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PAKISTAN NATIONAL ACCOUNTS - ACTIVITIES

National Accounts of Pakistan may be divided into two categories:

- A. Annual Regular Accounts, and
- B. Adhoc Developmental Exercises

A. Annual Regular Accounts

- i) GDP/GNP (At Current and Constant Factor Cost) by Industrial Origin
- ii) Expenditure on GNP (At Current and Constant Market Prices)
- iii) GDP Implicit Deflator - A Measure of Inflation
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B. Adhoc Developmental Exercises

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APPROACHES FOR ESTIMATES OF GDP/GNP

The primary purpose of national accounts is to provide a coherent and comprehensive picture of the economy. To be concise, these estimates tend to answer questions such as: i) what is the output of the economy, its size, its composition, and its uses? & ii) what is the economic process by which this output is

produced and distributed. These questions are addressed below in relation to estimation of GDP/GNP and final uses of the GNP.

The Gross National Product (GNP) is the market value of all final goods and services made available in the economy during a year. GNP is measured in rupee terms rather than in physical units of output. Gross Domestic Product (GDP) quantifies the magnitude and composition of production in the economy. GDP may be derived in three ways or in combination of them.

- i) 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, i.e.; $VA = \text{value of Output} - \text{value of intermediate consumption}$. Total value added by all producers equals GDP.
- ii) Income/Cost Approach: In this approach, consideration is given to the costs incurred by the producer within his own operation, the income paid out to employees, indirect taxes, consumption of fixed capital, and the operating surplus. All these add up to value added and GDP.
- iii) 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 in Pakistan is estimated as per guidelines provided by the SNA. For the purpose of GDP estimation by sectoral activities (current & constant prices), product, income and expenditure approaches are applied. The economy is divided into the following economic sectors.

A) Production Sectors

i) Agriculture

- a) Major Crops
- b) Minor Crops
- c) Livestock
- d) Fishing
- e) Forestry

ii) Industry

- a) Mining & Quarrying
- b) Manufacturing
 - Large-Scale
 - Small-Scale
 - Slaughtering
- c) Construction
- d) Electricity and Gas Distribution

B) Services Sectors

- a) Transport, Storage & Communication
- b) Wholesale & Retail Trade
- c) Finance and Insurance
- d) Ownership of Dwellings

- e) Public Administration & Defence
- f) Community, Social & Personal Services

GDP/GNP is also sub-classified according to expenditure approach comprising the following elements:

- a) Private Final Consumption Expenditure
- b) Government Final Consumption Expenditure
- c) Gross Fixed Capital Formation
- d) Change in Stocks
- e) Exports of Goods & Services and
- f) Imports of Goods & Services

SECTORAL ESTIMATES OF GDP/GNP

GDP from production side is computed by a combination of product, income and expenditure methods. Product method is applied to compute value added in agriculture, mining and quarrying, manufacturing, electricity & gas distribution, wholesale & retail trade and ownership of dwellings whereas income method is used to work out income accruing from transport, storage & communication, finance and insurance, public administration & defence and services sectors. Expenditure method is used to estimate value added in construction on the basis of investment made and the co-efficient of value added relating to investment.

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

Agriculture

Agricultural sector covers the activities of growing of crops, fruits & vegetables, harvesting & threshing, growing of trees & logging, fishing, breeding and rearing of animals and poultry, production of milk, eggs, dung, raw wool etc. For the purposes of computation of value added estimates, the sector has been divided in to the following four sub-sectors.

- i) Crops
- ii) Livestock
- iii) Fishery
- iv) Forestry

Crops

The contribution to the Gross Domestic Product (GDP) of agricultural crops has been estimated through product approach. It involves estimation of gross value of products and by-products, estimation of inputs like seed, fertilizer, pesticides, water and cost incurred on ploughing & planking and transport cost on intermediate inputs.

- i) **Gross Output and Valuation of Crops:** The production estimates of major and minor crops are obtained from the Provincial Departments of Agriculture, Crop Reporting Services that are coordinated in Federal Bureau of Statistics and released by the Ministry of Food and Agriculture. The estimated output of by-products of major crops is obtained as percentages of the respective crops products collected as

subsidiary information through objective crop cutting surveys supplied by Provincial Directorates of Agriculture and Directorates of Crop Reporting Services. The corresponding harvest prices have been obtained from the Provincial Departments of Agriculture, Department of Agriculture Extension, Directorate of Crop Reporting Services, Provincial Economic and Marketing Departments. For some of minor crops, where no harvest prices from any source were available, wholesale prices compiled and issued by Agricultural and Livestock Marketing & Grading Department and Provincial Departments of Economics and Marketing have been used after netting out the effect of trade and transport margins. Trade and transport margins are based on the Study on Wholesale and Retail Trade 1999-2000.

The revised-base Gross Value Added (GVA) has been computed on the basis of enlarged coverage and improved methodology. Number of vegetables and fruits has been added to the output which was not accounted for in the earlier bench mark series. The valuation of flowers and foliage is also estimated and included in the estimates of crops sector; the data have been made available by the Provincial Agriculture Departments.

The gross value of crops and their by-products is based on province-wise production of crops multiplied by the corresponding harvest prices. In case of wheat and sugarcane, procurement prices have been used for the part of production procured by federal and provincial governments or sold directly to mill sector on government fixed prices.

ii) **Intermediate Inputs:** The detailed discussion on the sources and methodology used for estimation of intermediate inputs is as under.

- a) **Seed:** The value of seed is worked out on the basis of crop-wise area sown in each province and per acre use of seed. The seed rates have been compiled on the basis of information made available by the Provincial Departments of Agriculture and Agriculture Extension, Crops Reporting Services, Agriculture Price Commission and Agriculture Seeds and Supplies Corporation. The quantity of seed by crops so derived has been multiplied by the corresponding prices. FBS has collected the prices from the Provincial Agriculture Departments, Provincial Economics and Marketing Departments, Departments of Crop Reporting Services. For the certified seed, data of Federal Seed Certification and Registration Department have been used. For wheat, rice, cotton and sugarcane the information contained in the reports of Agriculture Prices Commission have been utilized. For the minor crops valuation of seed has been estimated on Pakistan basis.
- b) **Fertilizer:** The value of off-take of fertilizer has been estimated on the basis of data on variety-wise quantity and value of fertilizer sold to the farmers. The National Fertilizer Development Centre (Planning and Development Division), Department of Fertilizer Imports (Ministry of Food and Agriculture), Fertilizer Development Cell, Agriculture Seed and Supplies Corporation, Provincial Bureaus of Statistics, have supplied the information on sale, stock and consumption of fertilizer. The information on off take/consumption of fertilizer in product tonnes and nutrient tonnes, and its value have been compiled on provincial basis by source of availability. The new benchmark estimates have been obtained from National Fertilizer Development Centre, which they have worked out for each item separately.
- c) **Pesticides:** The cost incurred on plant protection has been estimated on the basis of actual sale of various types of pesticides and insecticides to the farmers. The data on the quantity and value are supplied by Department of Plant Protection, Government of Pakistan and Pakistan Agricultural Pesticides Association.

- d) **Water:** The cost of water has been estimated separately for canal water and tube well water. Canal water data have been obtained from Indus River System Authority (IRSA), Ministry of Water and Power; Agriculture Water Management Department Punjab; Irrigation and Power Department, Sindh; Provincial Agriculture Departments of NWFP and Baluchistan; Agriculture Prices Commission, Ministry of Food and Agriculture. Data/Information available with Provincial Boards of Revenue, and WAPDA was also reviewed for reconciliation of the data between the different sources.
- e) **Cost of ploughing and planking:** The cost of ploughing and planking through tractor and animals (draught power) has been estimated on the basis of per acre cost by crops derived from the Study on Agriculture conducted by FBS and different studies conducted by Agricultural Prices Commission. Due to non-availability of appropriate data on ploughing and planking for minor crops, average cost per hectare of all major crops has been used.

Livestock

The livestock sub-sector includes the value of livestock products and the value of draught power. The sub-sector has been divided in to the following broad categories.

- i) Net sale of animals (for slaughtering)
- ii) Natural growth of animals
- iii) Livestock Products
 - a) Milk Production
 - b) Draught Power
 - c) Dung and Urine
 - d) Wool and Hairs
- iv) Poultry Products

The data have been taken from Ministry of Livestock and Dairy Development.

Valuation of Livestock Products

Each item has been valued separately. The gross output of the livestock sub-sector is valued at producers' prices and is equivalent to the total production of the livestock products multiplied by their respective prices.

Net Sales of Animals: The net sales were previously ignored in the livestock but presently these are being incorporated as per 1993 SNA recommendation. Following estimation procedure has been adopted to arrive at the final figures of net sales:

$$\text{Net Sales} = \text{Sale of animals} - \text{Purchase of animals in livestock activity} = \text{Sale for slaughtering}$$

Natural Growth of Animals: The animals in livestock are divided as under, according to their age specific groups:

- a. Adult
- b. Young Males and Females

As the adult are concerned they make part of work in progress and their value is accordingly imputed in net sale. For few categories, young males and females having age up to three years are taken as part of natural growth. Generally the animals, which are of age one year and below, have been taken as a part of natural growth.

Livestock Products: For the valuation of milk, dung & urine, wool & hairs, the quantities have been taken from Ministry of Food and Agriculture and Livestock Division, whereas the prices have been taken from Agricultural and Livestock Products Marketing and Grading Department.

Poultry and Poultry Product: Number of birds and eggs has been taken from Food, Agriculture and Livestock Division. Prices are taken from Agricultural and Livestock Products Marketing and Grading Department. Prices for chicks and other inputs have been collected from Poultry Research Institute (PRI).

Draught Power: Draught power has been subject to decreasing trend due to mechanization of agriculture sector and replacement of non-mechanized road transport with light transport vehicles like Auto Rickshaws and Motor Cycle Rickshaws. However the use of animal for ploughing and planking is in practice. The estimate of services of draught power has been developed by comparing the output with the equivalent work done by mechanized power.

Intermediate Inputs: The inputs of livestock are mainly derived from Agriculture sector. Emphasis on better rearing and catering, intensive use of medicines and health care services, and commercialization of dairy farming has led to diversification of input structure. The shift-in farming structure has brought about the use of expensive fodder and other inputs. For the intermediate consumption, green & dry fodder, medical care, transportation, interest, value of chicks, poultry feed etc. have been taken into consideration.

Fishery

The fishing activities cover commercial and subsistence fishing in ocean, coastal and offshore waters and inland waters. This includes catching, tackling and gathering of fish from rivers, canals, lakes, fish farms, ponds and inundated tracts.

Output: The data on quantity and value of commercial and subsistence fishing (inland and marine) have been obtained from Marine Fisheries Department, Ministry of Food & Agriculture, and from the Provincial Fisheries Departments. The value of marine fish catch is reduced by 6.5 percent for auction charges so as to arrive at the value at factor cost. The auction value of inland fish is doubled to cover the underreporting on inland fishing as recommended by Kazi Committee constituted for improvement of National Accounts of Pakistan. The doubling of inland fish demands an objective estimate. The estimates are based on annual catch of inland and marine fishing and their respective base year prices.

Inputs: The use of 36 percent as input cost for marine fishing has been continued. This provides basis for estimation of GVA at constant factor cost. The value at current factor cost is derived from the current data on quantity and value of fish-catch. The cost of inputs at 16 percent, due to fish farming, have been used for inland fishing as recommended by the FBS inland fishing survey.

Forestry

The Forestry sub-sector covers the activities of logging and gathering of uncultivated forest products, which are classified into two large groups.

- a) Major products comprising industrial wood such as timber and firewood.
- b) Minor forest products including a large number of heterogeneous items such as ephedra, grazing, resin, medicinal herbs etc.

In minor forest products only resin is gathered by the Forest Department, other forest products are gathered by the local population and sold in the market.

Estimates of Gross Value Added

- i) **Timber:** The estimates of timber have been developed from the consumption side. In this exercise 35 percent is used as trade and transport margin to convert the purchasers' prices into producer's price. 25 percent is deducted for smuggling. 25 percent input costs have been taken in respect of timber and firewood.
- ii) **Firewood:** The major user of firewood is household sector. Firewood is also used in large and small scale manufacturing sectors. The estimates of firewood have been developed from the consumption side taking all possible care of avoiding double counting and in line with the recommendations of 1993 SNA. The value of firewood used by households has been checked from expenditure approach from the results of Household Integrated Economic Survey for 1998-99.
- iii) **Minor Products of Forests:** For the minor products, the estimates have been prepared using the results of the Study on Forestry 1999-2000.

Mining and Quarrying

The value added in the mineral sector is concentrated in three principal minerals, i.e. coal, natural gas and crude oil. The value added estimates for bench mark year 1999-2000 and for onward estimates, the mining and quarrying sector has been classified according to ISIC Rev 3.1 and PSIC. The composing elements of the sector are as under:

- a) Coal Mining
- b) Crude Oil Mining
- c) Natural Gas Mining
- d) Other Minerals
- e) Surface Minerals
- f) Allied Services

Product approach is used for estimating the value added in coal, crude oil, natural gas, other minerals & surface minerals and allied services establishments. For the year 1999-2000 and onward, the separate input cost ratios of mineral items, surface minerals and allied services have been calculated. For the purpose of estimates, gross output is calculated at producers' prices for each mineral category and intermediate cost at purchasers' prices.

Manufacturing

The manufacturing sector comprises of following three sub sectors:

- i) Large Scale Manufacturing
 - ii) Small Scale Manufacturing
 - iii) Slaughtering
- i) **Large Scale Manufacturing Industries (LSMI)**

Large Scale Manufacturing covers the establishments registered under Section 2 (j) and 5 (i) of the Factories Act, 1934, whereas Small Scale Manufacturing includes all such manufacturing

establishments not covered there under. Section 2 (j) refers to the factories which employ 20 or more workers on any working day during the year and use power in their manufacturing operation. Section 5 (i) pertains to factories wherein a manufacturing process is carried on or ordinarily carried on whether with or without the use of power wherein ten or more workers are working there in or have worked there on any day of the 12 months immediately preceding.

There are two sources of data on large scale manufacturing. One is the Census of Manufacturing Industries (CMI) and the other is Quantum Index of Manufacturing (QIM). The Census of Manufacturing Industries is conducted on quinquennial basis and has been used to derive the base year estimates (1999-2000). Due to financial constraints, CMI cannot be undertaken every year; therefore for extrapolation an indirect method is presently being used to project the year-to-year value added at constant prices (factor cost) on the basis of QIM. The estimates at constant factor cost are converted into current factor cost by applying a specifically constructed Inflater (Producers' Prices Index) which covers the items of manufacturing and their respective weights. In the absence of any reliable data on depreciation, a flat rate of 7.50 percent of gross fixed capital formation is applied to arrive at net value added.

ii) **Small Scale Manufacturing**

The estimates for the base year 1999-2000 are based on the findings of the Study on Small Scale and Household Manufacturing Industries in Pakistan conducted by Quaidian Economic Consultants, Quaid-e-Azam University, Islamabad for change of base of National Accounts. For subsequent years a fixed growth rates of 7.51 percent is applied as per recommendation of the study until a new survey is undertaken to authenticate the growth rate. The estimates at constant factor cost are converted into current factor cost by applying a specifically constructed Inflater (Producers' prices Index) which covers the items of manufacturing and their respective weights. In the absence of any reliable data on depreciation, a flat rate of 4.5 percent of gross fixed capital formation is applied to arrive at net value added.

iii) **Slaughtering**

According to the latest classification the slaughtering industry relates to manufacturing whereas the livestock is a part of agriculture sector. The products i.e., meat, hides, skins, bones and blood etc. constitute slaughtering. Quantities of beef, mutton and poultry meat have been taken from the published data of Ministry of Food and Agriculture (Agricultural Statistics of Pakistan). Data on net sale of animals in the livestock sub-sector is taken as input for slaughtering. Number of animals, sold for slaughtering is provided by Livestock Division. The output of slaughtering sub-sector consists of meat and by-products like fats, hides/skins, bones, blood, edible offals etc. Prices of livestock and livestock products are based on survey data and prices made available from Department of Marketing & Grading. The value added in slaughtering industry has been derived by product approach. For the estimation of poultry meat, data in terms of quantity and prices of meat have been obtained from the Poultry Research Institute and Livestock Division. The prices of output and some inputs used in estimates are recorded in major cities of Pakistan by the Department of Marketing & Grading.

The bench mark estimates for 1999-2000 have been derived from the results of Study on Slaughtering Industry conducted for the change of base of National Accounts. For subsequent years the estimates are extrapolated by applying the growth rate of meat which is supplied by the Ministry of Livestock and Dairy Development Division. The estimates are converted into current factor cost by applying the specifically constructed inflater (PPI) which covers the items of meat & chicken & their respective weights.

Construction

This sector covers land improvement and construction of all type of buildings, roads, bridges, railway lines, utility lines (telecommunication lines, power lines, pipe lines) waterways, dams as well as repairs and maintenance of such infrastructure. The estimates of the sector have been developed on the basis of the expenditure, incurred by the establishments undertaking the construction or the contractors or the sub-contractors purchasing the construction material.

The data on expenditure on construction of these activities have been obtained from data set of GFCF of all sectors of economy by applying commodity flow approach. The input structure and the coefficients of the value added components have been used to derive the GVA of all activities of construction separately provided by the Study on Construction 1999-2000 has been applied. The coefficient of Gross Value Added are based on data collected from concerned agencies such as WAPDA, CAA, Railways, PWD, KPT, KDA, Irrigation Departments, Development Authorities and Construction Companies. PPI of construction material applied to convert these estimates into constant price figures.

Electricity, Gas and Water Supply

This sector covers the whole range of electricity generation, transmission, distribution and gas transmission & distribution. Moreover, according to SNA-1993 classification, water works and supply is also covered in this sector. Following is the sub-classification and coverage of the sector:

- i) Electricity transmission and distribution by WAPDA & KESC and generation by:
 - a) WAPDA, KESC, KANUPP,
 - b) Independent power plants (IPPs)
 - c) Captive power plants (CPPs)
 - d) Small hydel power units
- ii) Gas transmission and distribution
- iii) Water works & supply

i) Electricity generation, transmission and distribution

Water & Power Development Authority (WAPDA) and the Karachi Electric Supply Corporation (KESC) are the biggest sources of energy generation and distribution. Pakistani as well as multinational companies also work as Independent Power Plants (IPPs) units under the license by the Government of Pakistan. The IPP units generate electricity and sell their product to WAPDA and KESC, which distribute with their networks. The small hydel dams/micro hydel projects are situated in NWFP. These units are covered for the first time in the national accounts estimates.

ii) Gas transmission and distribution

The activities in the Gas Sub-sector are the transmission and distribution of the natural gas. For the existing estimates the data is collected from Sui Northern Gas Pipelines Limited (SNGP), Sui Southern Gas Company Limited (SSGC). Up till now these two companies were considered as the sole distributors of the natural Gas. Oil & Gas Development Company Limited (OGDCL), Mari Gas Company Limited and Pakistan Petroleum Limited (PPL) have been included in the estimates as they are selling some of their output directly to industries using gas as bulk users..

iii) Water works and supply

For the purpose of Value Added estimates, the sub-sector has been divided into three parts.

- a) Irrigation Water (Canal and Tube well water)
- b) Domestic Water (For household consumption)
- c) Commercial/Industrial Water

The estimates of gross value added for benchmark year 1999-2000 are based on the results of Study on Water conducted by FBS. For subsequent years value added is calculated for each part separately, which is aggregated to derive the estimates of the sub-sector. The value of irrigation water used as intermediate consumption in crops is assumed as value added of irrigation water (Canal and Tube well water). The value added of domestic and commercial/industrial water is estimated on the basis of growth of ownership of dwelling and large scale manufacturing respectively.

Transport, Storage and Communications

The economic activities covered are transportation by Pakistan Railways, Water transport (Coastal, Ocean & inland), Air transport, Oil Pipeline Transport, Road Transport (Mechanized & Non-mechanized), Storage and Communication Services rendered by Pakistan Post Office, Courier Services, Telecom companies/Corporations, Internet Services Providers, Mobile phone companies and Public Call Offices. The estimates of value added are measured through production approach. The requisite data is collected from source agencies. The estimates of mechanized road transport are based on survey conducted in major cities and Study on Intercity Transport, while the estimates of non-mechanized road transport are based on the data collected from town committees. Initially the estimates are derived in current factor cost. The current factor cost estimates are converted into constant by applying unit value indices of passenger & tonnage kilometer for Railways, passenger and tonnage kilometer for air transport and cargo handled at sea ports for water transport. For this unit value index Federal Bureau of Statistics collects data from all source agencies. Similarly unit value indices of postal and telecommunication services are prepared and applied.

To prepare the estimates on Transport and Communication in accordance with latest accounting framework, studies were conducted on intercity road transport, freight container services, travel agents, courier services & inland water transport and shipping, clearing & forwarding agents. The report on intercity road transport was discussed and finalized with the assistance of the experts of National Transport Research Centre (NTRC). A limited survey on reduced format was conducted to determine GVA per boat in different areas of the country and the findings have been applied to the inland water transport sub-sector. Un-registered part of non-mechanized road transport has been adjusted according to the number of animals of respective categories.

Wholesale and Retail Trade

The activities included in this sector are:

- a) Wholesale and retail trade including imports
- b) Purchase & sale agents and brokers
- c) Auctioning
- d) Hotels and restaurants

The study on wholesale and retail trade and hotel and restaurants conducted for the year benchmark year 1999-2000 have provided complete data set for benchmark estimates and trade margins and marketable surplus by commodity and imports for estimation subsequent year's value added. The trade margins provided in the study are exclusive of transport margins and calculated on the gross value of

commodities except large and small scale manufacturing sub-sectors, which are based on gross value added due to non-availability of gross value of industrial output. This estimation approach provided marketable surplus and trade mark-ups for the estimates. The study has provided separate data and estimates for hotels and restaurants sub-sector, which were incorporated in the sector for overall value added.

Finance and Insurance

This sector consists of the following sub-sectors

- i) State Bank of Pakistan
- ii) Other Depository Corporations
- iii) Other Financial Intermediaries
- iv) Insurance Corporations and pension funds

i) State Bank of Pakistan

This sub-sector consists of the central bank. The data on different components of output, inputs, wages & salaries, depreciation and GFCF has been collected from the State Bank of Pakistan. The gross value added of State Bank of Pakistan has been compiled using production approach. Intermediate consumption includes expenditures incurred on stationery, printing, utility bills, rental and maintenance of premises, running of vehicles, bank charges, legal and auditing fee, insurance etc. The data on current factor cost supplied by source agency provide basis for estimation in nominal values. In order to compute constant cost estimates, CPI has been applied.

ii) Other Depository Corporation

The Deposit Money Corporations consists of Nationalized Pakistani Banks, Private Pakistani Commercial Banks, Specialized Pakistani Banks and Foreign Commercial Banks, Cooperative Banks, Development Financial Institutions (DFIs), Investment Banks and Leasing Companies. The finance sector is one of the well established sector and all the banks, DFIs, leasing companies provide complete data on their output, intermediate cost, wages & salaries, depreciation and GFCF. Annual reports of all the institutions are also obtained to fill up the data gaps if any and or as alternate source for estimation of the gross value added where data has not been received. Production approach is applied in the sector.

iii) Other Financial Intermediaries

The institutions included in other Financial Intermediaries are Discount & guarantee houses, Housing Finance Companies, Venture Capital Companies, Investment Companies, Modaraba Companies, Exchange Companies (Money Changers) and Mutual Fund Companies etc. In Pakistan most of these companies are privately operated. For the collection of data through all the institutions covered in Other financial Intermediaries, National Accounts, FBS launches a regular survey through mail on a prescribed questionnaire. Annual/quarterly reports are also obtained from the institutions. The estimates of Gross Value Added in this sub-sector are compiled on the same lines and approach as used for State Bank of Pakistan and Other Depository Corporations.

iv) Insurance Corporations and Pension Funds

Insurance companies are generally incorporated entities and provide life, accident, sickness, fire, casualty or other forms of insurances. Data regarding the balance sheet, the revenue and profit and loss

accounts available from the annual reports of the insurance companies coupled with data collected through survey mail enquiries have been used for preparation of the GVA. The estimates of GVA of Employees Old-Age Benefit Institution (EOBI) have also been included in this sub-sector. The gross value added EOBI has been calculated adding wages & salaries and depreciation. This institution is working as a government welfare department. The data on Postal Life Insurance has also been collected and included in the sub-sector.

Ownership of Dwellings

According to the international recommendations and practices the estimates of value added in this sector are measured by the rent accruing from ownership of dwellings rented as well as of self-occupied. This requires cumulative increase of houses and their respective rent. To prepare estimates of value added, the number of occupied privately owned houses in urban and rural areas has been taken from the Housing Census, 1998. The estimates of annual average rentals for urban and rural areas have been derived from the rent survey of 1998 conducted by FBS. As no data was available for the bench mark year 1999-2000, the results of the Housing Census been inflated by the annual geometric growth between the Housing Census 1998 and the earlier Housing Census, same methodology has been applied on FBS survey. The intermediate consumption by the type of houses has been estimated through special survey undertaken by National Accounts in August 2002. For the subsequent years, the GVA at constant factor cost has been estimated on the basis of extrapolation of base year estimation by the incremental growth of houses during the respective year.

Public Administration and Defense

National Accounts estimates on General Government are based on wages & salaries and other compensations in cash and kind of government employees. The data is provided in detail in budgets under current expenditure (non-development) and development expenditure heads. These are regularly published by Federal, Provincial and District Government, Tehsil Municipal Administration (TMAs) and Cantonment boards in their budgets. As per new reclassification in line with System of National Accounts 1993, Pension, uniforms and liveries, bonus and cash awards for meritorious services have been valued and included in estimates of wages and salaries. Depreciation at rate of 5 percent on gross fixed capital formation (GFCF) is added in the estimates to work out the gross value added of the sector. Consumer Price Index has been applied on gross value added at current factor cost to derive estimates at constant factor cost.

Social, Community and Personal Services

Income approach has been applied to estimate the contribution of services sector in national economy which involves collection of data on number of service establishments classified by type of service and data on components of value added. Income arising in the Social Community & Personal Services sector consists of persons engaged in business; private education; health & social work; community, social & personal services; recreational & cultural services; private household employees etc.

FBS had carried out a Study on Community, Social, Personal and New Emerging Services in Pakistan in March 2001 for the rebasing of National Account for the year 1999-2000. The study has covered all the important service establishments namely computer and related institutions, business, education, medical & health, advertising, accounting, auditing & book keeping and recreational services which provide valuable data on various components on per worker value added. The persons employed in services sector by occupational group had been derived from the tabulation of Population Census 1998.

To compute the value added estimates for subsequent years, as per recommendation of study an indicator based on bench mark value added coefficient of each service category has been developed. For extrapolation of next year estimates annual change in size of employment in each number of service categories has been applied. Data on employment, number of enrolment in education, registered medical practitioners and paramedical staff, and change in membership of sports and other activities is annually collected from the service establishments and organization. In the absence of any reliable annual information on the activities of private household employees in the sector, annual growth of population is being used. CPI general is being used as deflator to derive the estimates at current factor cost.

ESTIMATION OF EXPENDITURE ON GNP

Gross National Product (GNP) viewed from the expenditure side is the sum of the value of final uses of goods and non-factor services measured in purchasers value less the c.i.f. value of imports of goods and services. The equation of the expenditure on GNP is under:

$$\text{GNP (Expenditure)} = C + G + K + S + X - M + R$$

Where C is private consumption expenditure
G is government final consumption expenditure
K is gross fixed capital formation (GFCF)
S is change in inventories (stocks)
X is export of goods and services
M is imports of goods and services
R is net factor income from rest of the world

PRIVATE CONSUMPTION

The aggregate comprises value of final consumption of goods & services of households and private non-profit institutions serving households (NPISHs). It is made up of outlays on new durable and non-durable goods & services reduced by net sales of second hand goods, scraps and wastes estimated at purchaser's value. It is measured either through commodity flow approach or on the basis of data of Household Integrated Economic Survey (HIES). At present owing to insufficient data required for commodity flow approach, it is derived as the residual of the GNP.

GENERAL GOVERNMENT CONSUMPTION

Government consumption is the output of the government which is not sold on the market. The activities (market production) of the government are classified into two distinct categories, first as administrative (non-market) and second as enterprise. The activities of the government which are purely of administrative nature are termed as general government consumption. It measures the current expenditure on goods and services incurred by the federal, provincial and districts governments, tehsil municipal administrations and cantonment boards. It comprises compensation of employees including pensions and intermediate consumption from enterprises and the rest of the world. A deduction is made on account of sales of goods & services, other than surplus stores, to enterprises and households. Sales of surplus stores are treated as a decrease in government consumption. To bring the estimates at constant prices the component of compensation of employees is deflated by CPI whereas wholesale price index (WPI) is used to deflate the intermediate consumption.

APPROACHES FOR GROSS FIXED CAPITAL FORMATION (GFCF)

The estimates of GFCF in Pakistan are primarily constructed separately for private and public sectors by economic activity as well as by capital assets. It comprises expenditure incurred on the acquisition of fixed assets, replacement, additions and major improvements of fixed capital viz. land improvement, buildings, civil and engineering works, machinery, transport equipments and furniture and fixture. Estimates of investment are computed by a combination of approaches i.e. commodity flow, expenditure (survey method) and financial.

Commodity flow approach 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:

- i) Agriculture,
- ii) Construction and
- iii) Transport.

Expenditure approach (survey method) is applied to the following sectors:

- i) Mining & quarrying
- ii) Large scale manufacturing (In Production)
- iii) Small & household manufacturing industries
- iv) Wholesale & retail trade
- v) Ownership of dwellings
- vi) Banking & insurance
- vii) Real estate and
- viii) Other services.

Financial approach is used to estimate GFCF in under construction of:

- i) Large scale manufacturing establishments
- ii) Livestock farming, farm poultry and fishing supplemented by survey method.

Sector wise methodology is presented below.

Agriculture

Main components of private investment in agriculture sector are:

- i) Imports and domestic production of agricultural machinery
- ii) Tube wells (electric and diesel) installed
- iii) Cultivated assets
- iv) Land improvement
- v) Farms buildings and sheds
- vi) Wells and bundats
- vii) Farm transport
- viii) Water courses
- ix) Orchards and
- x) Non-monetized investment.

To estimate investment expenditure on farm machinery and implements, the “commodity flow approach” is applied, using net availability of agricultural machinery and implements, adjusted for imports and exports. Trade Margins on imported machinery & equipment and domestic production are taken from study of Wholesale & Retail Trade 1999-2000. Handling charges @ 3 percent have been applied total value of imports (inclusive of all taxes). Trade margins are also based on Study of Wholesale and Retail Trade 1999-2000. Based on survey result of study a flat rate of 43.7 percent of total (other) monetized investment has been taken for non-monetized investment.

Crops

The estimates of GFCF for agriculture crops sub-sector are separately prepared for private and public sectors. The public sector estimates are based on data supplied by the public sector organizations. The estimates for household and private corporate sectors have been reviewed in light of System of National Accounts (SNA 1993). Data on land improvement, farm buildings & sheds, wells & bundats, farm transport, water courses and orchards have been taken from Agriculture Census 2000 and the investment in non-monetized is taken from Study on Agriculture 1999-2000 undertaken by National Accounts, FBS.

Livestock

In livestock, the animals not yet ready for sale or delivery, are recorded as work in progress. However, when animals intended to be used as fixed assets, they are produced on account by farmers or others, even though they are immature (not ready to be used in production) are treated as gross fixed capital formation. Gross fixed capital formation in livestock is measured by the value of acquisitions less disposals, taking account of treatment as described above. It is, therefore, equal to the total value of all mature 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 of including those sold for slaughter, plus those animals slaughtered by their owners. The investment on cultivated assets of livestock has been estimated using data supplied by Ministry of Livestock and Dairy Development.

Fishery

Purchasing of fishing crafts and construction of fishing harbor facilities are the two major components of fixed capital formation in fishing sub-sector. Investment in fishing crafts and other accessories is made by the private sector, while physical infrastructure for marine fisheries is developed and managed by the fish harbor authorities in the public sector. As regards inland fisheries, investment in hatcheries takes place in public sector, while those in fish farm, ponds and boats, it is made by individual framers and households.

For the estimates of bench mark year 1999-200 (marine and inland) the purchase of fishing crafts and other accessories and construction and major repair of fish harbours and fishing docks facilities accounted for major portion of fixed investment in fishing sub-sector. For subsequent year’s estimation or extrapolation data on increase in number of fishing crafts, purchase of fishing gears and other components during the year (and prices of some of them) is collected from Karachi Fisheries Harbour Authority, Marine Fishing Department, Fishing Trawlers operators Association, Ministry of Food and Agriculture (Agriculture Statistics – Annual), and Provincial Fisheries Departments. Value of fixed assets created as allied services by Fishermen's Cooperative Society, etc. is also added.

Forestry

Gross fixed capital formation in forestry sub-sector cover construction work and expenditure on regeneration and afforestation, access roads, watershed works, national parks, games sanctuaries and conservation of wild life. The equipments includes office equipments, cutting and sawing tools, fire fighting and photographic equipments and others used for loading, unloading and transportation of logs. Data on investment expenditure for the estimates of bench mark year 1999-2000 is based on the survey conducted for special study on 'Forestry' by Quaidian Economic Consultants, Quaid-e-Azam University, Islamabad for FBS. For estimation of investment expenditures in subsequent years, data is being collected from the office of Inspector General of Forests, Provincial Chief Conservators of Forests (through Divisional Forests Officers) and Provincial Forests Department. Reports and research of Pakistan Institute of Forests are also consulted where desired. Data is being collected by category of forests and area under thereof.

Mining and Quarrying

Gross Fixed Capital Formation (GFCF) in the Mining and Quarrying sector has been estimated as per study on Mining and Quarrying conducted by FBS in 2001. Moreover, information on GFCF has also been used from Census of Mining Industries 1999-2000. Acquisition of capital assets less disposal of assets is recorded as Gross Fixed Capital Formation. GFCF is being calculated on the basis of information supplied from Mineral Exploration Companies, Allied Services Companies, Federal & Provisional Mineral Departments, for expenditure on land improvement, Building, construction works, transport equipment, machinery & equipment, furniture & fixture. The GFCF estimates for this sector are computed separately for public and private sectors. The component of Direct Foreign Private Investment supplied by State Bank of Pakistan (SBP) is being also added to GFCF in this sector. Investment deflator developed for this sector is used to convert the estimates from current to constant.

Manufacturing

Large Scale Manufacturing Industries

Gross fixed capital formation in Large Scale Manufacturing Industries (LSMI) is measured by the value of acquisitions less disposal of fixed assets [land improvement, building, construction, plant and machinery, transport equipment, furniture and fixture, others (including intangible assets)] plus certain additions to the value of non-produced assets. It is, therefore, equal to the total value of all produced (tangible & intangible) assets less the value of their disposals during the accounting year. Exceptional losses of assets due to misuse, accidental losses or other natural disasters are recorded in other changes in the volume of assets account and not as disposals. The gross fixed capital formation (GFCF) of LSMI has been estimated by using a combination of expenditure & financing approaches. The gross fixed capital formation (investment) by units in production has been estimated through capital expenditure survey (LSMI Study 1999-2000). The estimates of GFCF are compiled for private and public sector separately. The estimates for private sector are compiled for in production units and under construction units separately. The estimates of in production units are compiled by survey approach. For this purpose regular survey is launched to collect data from all the listed and non listed companies. The estimates of under construction units are compiled by applying the financing approach, for which data is collected from all the scheduled Banks, Development Financial Institutions, Leasing and Modaraba companies. The estimates of public sector are compiled by conducting a regular census of public sector enterprises. The investment deflator is applied to compile the estimates at constant prices.

Small and Household Manufacturing Industries

The estimates for the base year 1999-2000 have been derived from the study on Small scale and household Manufacturing Industries in Pakistan conducted for the change of base of National Accounts. For subsequent years the estimates are extrapolated by applying a fixed growth rate of 9.44 percent derived from the study. The investment inflator is applied to convert the constant price estimates at current prices.

Slaughtering

The estimates for the base year 1999-2000 have been derived from the Study on Slaughtering Industry conducted for the change of base of National Accounts. For subsequent years the estimates are extrapolated by applying growth rate of meat production. Data for that is supplied by Livestock Division.

Construction

Investment in construction sector is computed separately for private and public sectors. For private sector, investment is estimated through commodity flow approach taking into account the c.i.f. value of imports of construction machinery and value of domestic production used for construction purposes namely concrete mixture, road rollers, etc. The import duty and sales tax, etc. are added to c.i.f. value of import of construction machinery and equipment while value of export/re-export is deducted. 42 percent is added on the net available balance for domestic use from total imports to account for trade margin and 3 percent of c.i.f. value of import is added as handling charges.

GFCF estimates of public sector construction include investment by capital assets i.e. expenditure on land improvement, machinery & transport equipment, furniture & fixture from autonomous bodies such as Development Authorities, National Construction Company, Indus Basin etc.

Electricity, Gas and Water Supply

The Gross Fixed Capital Formation (GFCF) consists of expenditure on land improvement, building, construction works, transport equipment, machinery & equipment, furniture & fixture. The GFCF estimates for this sector are computed separately for public and private sectors. GFCF is being estimated on the basis of information supplied by:

- § WAPDA, KESC, IPPs, CPPs, for electricity generation & distribution
- § SNGP, SSGC, OGDCL, Mari gas and PPL for gas distribution
- § Water Works and supply

Gross Fixed Capital Formation (GFCF) for the water supply sub-sector was estimated on the expenditure incurred on fixed assets during the year on purchase of capital assets, installation and repair of utility lines & buildings. The component of Direct Foreign Private Investment supplied by State Bank of Pakistan (SBP) is being also added to GFCF of this sector. To convert the Current into constant GFCF estimates, investment deflator for the sector is being applied.

Transport, Storage and Communications

The investment in transport and communication sector is estimated for private and public sector separately through commodity flow approach and expenditures incurred on land improvement, buildings, construction works, all types of machinery, transport equipment and furniture & fixtures. Investment in private sector transport is estimated through commodity flow approach. The c.i.f. value of imports of transport machinery & equipment and value of domestic production such as trucks, Buses, LCVs are

taken into account. Import duty and other indirect taxes are added to the c.i.f. value of imports machinery & equipment and value of exports & re-export is deducted to arrive at net available for domestic use. On the value of net available for domestic use 42 percent is added to account for trade mark-up and 3 percent on c.i.f. value of imports as handling charges. The summing up of the above items and adding the value of domestic production gives total value of gross fixed capital formation in private transport sector. For public sector transport, data is collected from all autonomous and semi-autonomous bodies such as Pakistan Railways, PIA, PNSC, KPT, NLC, CAA, PARKO and Port Qasim etc. In case of gross fixed capital formation in communication for public sector data is collected from all autonomous & semi autonomous bodies such as Post Office, PTCL and NTC etc. and from relevant companies for the private sector. Direct Foreign Investment is also included to arrive at the total GFCF of the sector. Investment deflator developed for transport sector is used to convert the estimates from current to constant.

Wholesale and Retail Trade

The GFCF in the wholesale and retail trade sector is based on the study conducted in 2001-02 for rebasing purposes. The estimates of gross fixed capital formation at current market prices for the benchmark year 1999-00 are collected directly from the trade and hotel establishments. For compiling the data, balance sheets or accounts registers were used in respect of establishments maintaining regular accounts, whereas, for establishments having no proper accounts, the estimates are based on survey response, trend and averages. In the latter case the enumerators completely reviewed and examined the data of such establishments and adjusted the data where higher differences were observed. The component of Direct Foreign Private Investment supplied by State Bank of Pakistan (SBP) is being also added to GFCF of this sector.

Finance and Insurance

The Financial Corporate Sector includes

- i) State Bank of Pakistan
- ii) Other Depository Corporations
- iii) Other Financial Intermediaries
- iv) Insurance Corporations and pension fund Institution

GFCF in the Financial Corporate Sector includes expenditure on land improvement, buildings, transport equipments, machinery & equipments, furniture, fixture and intangible assets, The GFCF is estimated separately for each of the above sub-sectors by deducting value of sale proceeds of disposal of fixed assets from value of addition in above assets as per following.

$$\text{GFCF} = \text{Addition of assets} - \text{Sale proceeds of disposal of fixed assets}$$

The data of Discount & Guarantee Houses, Venture Capital Companies, Investment Companies, Exchange Companies (Money Changers), Postal Life Insurance Company and Employees Old-Age Benefit Institution have been compiled and included in the estimates.

Ownership of Dwellings

GFCF of this sector is compiled through expenditure on following by type of fixed assets.

- a) New Buildings
- b) Alteration & Amendments

c) Major (Significant) Repair & Maintenance

The expenditure on ii & iii activities are taken from Construction Survey 1996 and for the former head of investment per house expenditure by type is applied on number of total houses newly constructed.

Public Administration & Defense

GFCF estimates derived from the budget documents (Development and Non-development) of Federal (including Defense), Provincials & Districts Governments, Tehsil Municipal Administration and Cantonment Boards. GFCF in Public Administration & Defense (General Government) includes expenditure made on purchase of physical assets i.e. transport, machinery and equipments, furniture & fixtures and construction of civil works e.g. land improvement; construction of buildings (residential & Non residential); and other constructions i.e. roads; highways; bridges; runways; tunnels; sewerage, drainage, water supply and other utilities lines, canals and irrigation tracts. Military equipments i.e. war weapons such as missiles, bombs, rockets, air craft's, tanks and other assets whose function is to release these weapon are not treated as investment. They are part of intermediate consumption instead.

The current GFCF is deflated with investment deflator of General Government based on components of GFCF to convert in to constant factor cost.

Social Community and Personal Services

The investment in services sector includes expenditure incurred on land improvement, buildings, construction work, all types of machinery, transport equipment and furniture & fixtures. The investment estimates for this sector are computed separately for public and private sectors. The investment estimates of private sector cover all private educational services, research & scientific institutions, medical & health services, religious institutions, recreational and cultural services, personal and household services and the component of Direct Foreign Private Investment in services sector supplied by State Bank of Pakistan (SBP) is added. The investment estimates of services in public sector are based on actual data collected annually on land improvement, buildings, construction works, all types of machinery, transport equipment and furniture & fixtures from all autonomous and semi-autonomous bodies such as research, development and educational institutions, universities, Higher Education Commission and Pakistan Council of Scientific and Industrial Research etc. To convert the Current into constant GFCF estimates, investment deflator for the sector is being applied.

CHANGE IN INVENTORIES (STOCKS)

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

- a) Goods producing industries
 - i) Material and supplies
 - ii) Work-in-progress
 - iii) Livestock except breeding stock,
 - iv) Dairy cattle and the like
 - v) Finished goods
- b) Wholesale & retail trade
- c) Other industries
- d) Producers of government services

The change in inventories in current prices is deflated by the wholesale price index (WPI-General) to bring the same at constant prices.

EXPORTS AND IMPORTS OF GOODS AND NON-FACTOR SERVICES

These transactions in national accounts are recorded at the moment at which the legal ownership of the goods passes between residents and non-residents or the services are rendered by either group or by one transactor to the other. That is, these transactions are recorded on the basis of physical movement of goods and services and not on financial basis. The basic data on merchandise are taken from the trade statistics of the FBS, whereas non-factor services and other current transfers are extracted from the SBPs balance of payments statistics. Besides, it includes imports under baggage, gifts in cash or in kind but excludes military equipments transferred between governments. The imports are deflated by the imports price index and the exports by the exports price index to bring the same at constant prices.

INDIRECT TAXES AND SUBSIDIES

Indirect taxes comprise those taxes paid by enterprises which are chargeable as business expenses and taxes paid by the households on possession of use of goods and services without regard to personal circumstances. Subsidies consist of current grants made by government to producers and are in fact negative indirect taxes since they contribute to factor income but do not enter into market prices. They may take the form of direct payments to producers or of a differential between the buying and selling prices of government trading organizations. The figures of indirect taxes and subsidies are derived from the budgets documents of the federal, provincial and local governments. The estimates in current prices are deflated by the wholesale price index (WPI-General) to bring the same at constant prices.