

# Business Statistics Training Workshop

Uganda Bureau of Statistics (UBoS)

15<sup>th</sup> – 17<sup>th</sup> August, 2017

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# Training Course Outline

## **Introduction to Business Statistics**

- What is Business Statistics
- Importance of business statistics and

## **Sources, Scope and coverage of data collection:**

- Censuses, surveys, administrative records etc
- Formal and Informal business activities
- Determining size of establishments (Large, medium, small etc)

## **Concept of Statistical Units and Groupings:**

- Institutional units / sectors
- Industry, Establishment & Enterprises
- Market and Non Market businesses
- Industrial Production and Boundaries

## **Classification of business / economic activities**

- **Concept of classifications**
- Categories of the International Standard Industrial Classification rev4

## **Compilation of Industrial Production**

- Non service industries ( Non Market and Market producers)
- Service businesses ( Non Market and Market producers)

# Training Course Outline (cont.)

## **Industrial Performance:**

- Role of growth rates
- Methodological improvements
- Innovation and use of advance technology

## **Business Demography:**

- Business Profiling
- Geographical Location
- Business employer / employee characteristics.

# Introduction and Importance of Business Statistics

# Introduction

## **What is Business Statistics:**

**Business Statistics** refers to the collection of data, compilation, processing, analysis and dissemination of information on business activities; income & expenditure, sales & revenue, production and consumption, transactions, flow of stock, assets, liabilities or all other related business activities.

# Introduction (cont.)

## **Importance of Business Statistics:**

There are three major functions in any business enterprise in which the statistical method / techniques are useful. These are as follows:

- (i) The planning of operations:** This may relate to either special projects or to the recurring activities of a firm over a specified period.
- (ii) The setting up of standards:** This may relate to the size of employment, volume of sales, fixation of quality norms for the manufactured product, norms for the daily output, and so forth.

# Introduction (cont.)

## **(iii) The function of control**

This involves comparison of actual production achieved against the norm or target set earlier. In case the production has fallen short of the target, it gives remedial measures so that such a deficiency does not occur again.

- A worth noting point is that although these three functions-planning of operations, setting standards, and control-are separate, but in practice they are very much interrelated.

# Introduction (cont.)

## **Importance and Uses:**

Different authors have highlighted the importance of Statistics in business. For instance, Croxton and Cowden give numerous uses of Statistics in business such as:

Project planning, budgetary planning and control, inventory planning and control, quality control, marketing, production and personnel administration.

# Importance of Business / Economics statistics

Another author, Irwing W. Burr, dealing with the place of statistics in an industrial organization, specifies a number of areas where statistics is extremely useful.

- These are: customer wants and market research, development design and specification, purchasing, production, inspection, packaging and shipping, sales and complaints, inventory and maintenance, costs, management control, industrial engineering and research.

# Sources Business Statistics Data

# Sources Business Statistics Data

## **Business / Economic censuses:**

- Complete count of all business units of a country within a specified time period. Normally conducted every five or ten years depending on availability of resources.

## **Business Establishment Survey:**

- A detailed study on sampled establishments of economic activities, revenues, expenses, assets etc

## **Labor Force Survey:**

- Periodic study on formal and informal employment in accordance with International Labor Standards (ILO)

# Sources Business Statistics Data (cont.)

## **Administrative data:**

- Eg. Income tax, VAT, no. of employees etc
- Particularly for sectors most likely not covered by economic census such as agriculture, finance etc

## **Business Register:**

- List of all formal or registered businesses outlining, location, contact details and economic activity

# SCOPE AND COVERAGE

# Scope & Coverage

## **Formal Businesses:**

- Registered businesses with tax authorities or municipalities, regions or councils. Mainly operate under fix structures.

## **Informal Businesses:**

- Unregistered businesses; low level organization, small scale, without a fix location, business inside house, no tax records, eg. Peddlers, micro-traders etc.

# Scope and Coverage (cont.)

## **Determining business size:**

All business needs to be categorized by size as either

- Large
- Medium
- Small

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# Scope and Coverage (cont.)

Most businesses are small in size. They may be owned by one person and employ no other people. They are likely to supply a local market and make just enough profit to keep the owner happy.

On the other hand, some businesses are very large. They may be owned jointly by many shareholders. They may employ thousands of people and make billions of dollars profit

# Methods of measuring business size

What is the difference between a large business and a small business?

When does a small business become large? How might size be measured?

## **1) Turnover:**

The sales revenue or turnover of a business could be used to measure size. For example, BP, the UK oil company, is a very large business. Its turnover in 2008 was \$361 billion.

# Methods of measuring business size (cont.)

## **2) The number of employees:**

A business with thousands of employees may be considered large. For example, Ford the US car giant, employed over 280,000 people in 2008.

## **3) The amount of capital employed:**

Capital employed is the amount of money invested in a business. The more money invested, the larger the business.

## **4) Market share:**

It could be argued that a business with a 43% market share, is larger than one that has a 9% market share in the same industry. Coca-Cola, for example sells over 50% of all cola drinks worldwide.

# Classification of Business by Size - Example

## European Union (EU)

The EU classifies the size of firms according to turnover, the number of employees and the capital employed

	Small	Medium	Large
Turnover	< 10 million euros	10 million to 50 million euros	>50 million euros
No. of Employees	<50	50 to 249	>249
Capital employed	<10 million euros	10 million to 43 million euros	> 43 million euros

# THE GAMBIA SCENARIO

	Large	Medium	Small	Micro
Turnover	> 1 million dalasis	500,000 to 1 million dalasis	100,000 to 500,000 dalasi	> 100, 000 dalasis
No. of employees	>10 persons	5 to 10 persons	1 to 5 persons	Self employed

# Problems with measuring size

In practice, measuring the size of a business may not be easy.

A highly automated chemical plant may only employ 45 people, but have a turnover of €50 million. According to the number of employees, the European Union (EU) would class it as a small business. However, according to the level of turnover it could be classed as a large business.

A business with a turnover of €56 million may have capital employed of just €32 million. Therefore, according to turnover it is large, but the size of its capital employed suggests that it is medium-sized!

# EXAMPLE 1

## **Sandeep Stores**

Sandeep Stores is a corner shop located in Delhi. It sells spices and dried fruits and has been run by the Sandeep family for over 70 years. Over 95% of the Indian retail market is made up of small, family run businesses like this one. Dilip Sandeep understands local tastes and makes sure that he can meet the needs of the local market. In 2008 the shop made a profit of \$12,000.

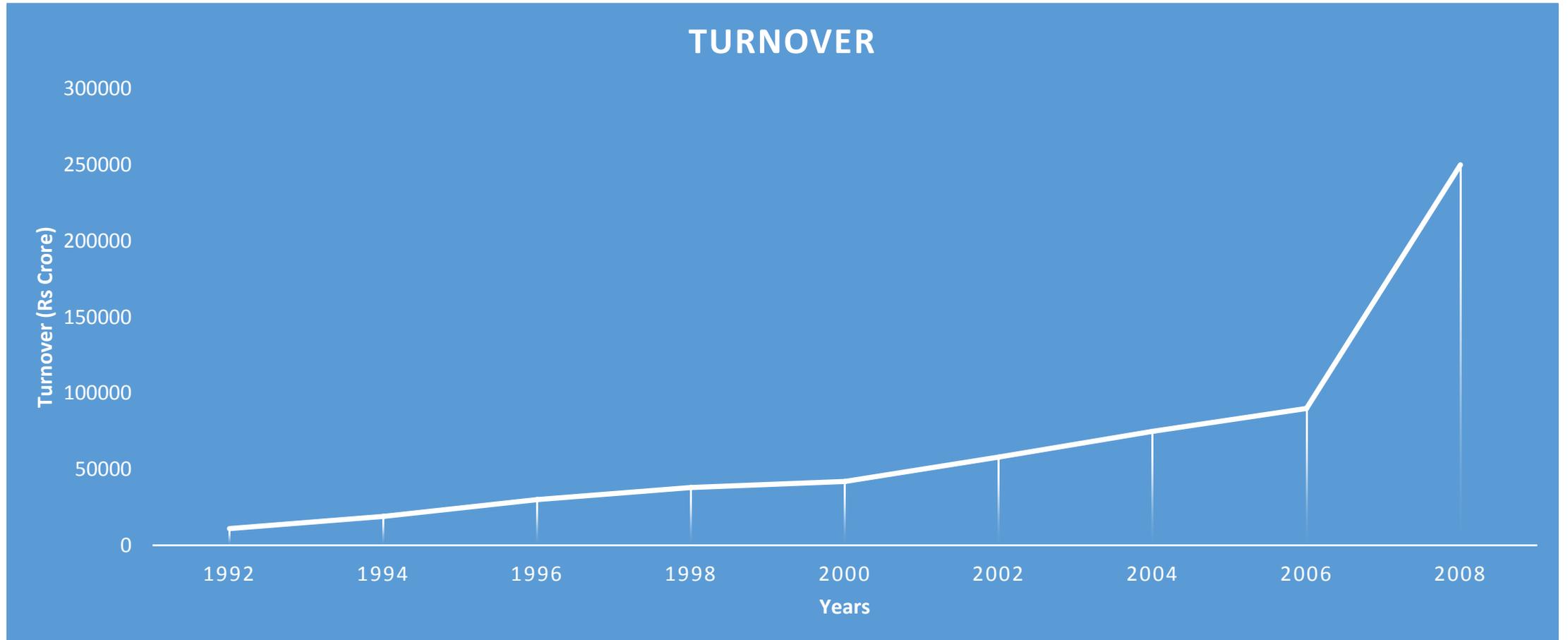
# EXAMPLE 2

## **Tata Group**

Tata Group is the largest business in India. It is involved in the production of steel, motor cars, chemicals, electricity and watches.

It also provides a range of services such as telecommunications, IT consultancy, hotels and hospitality. The company employs more than 350,000 people and has operations in over 80 different countries. In 2008, Tata had a turnover of \$62.5 billion and made a profit of \$5.4 billion

# GRAPH OF THE TATA TURNOVER



# QUESTIONS

- (a) What evidence is there to suggest that Tata group is a large business?
- (b) What evidence is there to suggest that Sandeep Stores is a small business?
- (c) To what extent has Tata Group grown since 1992

## QUESTIONS (cont.)

(d) Casio Computer Co. Ltd is based in Japan and makes electronic goods. It is best known for its calculators, audio equipment, cameras, musical instruments, and watches. In 1957 Casio released the world's first electric calculator. The company employs over 13,000 people and had a turnover of ¥623 billion (€4.8 billion) in 2008. Casio also made a profit of ¥3.946 billion (€30.64 million) in the same year. **Using evidence from the case, determine whether Casio is a small, medium or large business.**

# CLASSIFICATION OF BUSINESS ACTIVITIES

# Classification of Business activities

All business activities to be classified as either

## **Local standard:**

- Country specification of products for own use and internal comparisons

## **Regional standard:**

Surrounding countries with similar economic engagements and products harmonizing and operating in one classifications framework i.e Ecowas, Comesa etc

## **International standard:**

- Continental / global agree standards by the United Nations eg ISIC, COICOP, COFOG

# Industrial Classification - ISIC rev 4

ISIC REV 4	ACTIVITIES
	<b>AGRICULTURE</b>
A	Crops
	Livestock
	Forestry
	Fishing
B	<b>INDUSTRY</b>
	Manufacturing
C	Mining & Quarrying
D	Electricity, Gas, Steam & Air conditioning supply
E	Water supply; sewerage, waste management and remediation activities
F	Construction
	<b>SERVICES</b>

# Concepts of Statistical Units and Groupings

# Statistical Units

## **Statistical Units:**

- For data collection (surveys & administrative data sources)
  - Households, individuals and families
  - Enterprises, Establishments and tax entities
  - Transactions
- For analysis and presentation
  - Classifications

# Institutional Units

**An institutional unit** is an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities

- Can exchange ownership of goods or assets
- Responsible for actions at law
- Can enter into contracts
- Balance sheet information

# Residence units

**The residence** of each institutional unit is the economic territory with which it has the strongest connection, in other words, its center of predominant economic interest

Note predominant = all units are resident in one and only one economy

Concept of residence exactly the same in SNA as in BPM6

# Total Economy

- The total economy is defined as the entire set of resident institutional units
- Also need to consider interaction with non-resident institutional units – these are known collectively as “the rest of the world”
- Do not consider non – resident units with whom there is no interaction
- Use of “national” and domestic” in SNA

# Two types of Institutional Units

- 1) Household
- 2) Legal and Social entities

# 1) Households

- Household is a group of persons who share living, accommodation, who pool some or all of their income and wealth and who consume certain types of goods and services collectively; mainly housing and food
- Institutional households : Groups of persons staying in hospitals, retirement homes, prisons, boarding schools for a long period of time

## 2) Legal or Social Entity

- Legal or Social entity that engages in economic activities and transactions in its own right.
- It's existence is recognized by law or society independently of the persons, or other entities, that may own or control it
- Includes (a) **Corporations**, (b) **Government units** and (c) **NPIs**

# (a) Corporations

- The term corporations covers legally constituted corporations and also cooperatives, limited liability partnerships, notional resident units and quasi-corporations
- Aim to generate profit or other financial gain for owners
- Set up to engage in production

# Legally Constituted Corporations

- **A legally constituted corporation** is a legal entity, created for the purpose of producing goods and services for the market, that may be a source of profit or other financial gain to its owners; it is collectively owned by stakeholders who have the authority to appoint directors responsible for its general management

# Quasi - Corporations

- **A quasi – corporation** is either an unincorporated enterprise owned by a resident institutional unit that has sufficient information to compile a complete set of accounts and it operates as if it were a separate corporation and whose de facto relationship to its owner is that of a corporation to its shareholders, or

# Quasi – corporation (cont.)

Or,

An unincorporated enterprise owned by a non – resident institutional unit that is deemed to be a resident institutional unit because it engages in a significant amount of production in the economic territory over a long or indefinite period of time

# Three types of quasi-corporations

1. Unincorporated enterprises owned by government units that are engaged in market production and that are operated in a similar way to publicly owned corporations
2. Unincorporated enterprises, including unincorporated partnerships or trusts, owned by households that are operated as if they were owned corporations

# Three types of quasi-corporations (cont.)

3. Unincorporated enterprises that belong to institutional units resident abroad , refer to as “branches”

- Separation from parent unit difficult; must be able to identify balance sheet components

# Unincorporated enterprise

**Unincorporated enterprise** represents the production activity of a government unit, NPISH or household that cannot be treated as the production activity of a quasi- corporation.

# Notional Resident Units

- Immovable assets such as land, other natural resources, building and structures are treated as being owned by residents except in one particular circumstance;
- If the legal owner is actually non-resident, an artificial unit, called a notional resident, unit created in SNA. Owner has equity in the notional resident unit
- Only exception is land and building owned by foreign governments

# Groups of Corporations

- Not recognized as a single institutional unit in the SNA
- Subsidiaries (responsible and accountable for its own production activities, and required by law and tax authorities to produce complete set of accounts, including balance sheets ) treated on same basis as parent corporations
- But, supplementary information, especially for multi-nationals, may be interesting

# Head offices and Holding Companies

- Head office (sometimes misleadingly called a holding company) oversees and manages the units of the enterprise, manages day-to-day operations
- Holding company holds the assets (controlling level of equity) but does not administer or manage other units
- Consistent with ISIC rev. 4

## b) Government

- **A Government** is a unique kinds of legal entities established by a political process that have **legislative, judicial or executive** authority over other institutional units within a given area
- Principal functions of government
  - Provide goods and services to the community or individual households, financed from taxation...
  - Redistribute income and wealth
  - Engaged in non-market production

## c) Non - Profit Institutions (NPIs)

- Source of misunderstanding
- Not true that they cannot make profit – only true that they cannot distribute any profit to their owners
- May be the case that they receive special tax treatment but this does not define them
- Detailed discussions later on

# INSTITUTIONAL SECTORS

# Institutional sectors - Outline

- Why Sectors?
- Households, corporations, NPIs, government units
- Market vs. non-market producers
- Financial vs. non-financial corporations
- Control by government
- Sub-sectors

# Institutional Units Have Different Economic Objectives

- Households – Consume
- Corporations – produce to make profit for their owners
- NPIs – produce for other objectives
- Government – produces and consume on behalf of the community at large, redistributes income and wealth

# Why Sectors?

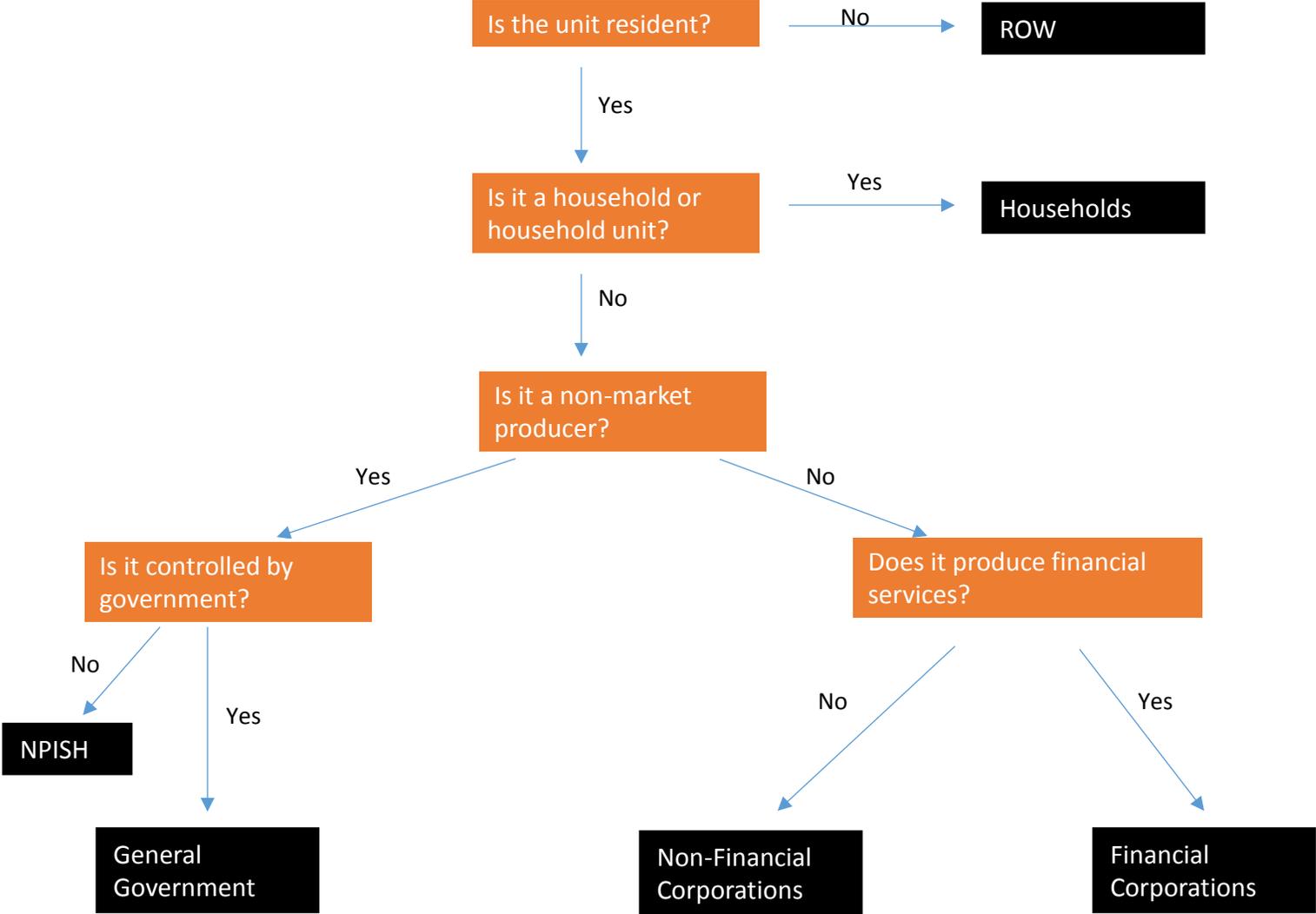
- Production of goods and services account completely explain what is produced and who uses production
- Does not explain how income earned is available to those who consume
- Does not show role of government
- Does not give full picture of wealth, its evolution or allocation

# Institutional Sectors

Five Institutional Sectors:

- 1) Non – Financial corporations
- 2) Financial Corporations
- 3) General Government
- 4) Households
- 5) NPISHs

# Allocation of institutional units to institutional sectors



# Market and Non-market

- Once households removed, all remaining units are producers
- Do they aim to sell their products at prices that are **economically significant**?
  - If yes, are market producers
  - If no, are non-market producers

# Economically Significant Prices

**Economically significant prices** are prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy. These prices normally result when:

- The producer has an incentive to adjust supply either with the goal of making a profit in the long run or, at a minimum, covering capital and other costs; and
- Consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged.

# Market Producers

## **Corporations:**

- Legally constituted
- Partnerships etc
- Quasi - corporations
- NPI that sell their output at economically significant prices
- Government units that sell their output at economically significant prices

# 1. Corporations

## **Non – Financial vs. Financial Corporations**

a) **Non-financial corporations** are corporations whose principal activity is the production of market goods or non-financial services

b) **Financial corporations** consist of all resident corporations that are principally engaged in providing financial services, including insurance and pension funding services, to other institutional units.

## a) Non-financial Corporations

- Public non-financial corporations
- National private non-financial corporations
- Foreign controlled non-financial corporations
- Also distinguish NPIs, ideally within each sub-sector

## b) Financial Corporations

**Financial corporations** can be divided into three broad classes namely:

- 1) financial intermediaries,
- 2) financial auxiliaries and
- 3) other financial corporations

# Financial Corporations (cont.)

**Financial Intermediaries** are institutional units that incur liabilities on their own account for the purpose of acquiring financial assets by engaging in financial transactions on the market.

- **They include insurance corporations and pension funds**

# Financial Corporations (cont.)

- **Financial auxiliaries** are institutional units principally engaged in serving financial markets, but do not take ownership of the financial assets and liabilities they handle.
- **Other financial corporations** are institutional units providing financial services, where most of their assets or liabilities are not available on open financial markets.

# Financial Corporations – Subsectors

- Central Bank
- Deposit-taking corporations other than central bank
- Money Market Funds (MMF)
- Non MMF investment funds
- Other financial intermediaries, except Insurance Corporations (IC) and Pension Funds (PF)

# Non Financial Corporations (cont.)

- Financial auxiliaries
- Captive financial institutions and money lenders
- Insurance Corporations (IC)
- Pension Funds (PF)

## 2) General Government

- Central Government
- State government
- Local government
- Social security funds
- (alternative structure where social security funds at each level of government are included at that level)
- (excludes market quasi corporations)

### 3) Non-Profit Institutions (NPIs)

- Non-profit institutions are legal or social entities, created for the purpose of producing goods and services, whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them.
- Whether they make profit is irrelevant
- Tax status is irrelevant

# Non- Profit Institutions (NPIs)(cont.)

## **NPIs engage in market production**

- Providing financial services are included in the financial corporations sector
- Otherwise are included in the non-financial corporations

## **NPIs engaged in non- market production**

- If controlled by government are treated as part of the government sector
- Otherwise form a separate sector, non-profit institutions serving households (NPISHs)

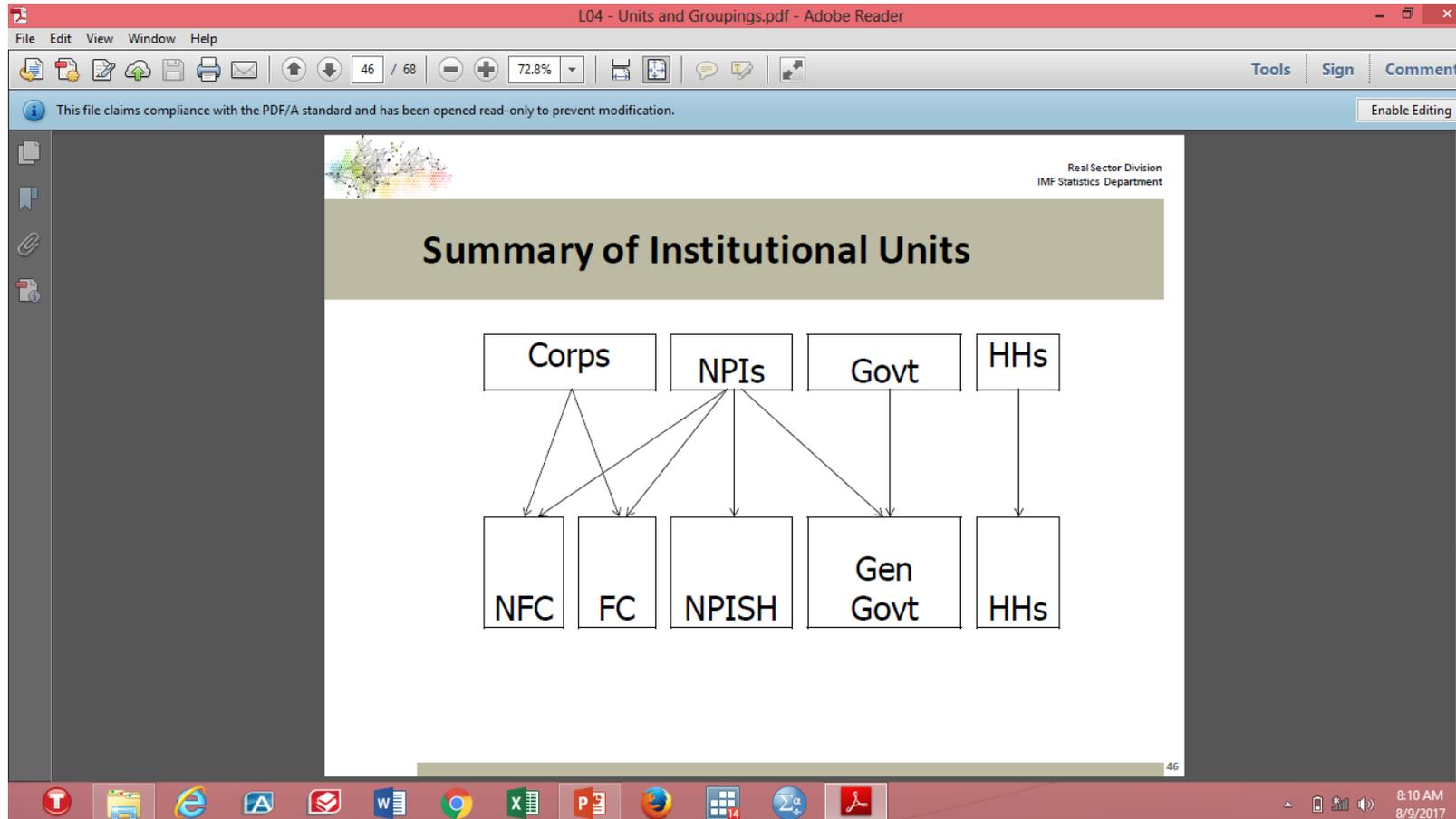
# NPIs – Control by Government

- Ability to determine general policy or program

## **Five indicators:**

- Appointment of officers
- Other provisions of enabling instruments
- Contractual agreements
- Degree of financing
- Risk exposure of government

# Summary of institutional Units



# NPIs Providing Goods & Services to Households

- Does doing so at economically significant prices
- Does providing goods & services to individual households free or at prices that are not economically significant
- Those providing collective services to the community at large free or at prices that are not economically significant

# EXAMPLES

- Hospitals, schools, day care centres
- NGOs, advocacy groups ( civil societies, human right groups)
- Arts, culture and sporting organizations
- Political parties
- Religious congregations
- Unions, business and professional organizations
- Charities, relief and aid organizations

# NPI Satellite Account – Why?

- To show full extent of activity undertaken by NPIs
- To be able to aggregate activity of all NPIs whichever sector they are located to in the SNA on a similar footing

## 4) Households

- Unlike corporations, can engage in all three activities, production, consumption and accumulation
- All must engage in consumption
- Partly engaged in production and
- accumulation

# Households as producers

- Owner-occupied dwellings
- Other activity entirely for own final use e.g. subsistence agriculture
- Small scale production, some at least for the market
- Units not treated as quasi-corporations but registered or more than a certain number of employees

# ACTIVITIES AND PRODUCING UNITS

# Activities and Producing units

Businesses activities are categorized into three:

- Principal
- Secondary
- Ancillary

# Activities and Producing units (cont.)

## **Types of units**

- Enterprises
- Kind-of-activity units
- Local units
- Establishments
- Units of homogeneous production (Industry)

# Principal Activity

- **The principal activity** of a producer unit is the activity whose value added exceeds that of any other activity carried out within the same unit
- Must be capable of being delivered to another unit though it may not be so delivered
- Includes by-product; that are necessarily produced with principal products – e.g, nutmet and mace

# Secondary Activity

- **A secondary activity** is an activity carried out within a single producer unit in addition to the principal activity and whose output, like that of the principal activity, must be suitable for delivery outside the producer unit.
- Most producer units have at least some secondary products - e.g. transport, construction, distributive trades

# Ancillary Activity

- Services (not goods) not intended for sale outside the enterprise
- Typically found as inputs into almost any kind of activity e.g. accounting, cleaning, transport
- Value small compared to main activity

# Enterprise

- **An enterprise** is the view of an institutional unit as a producer of goods and services.
- **An enterprise** may be a corporation, an NPI or an unincorporated enterprise
- **An unincorporated Enterprise** represents the production activity of a government unit, NPISH or household that cannot be treated as the production activity of a quasi-corporation.

# Kind-of-Activity Unit

- A kind-of-activity unit is an enterprise, or a part of an enterprise, that engages in only one kind of productive activity or in which the principal productive activity accounts for most of the value added.
- Ideally would like only one activity but as noted often there are secondary products

# Local Units

- **A Local Unit** is an enterprise, or part of an enterprise, that engages in productive activity at or from one location.
- This unit could be used when compiling regional accounts, but in general preference is given to establishment

# Establishment

- An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added.
- Many enterprises contain only one establishment but most large enterprises consist of many establishments.

# Industry

- An Industry consist of a group of establishments engaged in the same, or similar, kinds of activity.
- Only the production account and generation of income account can be compile for industries (and employment and a breakdown of fix capital)
- The classification of industries used in the SNA is ISIC Rev.4
- For Products is CPC 2

# Establishments Within Integrated Enterprises

- A horizontally integrated enterprise is one in which several different kinds of activities that produce different kinds of goods or services for sale on the market are carried out simultaneously using the same factors of production.
- A separate establishment should be identified for each different kind of activity wherever possible.

# Establishments Within Integrated Enterprises (cont.)

- A vertically integrated enterprise is one 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
- ISIC does not try to identify the different establishments
- SNA recommends that when the enterprise spans two or more ISIC sections, at least one establishment for each section should be identified

# Changes in the 2008 SNA

- Recognize ancillary units if observable
- Ancillary corporations now artificial subsidiaries
- Explicit recognition of branches as institutional units
- Holding companies classified to main sector of subsidiaries
- Sub-sectors of NPIs within corporations and govt.
- Sub-sectoring of financial corporations revised.

# Quiz

1. Five institutional sectors as per the 2008 SNA: Nonfinancial corporations, financial corporations, general government, nonprofit institutions serving households, and .....
2. General government sector consists of : Central government, state government , local government, and .....
3. Industry could consist of a group of establishments engaged in different kinds of activities (yes / No)

# INDUSTRIAL PRODUCTION

# INDUSTRIAL PRODUCTION

**Production** is an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labor, capital, and goods and services to produce outputs of goods and services.

**Production** can be described in general terms as an activity in which an enterprise uses inputs to produce outputs.

## **Examples:**

- Farming and fishing by households,
- Manufacturing of computers by DELL,
- Transport services provided by British airways,
- Educational services provided by schools, etc

# PRODUCTS

**Products**—goods and services (including knowledge capturing products) that result from a production process.

Particular enterprise may be involved in production of goods / services or both.

**Example:**

Mazda—manufactures cars (goods) and also provides consultancy services (services).

# GOODS

Goods are **physical**, produced objects for which a **demand** exists, over which **ownership** rights can be established and whose ownership can be **transferred** from one institutional unit to another by engaging in transactions on markets.

**Ownership, existence of demand and transferability**—main characteristics of goods.

Satisfy needs or wants of households or community or for production of other goods and services.

# SERVICES

Services are the result of a production activity that changes the conditions of the consuming units, or facilitates the exchange of products or financial assets.

## **Change effecting services:**

1) Change the conditions of goods

➤ Example: Cleaning, repairing or otherwise transforming them

2) Change the physical condition of persons

➤ Example: medical, beautician services

3) Change the mental condition of persons

➤ Example: educational, entertainment services.

**Margin services**—trade and many financial services

# PRODUCTION BOUNDARY

Whether all the activities carried under the responsibility, control and management of institutional units are included in the compilation of production account for a particular economy or there are exceptions?

**Production boundary**—specifies the activities included and excluded in the compilation of production account

# PRODUCTION BOUNDARY

## **Includes:**

- a) The production of all goods or services that are supplied to units other than their producers, or intended to be supplied, including the production of goods or services used up in the process of producing such goods or services;
- b) The own-account production of all goods that are retained by their producers for their own final consumption or gross capital formation;

## **Example:**

Agricultural produce (cereals, pulses, etc.) retained by farmers for own final consumption;

Furniture manufactured and retained by a carpenter for use in his household unincorporated enterprise

# PRODUCTION BOUNDARY

c) The own-account production of knowledge-capturing products that are retained by their producers for their own final consumption or gross capital formation but excluding (by convention) such products produced by households for their own use;

**Example:**

Own-account production of customized software by statistical offices for national accounts compilation.

d) The own-account production of housing services by owner occupiers; and

**Example:**

Karen lives in his/her own house in Wonderland with his/her family. It will be treated as production of housing services for final consumption by his/her household and this activity is included production boundary

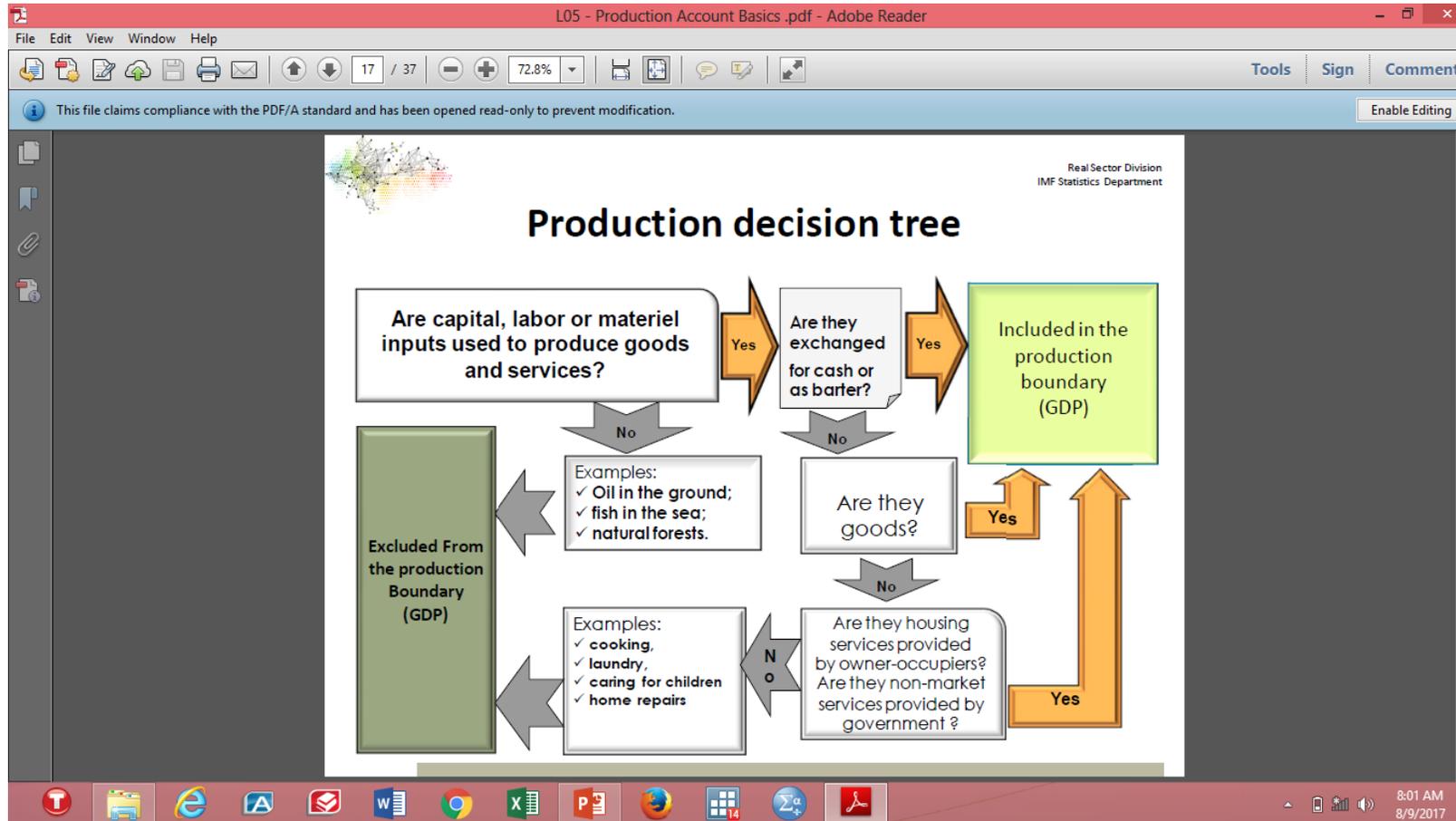
# PRODUCTION BOUNDARY

e) The production of domestic and personal services by employing paid domestic staff.

## **Example:**

Michael's family employs a domestic help Chinni to cook food and wash clothes and pay her \$ 1200 per month. Services provided by Chinni (cooking food and washing clothes) are included in the production boundary as per SNA.

# PRODUCTION DECISION TREE



# ILLEGAL ACTIVITIES INCLUDED

These are activities that are illegal by nature.

Two types:

- Production of goods & services whose sale, distribution, or possession is forbidden by law
- Production activities that are usually legal but becomes illegal by unauthorized producers, eg; unlicensed medical practitioner

# ILLEGAL ACTIVITIES INCLUDED (cont.)

Examples of activities that may be illegal but productive in an economic sense includes:

- Manufacturing and distribution of narcotics
- Illegal transportation in the form of smuggling of people and goods
- Services such as prostitution.

An activity may be illegal is not an automatic reason for exclusion

# Non Observed economy - Included

The term is used to describe activities that, for one reason or the other, are not captured by regular statistical enquiries.

Reasons:

- Informal activities not captured in Formal statistical enquiries.
- Producer anxious to conceal a legal activity
- May be an illegal activity

# Non Observed economy – Included (cont.)

Fact that activity is carried out informally or is not observed is no reason to exclude it from the measure of production in the system

## **Example:**

- activities concealed from authorities and other government agencies; without license or registration

## **Reasons:**

- Avoid payment of income, value added or other taxes.
- Avoid payment of social security contributions
- Avoid legal standards i.e minimum wage, maximum hours etc

# PRODUCTION BOUNDARY - EXCLUDES

All personal and domestic services produced and consumed within the same households are excluded from the concept of production in the SNA.

Example:

- Cleaning, decoration and maintenance of dwelling occupied by the household
- Use of Vehicles for household purposes
- Preparation & serving of meals
- The care, training and instruction of children
- The care of sick, infirm or old people
- Transportation of members of the household or their goods.

# PRODUCTION BOUNDARY - EXCLUDES

Reasons for not imputing values for unpaid domestic work or personal services produced and consumed within households may be as follows:

- Production of household service entails a simultaneous decision to consume that service
- Most household services are not produced for the market thus no suitable market prices to value the services
- Does not influence economic policy i.e changes in the levels of household services produced does not affect the tax yield of an economy or the level of exchange rate.

# Production Boundary—Household Production

Production of **all goods** by households even if some or all are for own final consumption are included.

Production of **only two services** by households are included:

- own-account production of housing services by owner occupiers.
- Production of domestic and personal services by employing paid domestic staff.

# The Production Account

The production account is the starting point for the sequence of accounts for institutional units and sectors displaying how income is generated, distributed and used throughout the economy.

Activities defined as production therefore determine the extent of GDP and the level of income for the economy.

# The Production Account (cont.)

In concept, the economy-wide production account is the aggregation of a similar account for each production unit.

Importantly, while production accounts can be compiled for an individual institutional unit as well as for sectors, they can also be compiled for establishments and thus for industries.

# The Production Account (cont.)

It is this feature that allows the study of industrial activity in the economy and permits the compilation of supply and use tables and input output tables.

## **Examples:**

Production account for financial corporations (Banks, Insurance companies, etc.), general government sector

Production account for agriculture, manufacturing, etc.

# PRODUCTION ACCOUNT (cont.)

## Composition:

- Output from production—**resources**
- Intermediate consumption and consumption of fixed capital— **uses**
- **Value added** is balancing item—intended to measure the value created by the process of production
- At the economy level, resources include taxes less subsidies

# EXAMPLE

Economy with two activities:

- agriculture (production of wheat) and
- manufacturing (bakery items)

## **Producer 1: Farmer**

- Output: wheat 1000
- Input: seed 600

## **Producer 2: Baker**

- Output: bread 1800
- Input: wheat 1000

# EXAMPLE : PRODUCTION ACCOUNT

## Uses

### Agriculture -farmer

- Intermediate consumption 600
- Value added 400

### Manufacturing - Baker

- Intermediate consumption 1000
- Value added 800

### Total economy

- Intermediate consumption 1600
- Value added 1200

## Resources

Output of wheat 1000

Output 1800

Output 2800

# OUTPUT

Output is the value of the goods and services produced by an establishment in the same economy that become available for use outside that establishment.

Losses & wastage in production not counted as output eg; Electricity produced & lost in distribution.

Output of goods & services normally recorded when their production is completed. If it takes more than one accounting period to produce a unit of output, then work-in-progress must be recorded at the end of the accounting period.

# OUTPUT (cont.)

Output of trade services is the margin realized from a good purchased for resale. It is equal to sale less the cost to repurchase the good sold at the time it is sold.

Output of banks is the implicit and explicit service charges, which are small part of interest charges.

Output of Insurance or pension funds is the service charge, which is a small part of premiums or contributions paid.

# OUTPUT (cont.)

Non-market output, which is provided free or sold at economically insignificant prices, is measured at production cost.

Non-market includes:

- a) General Government
- b) Non-profit institutions serving households;
- c) Own-account construction (own-account production means production for own use)
- d) Own-account research and development
- e) Own-account software development.

# TYPES OF OUTPUT

- Market output
- Non-market output
- Output for own final use

To explain the difference need concept of economically significant prices

# ECONOMICALLY SIGNIFICANT PRICES

Economically significant prices are prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy. These prices normally result when:

- The producer has an incentive to adjust supply either with the goal of making a profit in the long run or, at a minimum, covering capital and other costs; and

# ECONOMICALLY SIGNIFICANT PRICES (cont.)

- Consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged

**Rule of thumb:** A particular price is considered economically significant, when price of goods and services cover more than half of the cost of production

# MARKET OUTPUT

A fundamental distinction is drawn in the SNA between market output and non-market output because of the way the output of each is valued. Market producers are establishments, all or most of whose output is market production.

- Market output is the normal situation in a market economy where producers make decisions about what to produce and how much to produce in response to expected levels of demand and expected costs of supply.
- The determining factor behind production decisions is that economically significant prices prevail.

# MARKET OUTPUT (cont.)

Market output consists of output intended for sale at economically significant prices. The value of market output is determined as the sum of the following items:

- a. The value of goods and services sold at economically significant prices;
- b. The value of goods or services bartered in exchange for other goods, services or assets;
- c. The value of goods or services used for payments in kind, including compensation in kind;

# MARKET OUTPUT (cont.)

- d. The value of goods or services supplied by one establishment to another belonging to the same market enterprise to be used as intermediate inputs where the risk associated with continuing the production process is transferred along with the goods;
- e. The value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses;
- f. The margins charged on the supply of goods and services, transport margins, margins on the acquisition and disposal of financial assets, etc.

# Simple example: Value of Market Output

Keltron computer manufacturing company—sold 980 computers in year 1

5 laptops—given to employees free of cost

5 computers—given to HR and accounts divisions

Stocks—5 in the beginning and 10 at the year end

Keltron—market producer—sells computers at economically significant prices in the market

**Value of output** = value of  $(980+5+5)$  + value of change in stocks  $(10-5)$

# NON MARKET OUTPUT

Non-market output is output undertaken by general government and NPISHs that takes place in the absence of economically significant prices. Market producers are establishments, all or most of whose output is market production.

A price is said to be not economically significant when it has little or no influence on how much the producer is prepared to supply and is expected to have only a marginal influence on the quantities demanded.

# NON MARKET OUTPUT (cont.)

It is a price that is not quantitatively significant from the point of view of either supply or demand

- Such prices are likely to be charged in order to raise some revenue or achieve some reduction in the excess demand that may occur when services are provided completely free, but they are not intended to eliminate such excess demand.

# Non Market Output (cont.)

## **Non-market output may be produced for two reasons:**

- a. It may be technically impossible to make individuals pay for collective services because their consumption cannot be monitored or controlled. The pricing mechanism cannot be used when transactions costs are too high and there is market failure.

The production of such services has to be organized collectively by government units and financed out of funds other than receipts from sales, namely taxation or other government income.

# Non Market Output (cont.)

b. Government units and NPISHs may also produce and supply goods or services to individual households for which they could charge but choose not to do so as a matter of social or economic policy.

The most common examples are the provision of education or health services, free or at prices that are not economically significant, although other kinds of goods and services may also be supplied

# Non-Market Output (cont.)

Non-market output consists of goods and individual (education, health, etc.) or collective services (law & order, defense, public administration, etc.) produced by NPISHs or government that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole.

Output measured as **total cost of production**:

Sum of intermediate consumption, compensation of employees, CFC and other taxes (less subsidies) on production.

Government /NPISH- may have non-market /market establishments.

# Example: Non-Market Output

A Public school (govt. School) provides education completely free

In year 1:

Paid—compensation of employees (100); expenditure on books, pens, pencils, electricity, telephone, etc. (40); CFC (10)

Non-market output (provision of educational services during year 1) = 150 and obtained as the sum of costs of production.

# Output for Own Final Use (cont.)

Output for own final use consists of products retained by the producer for his own use as final consumption or capital formation.

Household subsistence activity, domestic staff, owner-occupied dwellings, own-account capital formation, inventories of finished goods or work-in-progress for one of these purposes and output for own intermediate use

Own GFCF- corporate /unincorporated

Example: extension of dwellings by households

# Intermediate Consumption

Intermediate consumption consists of the value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital.

R&D is intermediate consumption only if it does not bring economic benefits to the owner

# Borderline Intermediate Consumption

All the following are treated as intermediate consumption:

Tools and equipment used at work; protective clothing, uniforms; barracks, dormitories etc., travel and hotel services while on business, changing facilities, washrooms etc., medical facilities .

illustrative, not exhaustive

# Borderline Between Intermediate Consumption and Fixed Capital Formation

- Small tools—flexibility
- Maintenance and repairs —“Small” or “regular” are intermediate consumption
- Large machinery and equipment for processing and to improve performance are capital formation
- Mineral exploration and evaluation—always capital
- Military equipment—durable goods (bombs, spare parts etc.) are intermediate consumption when withdrawn from inventories

# Consumption of Fixed Capital

Consumption of fixed capital is the decline, during the course of the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage.

Depletion or degradation of natural assets not included

# QUIZ

- 1. Lee's family produces and consumes milk from two cows owned by them and don't sell milk in the market. Do you think that this milk production be included in the agriculture output ? (Yes/No)

**YES**

- Azelia is a teacher in a government school of Skyland and teaches his son maths during the weekends. Do you think that the activity of teaching his son be included in the production boundary ? (Yes/No)

**NO**

- 3. Government /NPISHs may have non-market /market establishments (Yes/No)

**YES**

- National accounts compilation software developed on own account by Statistical office of Newland should be included in output of Newland or not (Yes/No)

**YES**

# INDUSTRIAL PRODUCTION

# Industrial Production Activities

Industrial activities according to ISIC Rev 4 include the following sections:

- a) B: Mining and quarrying ;
- b) C: Manufacturing ;
- c) D: Electricity, gas, steam and air conditioning supply ;
- d) E: Water supply; sewerage, waste management and remediation activities .

# Output of Industrial activities - Manufacturing

The output of these industrial activities can be goods or industrial services. Output of **manufactured goods**, not services, is more complex to measure as sales do not correspond with value of output, thus focus will be put only on this subject.

In order to measure the output of **manufactured goods**, the following information is require:

# Output of Industrial activities - Manufacturing

**a) Sales or revenues, net of returns and discounts:** These are gross sales at a given period that deduct returns by customers and discounts given to them later. Only sales or revenues net of returns and discounts are used in the calculation of outputs.

**b) Cost of goods sold :** This has three components:

- Cost of services purchased,
- Cost of materials purchased, and
- Cost of labor.

# Output of Manufacturing

This information is readily available as the objective of a manufacturer is to derive the cost of the goods they sold. All goods manufactured (or produced) may not be fully sold in one period but go into inventory.

At the same time sale may come from inventory. Thus sales and cost of goods sold does not reflect output and its Manufacturing cost in a given period.

# Output of Manufacturing (cont.)

The objective of a national accountant is to derive the cost of output incurred (which is intermediate consumption) to match with output produced.

Similar to sales, inventories of materials purchased must be revalued to the prices at the time materials are taken out of inventories for use in production.

In effect, goods only enter inventories when they are not immediately used for sale or other use in the period they are produced.

# Output of Manufacturing (cont.)

Similarly, goods are withdrawn from inventories when the demand for the goods exceeds the amount produced in a period.

No output is recorded when goods produced previously are withdrawn from inventories and sold or otherwise used unless a storage activity takes effect.

Inventories of finished goods therefore explain the difference between production and sales (or other use) in a single period.

# Output / Intermediate Consumption of Manufacturing

The formulas for deriving output and intermediate consumption are as follows:

- a) Output in basic prices = Sales or revenues + Change in inventories of goods manufactured (including finished and semi-finished goods)
- b) Intermediate consumption in purchasers' prices = Cost of materials purchased - Change in inventories of raw materials + Cost of services purchased

# Estimation of Output from Sales - Example

	Calculating operations	T0	T1	T3	T4
<b>Information given</b>					
1. Sales net of taxes and plus subsidies			80	120	272
2. Price index			100	125	200
3. Value of inventory at end of period (book value)		0	40	30	16
4. Change in inventory (book value)	= $(T_i - T_{i-1})$ applied to line (3)		40	-10	-14
<b>Derived data</b>					
5. Value of inventory at constant prices	= Line (3)*100/ line (2)	0	40	24	8
6. Change in inventory at constant prices	= $(T_i - T_{i-1})$ from line (5)		40	-16	-16
7. Change in inventory at current prices	= Line (6) * line (2)/100		40	-20	-32
8. Output at basic price	= Line (1) + line (7)		120	100	240

# Estimation of output and gross value added from sales and cost of sales – an example

C1=2+5+6	Intermediate consumption at purchasers' prices	3250	C2=2+3	Output at basic prices	4480
2=3-4	Use of materials at purchasers prices	2900	2	Sales	5000
3	Purchase of raw materials	3000	3	(+) Change in inventories of finished and semi-finished products (decrease)	-200
4	(-) Change in inventories of materials (increase)	100			
5	Electricity	150			
6	Other services	200			
7= C2-C1	<b>Gross value added at basic prices</b>	1230			

# Output of Distributive Trade

Distributive trade activities (section G) according to ISIC, Rev.4 include the following divisions:

- a) 45: Wholesale and retail trade, repair of motor vehicles and motorcycles ;
- b) 46: Wholesale trade, except of motor vehicles and motorcycles;
- c) 47: Retail trade, except of motor vehicles and motorcycles.

The output of wholesale and retail services, which is called **trade margin**, is the difference between sales less the cost to repurchase the good sold at the time it is sold.

# OUTPUT of FOOD & BEVERAGE ACTIVITIES

Although not part of distributive trade, **Food and beverage service activities**

(division 56), a part of **accommodation and food service activities** (section I of ISIC, Rev.4) is quite similar to distributive trade in the sense that an important part of food and beverage are bought for resale. In this case, output of food or beverage services is only the margin, similar to trade margin, a difference between sales and cost of goods bought for resale.

# TRADE MARGINS

The trade margin recorded in business accounting is not the same as that of national accounting because the cost of goods sold is measured by business accountants at book value, i.e. at the value the company actually paid for in the past.

In national accounting, this book value must be revalued to the price the company has to pay if it wishes to restock the sold goods. This means that the inventory of product A, and as a consequence, the value of output bought for resale must be revalued by national accountants to the prices at the time the product is sold

# Output of wholesale and retail services: an example

T-3	T-2	T-1	T
<ul style="list-style-type: none"><li>Product A was bought at 100</li></ul>			<ul style="list-style-type: none"><li>Product A was sold at 120.</li><li>Market value if the product sold is to be restocked: 110</li></ul>

# Output of wholesale and retail services: an example

**In theory:** Output at basic price = Trade margin =  $120 - 110 = 10$ .

Output is at basic price since sale is normally recorded net of taxes on products.

**Incorrect practice:** Trade margin =  $120 - 100 = 20$  if inventories are not properly valued. The miscalculation is unacceptable during the time of high inflation if revaluation of inventories is not carried out. In the example, the difference of 10 is called holding gain, which is not part of output.

# E. Construction

Construction (section F of ISIC, Rev.4) includes the following divisions:

a) 41: Construction of buildings;

b) 42: Civil engineering, which includes:

- Construction of road and railways;
- Construction of utility projects; and
- Construction of other civil engineering projects such as industrial facilities (other than buildings), waterways, harbor, dredging of water ways, dams, etc.).

c) 43: Specialized construction activities, which includes:

- Demolition and site preparation;
- Electrical, plumbing and other construction, installation activities;
- Building completion and finishing; and
- Other specialized construction activities.

# CONSTRUCTION (cont.)

Construction involves general and special trade contractors. General contractors undertake complete projects. Special trade contractors are engaged in only part of the work on a construction project for example painting, plumbing, installing electric wiring, heating, air-conditioning, elevators, demolition, exaction, etc.

The special trade contractors normally work on sub-contract from the general contractor.

The collection of data requires elimination of double-counting and therefore the **value of revenues** to be used for calculating output should **net out values payable to subcontracts**.

# CONSTRUCTION (cont.)

For construction statistics, there are five sources:

1) **Survey of household unincorporated enterprises captures construction on contracts that are not covered by construction establishment surveys.** Construction as part of household activities is quite significant in developing countries.

Estimated increase in population would allow for the estimation of construction.

# CONSTRUCTION (cont.)

- 2) **Establishment surveys.** These surveys are on construction and construction related companies through **establishment surveys.**
- 3) **Household income and expenditure survey** captures **own-account construction by households.**
- 4) **Own construction by general government:** is quite significant, particularly in construction and major repairs of roads, dikes, waterways, etc. The government budget is the main source for this activity.
- 5) **Own construction by the corporations.** This can be obtainable through industrial and service surveys.

# CONSTRUCTION (cont.)

The value of construction by establishments of the benchmark year may be extrapolated to current periods by using indices on value of construction put in place that might be regularly collected on the monthly, quarterly or annual basis.

Employment data, permits approved, cements for construction may be used as indicator.

In national accounting, construction put in place is treated as output even though the construction projects have not been finished and put in use.

# G. Output of non-financial services

Non-financial services include a large number of activities classified in the following sections of ISIC, Rev.4:

- a) H: Transportation and storage;
- b) I: Accommodation and food service activities
- c) J: Information and communication;
- d) L: Real estate activities;
- e) M: Professional, scientific and technical activities;
- f) N: Administrative and support service activities;
- g) P: Education;
- h) Q: Human health and social work activities;
- i) R: Arts, entertainment and recreation;
- j) S: Other service activities.

# Output of non-financial services (cont.)

Output of **market non-financial services** is the sum of revenues receivable for the services rendered.

These revenues normally called fees should exclude interest receivable on investing financial assets.

They should also exclude taxes on products assessed on these revenues.

# Output of non-financial services (cont.)

**Transportation and storage** that cover railroad, airlines, shipping, trucking, pipelines for the benchmark year must be collected through censuses of transportation.

For annual and quarterly value added, industry reports are major source of information, but when they are not yet available, employment, taxes collected or ton-kilometers, passenger-kilometers could be used.

# Output of non-financial services (cont.)

## **Communication and telephone:**

May be extrapolated by number of calls made, tons of mail delivery, etc. Employment, taxes, number of customers (like students) are major indicators for other nonfinancial service activities.

# OUTPUT OF NON MARKET

In the case that these service activities are non-market, which means that the government is the main source of funding for the activities such as public education and health,

the output of these services will be measured by **production costs**.

# OUTPUT OF NON MARKET (cont.)

Non-market services such as education, health, administrative and national security services may occur at any economic activity, which is provided free or is sold at economically insignificant prices. Non-market output includes those produced by the following institutional sectors:

- a) General government;
- b) Non-Profit Institutions Serving Households (NPISH).

# OUTPUT OF NON MARKET (cont.)

For the calculation of output of non-market services at basic prices, it is assumed that operating surplus is zero and the output is equal to the sum of:

- a) Intermediate consumption;
- b) Compensation of employees;
- c) Consumption of fixed capital;
- d) Other taxes less subsidies on production.

# INDUSTRIAL PERFORMANCE

# INDUSTRIAL PERFORMANCE

## DRIVERS:

### **Methodological improvement**

Acquisition of better inputs as seeds, fertilizers and adequate tools or and improvement in processes / management systems etc.

### **New Innovations**

Use of advance, modern techniques and mechanization of Industrial production.

# INDUSTRIAL PERFORMANCE (cont.)

## Measuring Industrial performance:

**Growth rates:** Are computed to compare production performances within and between institutional units and sectors from one period to another.

Formula: 
$$\frac{\text{Prod (current)} - \text{Prod (Previous)}}{\text{Prod(Previous)}}$$

**TREND ANALYSIS:** Example; Graph of production over time.

# BUSINESS DEMOGRAPHY

## **Profile of Businesses:**

Background of business such as identities (Name, region, district, town / village, street, contact details etc), activity type, Date business commenced etc.

**Business employers and employees characteristics** (Nationality, age, sex, level of education, health status, wages / salary structure, etc.)

**Territorial boundaries of businesses:** Operation of business in other countries as multinationals or franchises and headquarters.

THANK YOU

ASANTE SANA

ALA BARAKA