229.7 | 518.8 | 2873.1 |
| 63 | Garma | 0 | 0 | 0 | 0.5 | 0.5 |
| 64 | Sarda | 0 | 0 | 0 | 0.5 | 0.5 |
| 65 | Pumpkin & Melon Pumpkin | 34.8 | 0 | 0.9 | 0.7 | 36.5 |
| 66 | Long Melon | 0 | 0.5 | 0 | 0 | 0.5 |
| 67 | Tomatoes | 111.9 | 82.9 | 101.2 | 212.6 | 508.5 |
| 68 | Cucumber | 1.5 | 0.2 | 0 | 14.7 | 16.5 |
| 69 | Apple | | | | | |
| 70 | Plums | | | | | |
| 71 | Peaches | | | | | |

| S.No | Crop/Item | 2015-16 | | | | |
|------|-------------------|---------|--------|-------|-------------|----------|
| | | Punjab | Sindh | KPK | Balochistan | Pakistan |
| 72 | Pomegranates | | | | | |
| 73 | Appricots | | | | | |
| 74 | Pear | | | | | |
| 75 | Jaman | | | | | |
| 76 | Litchi | | | | | |
| 77 | Phalsa | | | | | |
| 78 | Chikoo | | | | | |
| 79 | Papaya | | | | | |
| 80 | Cherry | | | | | |
| 81 | Ber | | | | | |
| 82 | Loquat | | | | | |
| 83 | Mulbery | | | | | |
| 84 | Percimen | | | | | |
| 85 | Other K. Fruits | | | | | |
| 86 | Other R. Fruits | | | | | |
| 87 | Almond | | | | | |
| 88 | Walnuts | | | | | |
| 89 | Pistachio | | | | | |
| 90 | Soya Beans | 0 | 2.4 | 0.2 | 0 | 2.6 |
| 91 | Groundnuts | 1199.2 | 2.9 | 258.3 | 0 | 1460.3 |
| 92 | Sunflower | 79.8 | 1038.6 | 0 | 0 | 1118.4 |
| 93 | Sesamum | 134.2 | 11.6 | 0 | 3.3 | 149.1 |
| 94 | Safflower | 0 | 0 | 0 | 0 | 0 |
| 95 | Rape & Mustard | 61.1 | 24.2 | 54.3 | 7.2 | 146.8 |
| 96 | Canola | 19.9 | 1.6 | 0.2 | 1.9 | 23.5 |
| 97 | Castro seed | 0 | 0.2 | 0 | 0.9 | 1.1 |
| 98 | Lin seed | 1.1 | 3.9 | 0 | 0 | 5 |
| 99 | Flowers & F. Buds | 0 | 0 | 0 | 0 | 0 |
| 100 | Corriander | 3.2 | 6.5 | 0.7 | 8.4 | 18.7 |
| 101 | Cumin seeds | 0 | 0 | 0 | 106.3 | 106.3 |
| 102 | Dil seed | 0 | 1.6 | 0 | 0 | 1.6 |
| 103 | Chillies | 22.7 | 665.4 | 0.8 | 6.8 | 695.7 |
| 104 | Ajwan | 0 | 0.8 | 0 | 0 | 0.8 |
| 105 | Fennel (Sounf) | 0 | 1.6 | 0 | 0 | 1.6 |
| 106 | Turmeric | 165.3 | 88.8 | 0 | 0 | 254.1 |
| 107 | Garlic | 366.4 | 149.5 | 140.3 | 52.1 | 708.2 |

| S.No | Crop/Item | 2015-16 | | | | |
|------|--------------------------|---------|---------|--------|-------------|----------|
| | | Punjab | Sindh | KPK | Balochistan | Pakistan |
| 108 | Ginger | 0 | 39.9 | 0 | 0 | 39.9 |
| 109 | Other spices | 0 | 1.8 | 0 | 0 | 1.8 |
| 110 | Tobacco | 4.7 | 5.8 | 243.7 | 0.1 | 254.4 |
| 111 | Sugar beet Crop | 0 | 0 | 0.5 | 0 | 0.5 |
| 112 | Sugar cane-Released | 6371.8 | 168.5 | 1296.3 | 26.8 | 7863.4 |
| 113 | Sugar cane-Procured | 13540.1 | 16683.1 | 2631.9 | 0 | 32855.1 |
| 114 | Fodders Green | 19311.9 | 746.2 | 355.5 | 202.7 | 20616.4 |
| 115 | Guarseed | 102.9 | 62.6 | 2 | 23.4 | 190.9 |
| 116 | Fodders Dry-Wheat | | | | | |
| 117 | Fodders Dry-Maize-Stalks | | | | | |
| 118 | Fodders Dry-Maize-Piths | | | | | |
| 119 | Rice-Straw | | | | | |
| 120 | FD-Barley | | | | | |
| 121 | FD-Bajra | | | | | |
| 122 | FD-Jowar(Sorghum) | | | | | |
| 123 | FD-Gram | | | | | |
| 124 | Fodders Dry-S.cane | | | | | |
| 125 | Fodders Dry-Sesamum | | | | | |
| 126 | Fodders Dry-R&Mustard | | | | | |
| 127 | Cotton-Upland (Phutti) | 12784.4 | 2780.8 | 1.9 | 222.6 | 15789.8 |
| 128 | Cotton-Desi (Phutti) | 122.5 | 7.7 | 0 | 0 | 130.2 |
| 129 | Hemp | 0.2 | 0 | 0 | 0 | 0.2 |
| 130 | Cotton Sticks | | | | | 0 |

Average Rate of Ploughing & Planking of Crops (Rs/ Hect.)
Annexure VII

| S.No | Crop/Item | Average Rate 2015-16 | | | | |
|------|--------------------|----------------------|-------|-------|-------------|----------|
| | | Punjab | Sindh | KP | Balochistan | Pakistan |
| 1 | Wheat-Released | 8310 | 9348 | 9089 | 9089 | 8959 |
| 2 | Wheat-Procured | 8310 | 9348 | 9089 | 9089 | 8959 |
| 3 | Maize | 10127 | 9868 | 8050 | 10647 | 9673 |
| 4 | Rice-Basmati | 12205 | 8050 | | 10127 | 10127 |
| 5 | Rice-Irri | 11426 | 6752 | 10127 | 9435 | 9435 |
| 6 | Rice-Others | 11426 | 6752 | 10127 | 9435 | 9435 |
| 7 | Barley | 7790 | 5194 | 6752 | 8569 | 7076 |
| 8 | Bajra | 7011 | 5194 | 6752 | 9089 | 7011 |
| 9 | Jowar(Sorghum) | 4934 | 5194 | 6752 | 9868 | 6687 |
| 10 | Other | 0 | 0 | 0 | 0 | |
| 11 | Gram | 5453 | 5194 | 6752 | 9868 | 6817 |
| 12 | Mash | 5453 | 5194 | 6752 | 9868 | 6817 |
| 13 | Masoor | 5453 | 5194 | 6752 | 9868 | 6817 |
| 14 | Moong | 5453 | 5194 | 6752 | 9868 | 6817 |
| 15 | Mattar | 5453 | 5194 | 6752 | 9868 | 6817 |
| 16 | Other K. Pulses | 5453 | 5194 | 6752 | 9868 | 6817 |
| 17 | Other R. Pulses | 5453 | 5194 | 6752 | | 5799 |
| 18 | Potato | 8310 | 9348 | 9089 | 9608 | 9089 |
| 19 | Sweet Potato | 5453 | 5194 | | | 5323 |
| 20 | Peas & Garden Peas | 5453 | 5194 | 6752 | 9868 | 6817 |
| 21 | Beans | 8137 | 5194 | 9348 | 9868 | 8137 |
| 22 | Tinda | 5453 | 5194 | 6405 | 8569 | 6405 |
| 23 | Lady finger | 5453 | 5194 | 6838 | 9868 | 6838 |
| 24 | Bitter Gourd | 5453 | 5194 | 6405 | 8569 | 6405 |
| 25 | Bottle Gourd | 5453 | 5194 | 6405 | 8569 | 6405 |
| 26 | Brinjal (eggplant) | 5453 | 5194 | 8310 | 8569 | 6881 |
| 27 | Arum | 5973 | 5194 | 6752 | | 5973 |
| 28 | Luffa | 7877 | 5194 | 9868 | 8569 | 7877 |
| 29 | Pursilano | | 5194 | | | 5194 |
| 30 | Field vetch | 9348 | 5194 | 7271 | | 7271 |
| 31 | Cauliflower | 5453 | 5194 | 5453 | 8569 | 6167 |
| 32 | Cabbage | 5453 | 5194 | 6405 | 8569 | 6405 |
| 33 | Spinach | 5453 | 5453 | 8180 | 8569 | 6914 |
| 34 | Knol Kohl | | 5453 | | | 5453 |

| S.No | Crop/Item | Average Rate 2015-16 | | | | |
|------|-------------------------|----------------------|-------|------|-------------|----------|
| | | Punjab | Sindh | KP | Balochistan | Pakistan |
| 35 | Fenu Greek | 13503 | 5453 | | | 9478 |
| 36 | Lettuce | | 5453 | | | 5453 |
| 37 | Other K. Vegetables | 5453 | 5453 | 6492 | 8569 | 6492 |
| 38 | Other R. Vegetables | 5453 | 5453 | 6492 | 8569 | 6492 |
| 39 | Onion | 5453 | 9348 | 6752 | 9868 | 7855 |
| 40 | Carrot | 5453 | 5194 | 6752 | 7531 | 6232 |
| 41 | Radish | 5453 | 5194 | 6752 | 8569 | 6492 |
| 42 | Lotus roots | | 5194 | | | 5194 |
| 43 | Sugar beet Vegetable | | 5194 | | 8569 | 6881 |
| 44 | Turnip | 5453 | 5194 | 6405 | 8569 | 6405 |
| 45 | Mango | 0 | 0 | 0 | 0 | 0 |
| 46 | Banana | 0 | 0 | 0 | 0 | 0 |
| 47 | Guava | 0 | 0 | 0 | 0 | 0 |
| 48 | Dates | 0 | 0 | 0 | 0 | 0 |
| 49 | Figs | | | 0 | 0 | 0 |
| 50 | Coconut | | 0 | | 0 | 0 |
| 51 | Orange | 0 | 0 | 0 | | 0 |
| 52 | Kino | 0 | 0 | | | 0 |
| 53 | Lemon | 0 | 0 | 0 | | 0 |
| 54 | Grape fruit | 0 | 0 | | | 0 |
| 55 | Mandrine | 0 | 0 | | | 0 |
| 56 | Musambi | 0 | 0 | | | 0 |
| 57 | Sure lime | 0 | 0 | | | 0 |
| 58 | Sweet lime | 0 | 0 | | | 0 |
| 59 | Soure orange | 0 | 0 | | | 0 |
| 60 | Other Citrus | 0 | 0 | 0 | 0 | 0 |
| 61 | Grapes | | 0 | 0 | 0 | 0 |
| 62 | Water melon | 5453 | 5194 | 6405 | 8569 | 6405 |
| 63 | Garma | | | 8569 | 8569 | 8569 |
| 64 | Sarda | | | 8569 | 8569 | 8569 |
| 65 | Pumpkin & Melon Pumpkin | 5453 | 5453 | 6492 | 8569 | 6492 |
| 66 | Long Melon | | 5453 | | | 5453 |
| 67 | Tomatoes | 5453 | 5194 | 6752 | 9868 | 6817 |
| 68 | Cucumber | 5194 | 5194 | 6319 | 8569 | 6319 |
| 69 | Apple | 0 | 0 | 0 | 0 | 0 |
| 70 | Plums | 0 | | 0 | 0 | 0 |

| S.No | Crop/Item | Average Rate 2015-16 | | | | |
|------|-------------------|----------------------|-------|------|-------------|----------|
| | | Punjab | Sindh | KP | Balochistan | Pakistan |
| 71 | Peaches | 0 | | 0 | 0 | 0 |
| 72 | Pomegranates | 0 | | 0 | 0 | 0 |
| 73 | Appricots | 0 | | 0 | 0 | 0 |
| 74 | Pear | 0 | | 0 | 0 | 0 |
| 75 | Jaman | 0 | 0 | | | 0 |
| 76 | Litchi | 0 | | | | 0 |
| 77 | Phalsa | 0 | 0 | | | 0 |
| 78 | Chikoo | | 0 | | 0 | 0 |
| 79 | Papaya | | 0 | | 0 | 0 |
| 80 | Cherry | | | | 0 | 0 |
| 81 | Ber | 0 | 0 | | | 0 |
| 82 | Loquat | 0 | | 0 | 0 | 0 |
| 83 | Mulbery | 0 | 0 | 0 | | 0 |
| 84 | Percimen | | | 0 | | 0 |
| 85 | Other K. Fruits | 7271 | 5453 | 7098 | 8569 | 7098 |
| 86 | Other R. Fruits | 0 | 0 | 0 | 0 | 0 |
| 87 | Almond | 0 | | 0 | 0 | 0 |
| 88 | Walnuts | 0 | | 0 | | 0 |
| 89 | Pistachio | | | | 0 | 0 |
| 90 | Soya Beans | | 5453 | 5453 | | 5453 |
| 91 | Groundnuts | 5453 | 5194 | 6752 | | 5799 |
| 92 | Sunflower | 9089 | 9348 | 9089 | 9868 | 9348 |
| 93 | Sesamum | 5453 | 5194 | 6752 | 9868 | 6817 |
| 94 | Safflower | | 5194 | | | 5194 |
| 95 | Rape & Mustard | 5453 | 5194 | 6752 | 5799 | 5799 |
| 96 | Canola | 5453 | 5194 | 6752 | 5799 | 5799 |
| 97 | Castro seed | 0 | 0 | | 0 | 0 |
| 98 | Lin seed | 0 | 0 | | | 0 |
| 99 | Flowers & F. Buds | | | | | |
| 100 | Corriander | 7271 | 5453 | 7790 | 8569 | 7271 |
| 101 | Cumin seeds | | 5453 | | 8569 | 7011 |
| 102 | Dil seed | | 5453 | | | 5453 |
| 103 | Chillies | 9219 | 9348 | 9089 | 9608 | 9316 |
| 104 | Ajwan | | 5453 | | | 5453 |
| 105 | Fennel (Sounf) | | 5453 | | | 5453 |
| 106 | Turmeric | 5453 | 5194 | 6752 | | 5799 |

| S.No | Crop/Item | Average Rate 2015-16 | | | | |
|------|--------------------------|----------------------|-------|-------|-------------|----------|
| | | Punjab | Sindh | KP | Balochistan | Pakistan |
| 107 | Garlic | 5453 | 5194 | 6838 | 9868 | 6838 |
| 108 | Ginger | | 5453 | 5194 | | 5323 |
| 109 | Other spices | | 5194 | | | 5194 |
| 110 | Tobaccoo | 9998 | 9348 | 10647 | 9089 | 9770 |
| 111 | Sugar beet Crop | 5194 | | 9089 | | 7141 |
| 112 | Sugar cane-Released | 10906 | 11166 | 10647 | 10906 | 10906 |
| 113 | Sugar cane-Procured | 10906 | 11166 | 10647 | 10906 | 10906 |
| 114 | Fodders Green | 5453 | 5453 | 7531 | 8569 | 6752 |
| 115 | Guarseed | 5453 | 5194 | 6405 | 8569 | 6405 |
| 116 | Fodders Dry-Wheat | | | | | |
| 117 | Fodders Dry-Maize-Stalks | | | | | |
| 118 | Fodders Dry-Maize-Piths | | | | | |
| 119 | Rice-Straw | | | | | |
| 120 | FD-Barley | | | | | |
| 121 | FD-Bajra | | | | | |
| 122 | FD-Jowar(Sorghum) | | | | | |
| 123 | FD-Gram | | | | | |
| 124 | Fodders Dry-S.cane | | | | | |
| 125 | Fodders Dry-Sesamum | | | | | |
| 126 | Fodders Dry-R&Mustard | | | | | |
| 127 | Cotton-Upland (Phutti) | 9385 | 11875 | 10630 | 10630 | 10630 |
| 128 | Cotton-Desi (Phutti) | 9385 | 11875 | 10630 | 10630 | 10630 |
| 129 | Hemp | 5453 | | 6752 | | 6102 |
| 130 | Cotton Sticks | | | | | |

Ploughing & Planking Cost of Crops (Million Rs)**Annexure VIII**

| S.No | Crop/Item | Ploughing & Planking Cost 2015-16 | | | | |
|------|--------------------|-----------------------------------|-------|------|-------------|----------|
| | | Punjab | Sindh | KPK | Balochistan | Pakistan |
| 1 | Wheat-Released | 40248 | 7483 | 6397 | 3233 | 57362 |
| 2 | Wheat-Procured | 17204 | 3310 | 622 | 247 | 21384 |
| 3 | Maize | 7252 | 36 | 3772 | 31 | 11091 |
| 4 | Rice-Basmati | 15275 | 416 | 0 | 343 | 16034 |
| 5 | Rice-Irri | 2131 | 2632 | 236 | 1316 | 6315 |
| 6 | Rice-Others | 3909 | 1879 | 260 | 13 | 6062 |
| 7 | Barley | 180 | 43 | 157 | 98 | 478 |
| 8 | Bajra | 3041 | 234 | 27 | 30 | 3332 |
| 9 | Jowar(Sorghum) | 1140 | 68 | 56 | 208 | 1472 |
| 10 | Other | 0 | 0 | 0 | 0 | 0 |
| 11 | Gram | 4662 | 77 | 222 | 364 | 5325 |
| 12 | Mash | 84 | 1 | 5 | 28 | 118 |
| 13 | Masoor | 61 | 7 | 24 | 17 | 109 |
| 14 | Moong | 726 | 12 | 50 | 35 | 822 |
| 15 | Mattar | 71 | 110 | 8 | 98 | 287 |
| 16 | Other K. Pulses | 8 | 1 | 9 | 13 | 31 |
| 17 | Other R. Pulses | 1 | 0 | 1 | 0 | 2 |
| 18 | Potato | 1375 | 5 | 85 | 18 | 1484 |
| 19 | Sweet Potato | 3 | 5 | 0 | 0 | 8 |
| 20 | Peas & Garden Peas | 96 | 12 | 13 | 11 | 132 |
| 21 | Beans | 3 | 4 | 0 | 5 | 12 |
| 22 | Tinda | 37 | 11 | 7 | 7 | 61 |
| 23 | Lady finger | 32 | 26 | 14 | 26 | 98 |
| 24 | Bitter Gourd | 23 | 3 | 8 | 6 | 40 |
| 25 | Bottle Gourd | 21 | 2 | 3 | 6 | 33 |
| 26 | Brinjal (eggplant) | 24 | 7 | 7 | 14 | 53 |
| 27 | Arum | 6 | 1 | 9 | 0 | 16 |
| 28 | Luffa | 10 | 2 | 0 | 3 | 15 |
| 29 | Pursilano | 0 | 0 | 0 | 0 | 0 |
| 30 | Field vetch | 0 | 3 | 0 | 0 | 3 |
| 31 | Cauliflower | 39 | 11 | 8 | 17 | 75 |
| 32 | Cabbage | 14 | 6 | 3 | 6 | 29 |
| 33 | Spinach | 19 | 11 | 14 | 12 | 56 |
| 34 | Knol Kohl | 0 | 1 | 0 | 0 | 1 |
| 35 | Fenu Greek | 0 | 1 | 0 | 0 | 1 |

| S.No | Crop/Item | Ploughing & Planking Cost 2015-16 | | | | |
|------|-------------------------|-----------------------------------|-------|-----|-------------|----------|
| | | Punjab | Sindh | KPK | Balochistan | Pakistan |
| 36 | Lettuce | 0 | 2 | 0 | 0 | 2 |
| 37 | Other K. Vegetables | 83 | 1 | 37 | 4 | 125 |
| 38 | Other R. Vegetables | 172 | 1 | 20 | 3 | 197 |
| 39 | Onion | 244 | 483 | 83 | 269 | 1079 |
| 40 | Carrot | 45 | 8 | 4 | 23 | 80 |
| 41 | Radish | 34 | 6 | 7 | 12 | 59 |
| 42 | Lotus roots | 0 | 1 | 0 | 0 | 1 |
| 43 | Sugar beet Vegetable | 0 | 3 | 0 | 0 | 3 |
| 44 | Turnip | 50 | 9 | 21 | 8 | 89 |
| 45 | Mango | 0 | 0 | 0 | 0 | 0 |
| 46 | Banana | 0 | 0 | 0 | 0 | 0 |
| 47 | Guava | 0 | 0 | 0 | 0 | 0 |
| 48 | Dates | 0 | 0 | 0 | 0 | 0 |
| 49 | Figs | 0 | 0 | 0 | 0 | 0 |
| 50 | Coconut | 0 | 0 | 0 | 0 | 0 |
| 51 | Orange | 0 | 0 | 0 | 0 | 0 |
| 52 | Kino | 0 | 0 | 0 | 0 | 0 |
| 53 | Lemon | 0 | 0 | 0 | 0 | 0 |
| 54 | Grape fruit | 0 | 0 | 0 | 0 | 0 |
| 55 | Mandrine | 0 | 0 | 0 | 0 | 0 |
| 56 | Musambi | 0 | 0 | 0 | 0 | 0 |
| 57 | Sure lime | 0 | 0 | 0 | 0 | 0 |
| 58 | Sweet lime | 0 | 0 | 0 | 0 | 0 |
| 59 | Soure orange | 0 | 0 | 0 | 0 | 0 |
| 60 | Other Citrus | 0 | 0 | 0 | 0 | 0 |
| 61 | Grapes | 0 | 0 | 0 | 0 | 0 |
| 62 | Water melon | 100 | 31 | 26 | 71 | 228 |
| 63 | Garma | 0 | 0 | 0 | 3 | 3 |
| 64 | Sarda | 0 | 0 | 0 | 3 | 3 |
| 65 | Pumpkin & Melon Pumpkin | 12 | 1 | 5 | 5 | 23 |
| 66 | Long Melon | 0 | 1 | 0 | 0 | 1 |
| 67 | Tomatoes | 45 | 145 | 92 | 127 | 408 |
| 68 | Cucumber | 9 | 4 | 0 | 8 | 21 |
| 69 | Apple | 0 | 0 | 0 | 0 | 0 |
| 70 | Plums | 0 | 0 | 0 | 0 | 0 |
| 71 | Peaches | 0 | 0 | 0 | 0 | 0 |

| S.No | Crop/Item | Ploughing & Planking Cost 2015-16 | | | | |
|------|-------------------|-----------------------------------|-------|-----|-------------|----------|
| | | Punjab | Sindh | KPK | Balochistan | Pakistan |
| 72 | Pomegranates | 0 | 0 | 0 | 0 | 0 |
| 73 | Appricots | 0 | 0 | 0 | 0 | 0 |
| 74 | Pear | 0 | 0 | 0 | 0 | 0 |
| 75 | Jaman | 0 | 0 | 0 | 0 | 0 |
| 76 | Litchi | 0 | 0 | 0 | 0 | 0 |
| 77 | Phalsa | 0 | 0 | 0 | 0 | 0 |
| 78 | Chikoo | 0 | 0 | 0 | 0 | 0 |
| 79 | Papaya | 0 | 0 | 0 | 0 | 0 |
| 80 | Cherry | 0 | 0 | 0 | 0 | 0 |
| 81 | Ber | 0 | 0 | 0 | 0 | 0 |
| 82 | Loquat | 0 | 0 | 0 | 0 | 0 |
| 83 | Mulbery | 0 | 0 | 0 | 0 | 0 |
| 84 | Percimen | 0 | 0 | 0 | 0 | 0 |
| 85 | Other K. Fruits | 26 | 0 | 3 | 7 | 37 |
| 86 | Other R. Fruits | 0 | 0 | 0 | 0 | 0 |
| 87 | Almond | 0 | 0 | 0 | 0 | 0 |
| 88 | Walnuts | 0 | 0 | 0 | 0 | 0 |
| 89 | Pistachio | 0 | 0 | 0 | 0 | 0 |
| 90 | Soya Beans | 0 | 0 | 0 | 0 | 0 |
| 91 | Groundnuts | 458 | 3 | 49 | 0 | 510 |
| 92 | Sunflower | 147 | 616 | 2 | 3 | 768 |
| 93 | Sesamum | 358 | 36 | 1 | 57 | 452 |
| 94 | Safflower | 0 | 0 | 0 | 0 | 0 |
| 95 | Rape & Mustard | 675 | 261 | 87 | 82 | 1105 |
| 96 | Canola | 39 | 15 | 3 | 20 | 76 |
| 97 | Castro seed | 0 | 0 | 0 | 0 | 0 |
| 98 | Lin seed | 0 | 0 | 0 | 0 | 0 |
| 99 | Flowers & F. Buds | 0 | 0 | 0 | 0 | 0 |
| 100 | Corriander | 4 | 15 | 2 | 15 | 36 |
| 101 | Cumin seeds | 0 | 0 | 0 | 47 | 47 |
| 102 | Dil seed | 0 | 2 | 0 | 0 | 2 |
| 103 | Chillies | 52 | 511 | 4 | 40 | 606 |
| 104 | Ajwan | 0 | 2 | 0 | 0 | 2 |
| 105 | Fennel (Sounf) | 0 | 4 | 0 | 0 | 4 |
| 106 | Turmeric | 29 | 1 | 2 | 0 | 32 |
| 107 | Garlic | 17 | 7 | 18 | 9 | 50 |

| S.No | Crop/Item | Ploughing & Planking Cost 2015-16 | | | | |
|------|--------------------------|-----------------------------------|-------|-----|-------------|----------|
| | | Punjab | Sindh | KPK | Balochistan | Pakistan |
| 108 | Ginger | 0 | 2 | 0 | 0 | 2 |
| 109 | Other spices | 0 | 2 | 0 | 0 | 2 |
| 110 | Tobacco | 183 | 1 | 354 | 9 | 547 |
| 111 | Sugar beet Crop | 0 | 0 | 5 | 0 | 5 |
| 112 | Sugar cane-Released | 2462 | 35 | 396 | 7 | 2900 |
| 113 | Sugar cane-Procured | 5231 | 3458 | 804 | 0 | 9493 |
| 114 | Fodders Green | 17369 | 746 | 750 | 300 | 19164 |
| 115 | Guarseed | 521 | 498 | 4 | 56 | 1079 |
| 116 | Fodders Dry-Wheat | | | | | |
| 117 | Fodders Dry-Maize-Stalks | | | | | |
| 118 | Fodders Dry-Maize-Piths | | | | | |
| 119 | Rice-Straw | | | | | |
| 120 | FD-Barley | | | | | |
| 121 | FD-Bajra | | | | | |
| 122 | FD-Jowar(Sorghum) | | | | | |
| 123 | FD-Gram | | | | | |
| 124 | Fodders Dry-S.cane | | | | | |
| 125 | Fodders Dry-Sesamum | | | | | |
| 126 | Fodders Dry-R&Mustard | | | | | |
| 127 | Cotton-Upland (Phutti) | 20751 | 7356 | 4 | 400 | 28511 |
| 128 | Cotton-Desi (Phutti) | 296 | 22 | 0 | 0 | 318 |
| 129 | Hemp | 0 | 0 | 0 | 0 | 0 |
| 130 | Cotton Sticks | 0 | 0 | 0 | 0 | 0 |

Livestock Population

Annexure IX

| Animal Categories | | | “000” Heads | |
|-------------------|----------------------|------------------------------------|---------------|---------------|
| | | | 2005-06 | 2015-16 |
| Buffaloes | | | 27,335 | 36,637 |
| | Mature | | 16,172 | 21,676 |
| | | Bulls 3 years and above | 610 | 817 |
| | | For Breeding | 330 | 442 |
| | | For Work | 280 | 375 |
| | | Buffaloes 3 Years and above | 15,562 | 20,859 |
| | | In Milk | 10,222 | 13,701 |
| | | Dry | 3,381 | 4,532 |
| | | Not Yet Calved | 1,959 | 2,626 |
| | Young Males | | 4,706 | 6,307 |
| | NB | Bulls Below one Year | 3,748 | 5,023 |
| | Immature | Bulls Between 1 & 3 Years | 958 | 1,284 |
| | Young Females | | 6,457 | 8,654 |
| | NB | Buffaloes Below One Year | 4,276 | 5,731 |
| | Immature | Buffaloes Between 1 & 3 years | 2,181 | 2,923 |
| Cattle | | | 29,558 | 42,796 |
| | Mature | | 19,303 | 27,948 |
| | | Bulls 3 years and above | 4,147 | 6,004 |
| | | For Breeding | 1,573 | 4,050 |
| | | For Work | 2,574 | 1,954 |
| | | Cows 3 Years and above | 15,156 | 21,944 |
| | | In Milk | 8,720 | 12,625 |
| | | Dry | 4,469 | 6,471 |
| | | Not Yet Calved | 1,967 | 2,848 |
| | Young Males | | 5,374 | 7,781 |
| | NB | Bulls Below one Year | 3,911 | 5,663 |
| | Immature | Bulls Between 1 & 3 Years | 1,463 | 2,118 |
| | Young Females | | 4,881 | 7,067 |
| | NB | Cows Below One Year | 3,426 | 4,960 |
| | Immature | Cow Between 1 & 3 years | 1,455 | 2,107 |
| Sheep | | | 26,488 | 29,789 |
| | Mature | | 18,120 | 20,378 |
| | | Male 1 Year and Above | 4,365 | 4,909 |
| | | Female 1 Year and above | 13,755 | 15,469 |
| | Young | Youngstock less than 1 Year | 8,368 | 9,411 |

| Animal Categories | | | “000” Heads | |
|-------------------|---------------|------------------------------|---------------|---------------|
| | | | 2005-06 | 2015-16 |
| Goats | | | 53,789 | 70,274 |
| | Mature | | 37,788 | 49,369 |
| | | Male 1 Year and Above | 6,617 | 8,645 |
| | | Female 1 Year and above | 31,171 | 40,724 |
| | Young | Young stock less than 1 Year | 16,001 | 20,905 |
| Camels | | | 921 | 1,048 |
| | Mature | | 698 | 794 |
| | | Male, 3 Years and above | 356 | 405 |
| | | Female 3 Years and above | 342 | 389 |
| | Young | Less Than 3 years | 223 | 254 |
| Horses | | | 344 | 364 |
| | Mature | 3 Years and above | 289 | 306 |
| | Young | Less Than 3 years | 55 | 58 |
| Mules | | | 156 | 186 |
| | Mature | 3 Years and above | 140 | 167 |
| | Young | Less Than 3 years | 16 | 19 |
| Asses | | | 4,269 | 5,128 |
| | Mature | 3 Years and above | 3,495 | 4,198 |
| | Young | Less Than 3 years | 774 | 930 |

Opening and Closing Stock of Animals (000 Heads) 2015-16

Annexure X

| Species | Opening | New Born | Slaughtered | Died | Closing |
|-----------|---------|----------|-------------|-------|---------|
| Buffaloes | 36,637 | 10,755 | 2,660 | 7,006 | 37,726 |
| Cattle | 42,796 | 10,623 | 7,811 | 1,198 | 44,410 |
| Sheep | 29,789 | 15,547 | 14,300 | 894 | 30,142 |
| Goats | 70,274 | 43,402 | 38,686 | 2,811 | 72,179 |
| Camels | 1,048 | 254 | 63 | 178 | 1,061 |
| Horses | 364 | 58 | | 56 | 366 |
| Mules | 186 | 19 | | 16 | 189 |
| Asses | 5,128 | 930 | | 835 | 5,223 |

Livestock and Poultry Products
Annexure XI

| Poultry and Poultry Products | | | | |
|-------------------------------------|------------------------------------|----------------|-----------------|------------------|
| Description | | Unit | 2005-06 | 2015-16 |
| Poultry | | | | |
| | Layers (Farming) | Mill. # | 23.2 | 45.64 |
| | Broilers (Farming) | " | 337 | 874.09 |
| | Breeding Stock (Farming) | " | 6.9 | 11.24 |
| | Poultry (Desi-cocks, hen, chicken) | " | 72.95 | 84.58 |
| | Ducks, Drakes and Ducklings | " | 0.7 | 0.46 |
| Poultry products | | | | |
| | Eggs (Farming) | " | 6,258.00 | 12,077.00 |
| | Eggs (Desi) | " | 3,423.00 | 4,090.00 |
| | Eggs (Ducks) | " | 31.28 | 20.55 |
| | Total Eggs | " | 9,712.28 | 16,187.55 |
| Livestock products | | | | |
| Milk | | | | |
| | Buffaloes | (000 MT) | 19,779.00 | 26,510.00 |
| | Cows | " | 10,726.00 | 15,529.00 |
| | Sheep | " | 34 | 39 |
| | Goat | " | 664 | 867 |
| | Camel | " | 767 | 873 |
| | Dung & Urine | Mill.MT | 1,171.00 | 1,575.00 |
| Wool & Hair | | | | |
| Wool | | | | |
| | Sheep | (000 MT) | 38.5 | 43.18 |
| | Camel | " | 1.71 | 1.94 |
| Hair | | | | |
| | Goat | " | 19.93 | 26.04 |
| | Horse | " | 0.26 | 0.28 |
| | Mule | " | 0.12 | 0.14 |

Working for Draught Power 2015-16

Annexure XII

| DRAUGHT POWER | 2005-06 | 2015-16 |
|---|-----------------------|----------------|
| DESCRIPTION | NO & VALUE | |
| NO. OF ANIMALS USED FOR WORK | 2,854,000 | 2,329,000 |
| i. ANIMALS USED FOR NON-MECHANISED ROAD TRANSPORT(REGISTERED) 1% OF TOTAL | 28,540 | 23,290 |
| ii. ANIMALS USED FOR TRANSPORT/BIKES MOVEMENT ETC 2 % OF TOTAL | 57,080 | 46,580 |
| iii. AVAILABLE ANIMALS FOR DRAUGHT POWER = | 2,768,380 | 2,259,130 |
| NO OF WORK DAYS IN A YEAR | 365 | 365 |
| i. RAINY AND SLACK SEASON DAYS | 145 | 145 |
| ii. WORKING DAYS FOR USE OF DRAGUHT POWER | 220 | 220 |
| A PAIR OF ANIMALS PLOUGH 1/2 ACRE IN A DAY (FOR AOUT (4-5 HOURS) | 160 | 552 |
| TRACTOR PLOUGHS 1/2 ACRE FOR RUPEES 160/- | 160 | 552 |
| THE OUTPUT OF TWO ANIMALS 160 RUPEES PER DAY | 160 | 552 |
| AND PER DAY PER ANIMALS WILL BE EQUAL TO $160/2 = 80$ RUPEES | 80 | 276 |
| OUTPUT OF ONE ANIMLAS IS EQUAL TO 80×220 RUPEES PER YEAR | 17,600 | 60,685 |
| NO OF BULLOCKS AND BULLS USED IN THE AGRICULTURE (97%) | 2,768,380 | 2,259,130 |
| OUTPUT OF WORKING ANIMALS AVAILABLE FOR DRAUGHT POWER(MILLIONS RS) | 48,723 | 137,095 |

Gross Output Of Forestry 2015-16 (Million Rs)
Annexure XIII

| Benchmark Estimates of Timber, 2015-16 | | |
|---|---------------|----------------|
| Description | 2005-06 | 2015-16 |
| <u>TIMBER</u> | | |
| A Total use of Timber by Sectors (net of imports (Sum(i-iv))) | 25,048 | 82,742 |
| i. Census of Mining Industries 2016-17 adjusted to 2015-16 | 809 | 3,940 |
| ii. Census of Large Scale Manufacturing Industries (CMI 2015-16) | 4,682 | 29,997 |
| iii. Small and household Manufacturing Industries (SHMI) 2015-16 | 9,679 | 24,081 |
| iv. Construction survey 2014-15, adjusted to 2015-16 | 9,878 | 24,723 |
| B Smuggling (25% of 'A') | 6,262 | 20,685 |
| C Trade & Transport Margin (40% of 'A') | 7,515 | 24,822 |
| D Domestic use of timber in 2015-16- at 2015-16 Prices (A – B –C) | 11,272 | 37,234 |
| <u>FIREWOOD</u> [consumption by Household & Industry] | 32,956 | 166,707 |
| Benchmark Estimates at 2015-16 prices | | |
| A Household Use -2015-16 | | |
| i. Total Firewood consumption (<i>net of 30% Trade & Transport Margin</i>) | 44,960 | 169,347 |
| ii. Value of Firewood used at 2015-16 Producers' Prices | 31,472 | 135,478 |
| B Total Industrial Use of Firewood (CMI + SHMI) [C+D] | 2,473 | 52,049 |
| i. Value of Firewood used in 2015-16 Prices (SHMI) | 2,138 | 1,861 |
| ii. Use of Firewood in CMI 2015-16 | 335 | 50,187 |
| C Trade & Transport Margin (40%) | 989 | 20,820 |
| D Value of Firewood (at producer's prices) used in 2015-16 at 2015-16 Prices [B – C] | 1,484 | 31,299 |
| GRAND TOTAL (TIMBER+ FIREWOOD) | 44,227 | 203,941 |

Brief on Survey on Other Private Services (OPS) 2016-17

The OPS Survey has been conducted by the Pakistan Bureau of Statistics (PBS) in both urban and rural areas of the country to provide necessary data about the contribution of selected services being undertaken in the private sector for the change of base of national accounts from 2005-06 to 2015-16. The survey has been conducted in the selected areas of urban and rural areas of the four provinces of Pakistan. However, Azad Jammu & Kashmir (AJK), Gilgit-Baltistan (GB) and FATA were excluded from the scope of the survey. Enumeration of establishments was not undertaken in the military restricted areas and other prohibited places.

The survey has been conducted to assess the value-added contributions of private services in selected industries including accommodation and food service activities (PSIC Section I), activities of real estate agents (PSIC Division 68), administrative and support service activities (PSIC Section N), education (PSIC Section P), human health and social work (PSIC Section Q), arts, entertainment and recreation (PSIC Section R), and other service activities (PSIC Section S). Repair of motor vehicles and motorcycles (PSIC Division 45) has also been covered in the survey.

As the Business Register was not updated, therefore, the survey had to be conducted through blocks. For the OPS Survey, the newly updated frame from the Sixth Population and Housing Census, Economic Census and Updating of Urban area frame in 2013 containing information on the number of establishments and their type of work was used in sample selection by the Sample Design Section of the PBS. Based on available information relating to establishments, the blocks were divided into three mutually exclusive categories i.e. **Stratum I:** Blocks with information of establishment, **Stratum II:** Blocks with information but reported zero establishments for all the categories and **Stratum III:** Blocks with no information. A representative sample, having representation of all three stratum and provinces of Pakistan, comprising of 3514 blocks was fixed for the OPS Survey 2016-17 out of which 1841 blocks belonged to urban areas and the remaining 1673 were in rural areas. Four provinces of Pakistan Out of 3514 blocks, 30 were dropped due to the law and order situation. Hence, data collection had to be arranged from 3484 blocks. The enumeration blocks of **substratum-I** were selected by Probability Proportional to size (PPS) method by taking the sum of establishments engaged in the private sector in activities including education, health, hotel & restaurant, and other services as a *measure of size*. The enumeration blocks of **substratum-II & III** were selected by the **Simple Random Sampling** method. Sample Design Section provided the sampling weights to raise the results at the national level.

Although the reference period of the survey was financial year i.e. 2016-17, the option of reporting responses on monthly basis was also provided for some of the services e.g. repair of computers and personal and household goods, other personal service activities to facilitate the respondents. However, the results have been compiled for the financial year 2016-17. The data were collected from the establishments on specially designed questionnaires through enumerators by interview method. However, to improve the coverage of big establishments engaged in education and human health activities under census parts, some data were also extracted from the annual reports of the establishments. The collected responses were edited and coded first at the PBS Regional/Field Offices and then at Headquarters, Islamabad. The data was entered through a specialized data entry program developed by the Data Processing (DP) Centre of the PBS. The final results relating to various industries were compiled by the DP Centre based on industry-specific tabulation plans. The survey results have been used for the estimation of gross value added and gross fixed capital formation for various industries under the Rebasing of National Accounts from 2005-06 to 2015-16.