

The background is a vibrant blue with a subtle pattern of dandelion seed heads and individual seeds. The seed heads are rendered in a soft, glowing style, with some showing brownish centers. The seeds are depicted as small, white, starburst-like shapes scattered across the frame. The overall aesthetic is clean and modern.

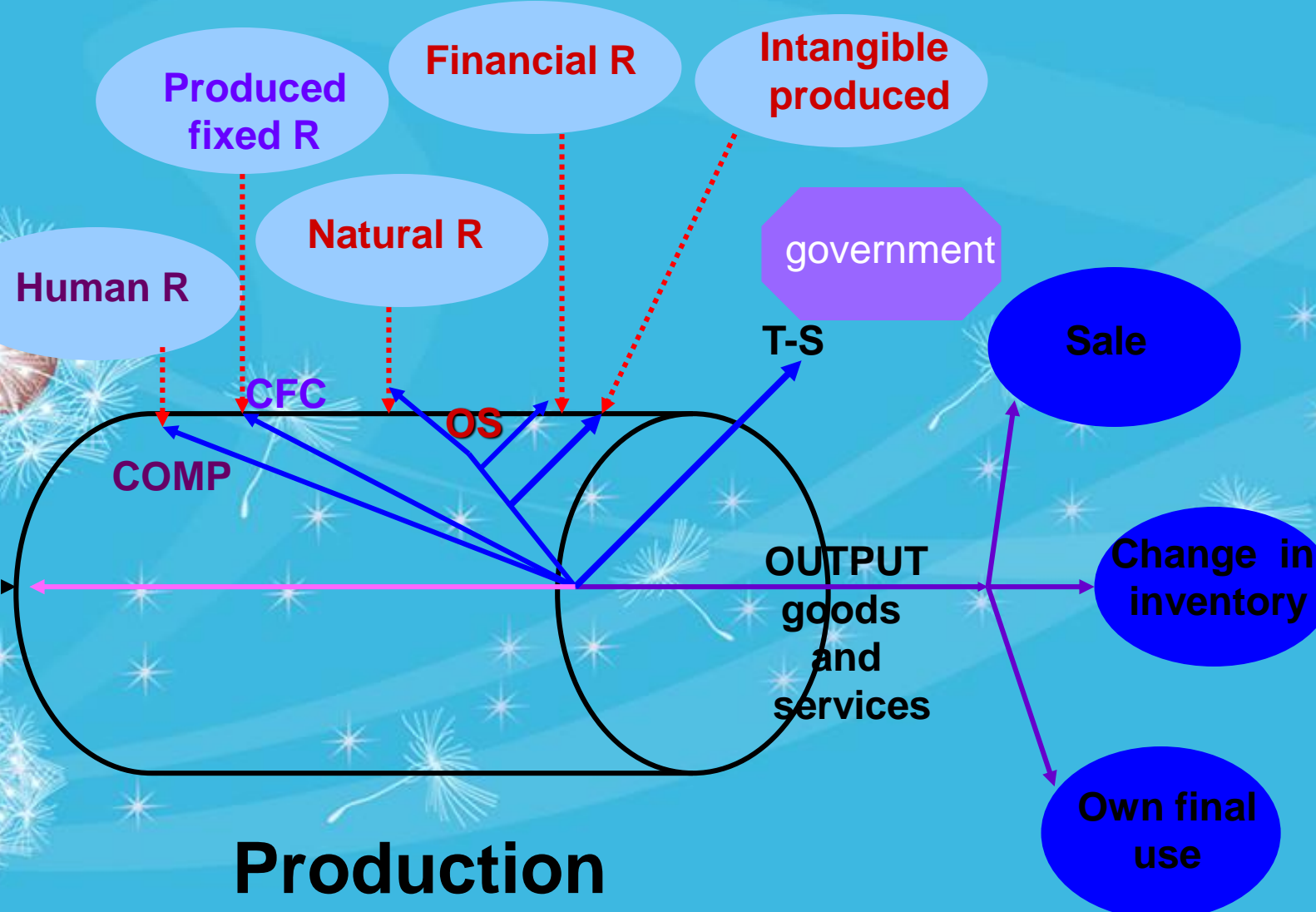
Lecture 3. GDP by Production Approach

Intermediate input

Value added

Output

Good & Services from Production



How to measure gross output?

- ***Physical output***

GO = quantity * unit price

- ***Disposition***

GO = Sales + addition to inventory + own final use

- ***Input cost***

GO = intermediate consumption (II)
+ compensation (COMP)
+ consumption of fixed capital (CFC)
+ taxes net of subsidies (T-S)
+ operating surplus or mixed income (OS/MI)

Where to apply these?

Market goods and services

GO = quantity * unit price

GO = sale

+ change in inventory

+ own final use

GO = Intermediate input

+ compensation

+ taxes net of subsidies

+ consumption of fixed capital

+ operating surplus

Where to apply these?

Non market goods and services, use

GO = intermediate input

+ compensation

+ taxes net of subsidies

+ consumption of fixed capital

How to compute gross value added?

Product:

$$\mathbf{GVA = GO - II}$$

where:

GO = value of gross output

II = value of intermediate input/ consumption

Cost:

$$\mathbf{GVA = COMP + T-S + CFC + OS/MI}$$

Computation of GO and GVA of primary industries

Industries which are extractive and mostly nature based:

A - Agriculture, hunting and forestry

B - Fishing

C - Mining and Quarrying

Statistical units

Enterprise: agricultural households or partnership, corporation, etc

Establishment : farm

General methodology

Crops

1. $GO = \text{harvest} * \text{unit price}$

$$GVA = GO * GVA$$

2. $GO = \text{sales} + \text{own consumption} + \text{change in inventory}$

$$GVA = GO - IC$$

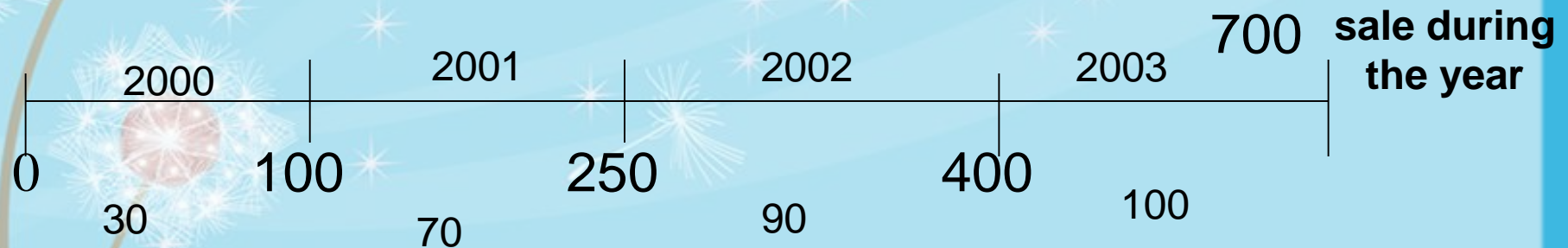
How to treat output of special industries?

- **Cultivated assets**

GO = Sale + change in inventory + own final use

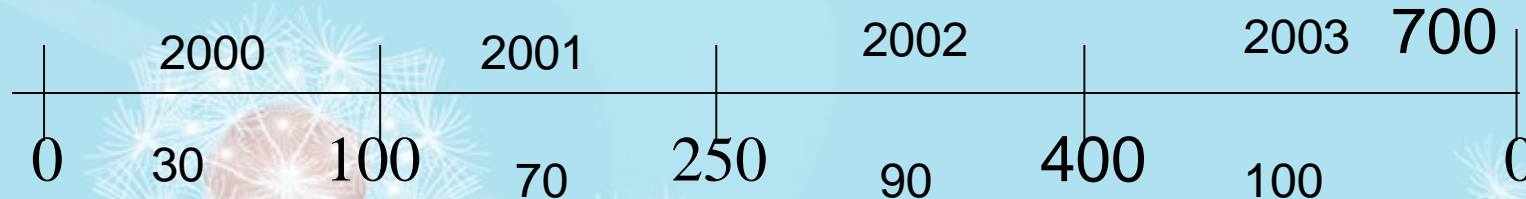
EX: Cultivated forest

Trees were planted and is expected to be cut for sale after 4 years. The following are the estimated value of opening, closing inventory, intermediate consumption and sale



Cultivated forest

- **GO = Sale + change in inventory + own final use**



	2000	2001	2002	2003
Closing inventory	100	250	400	0
Less opening inventory	- 0	-100	-250	-400
= change in inventory	100	150	150	-400
+ Sales	0	0	0	700
+ own final use	0	0	0	0
= GO	100	150	150	300
- II/IC	30	70	90	100
= GVA	70	80	60	200

Trade

The services provided for making the goods available to the purchasers

GO = Sale - cost of goods sold

Cost of goods sold = purchases + opening stock - closing stock

GO = sale + (closing - opening) inventory of goods for resale - purchases of goods for resale

Trade

Example: The retail store in 2000 recorded the following transactions:

sale = 50,000

purchases of goods for sale = 30,000

opening stock = 5,000

closing stock = 4,000

utilities = 200

supplies = 500

other services paid = 50

GO = 50,000 + (5,000 - 4,000) - 30,000 = 21,000

**GVA = 21,000 - (200 + 500 + 50) = 21,000 - 750
= 20,250**

Banks

**GO = service charges and other receipt
from services + FISIM**

FISIM (financial intermediaries indirectly measured) is the bank charge which is integrated in the computation of interest rates of deposit and loans.

Formerly referred to imputed services charge

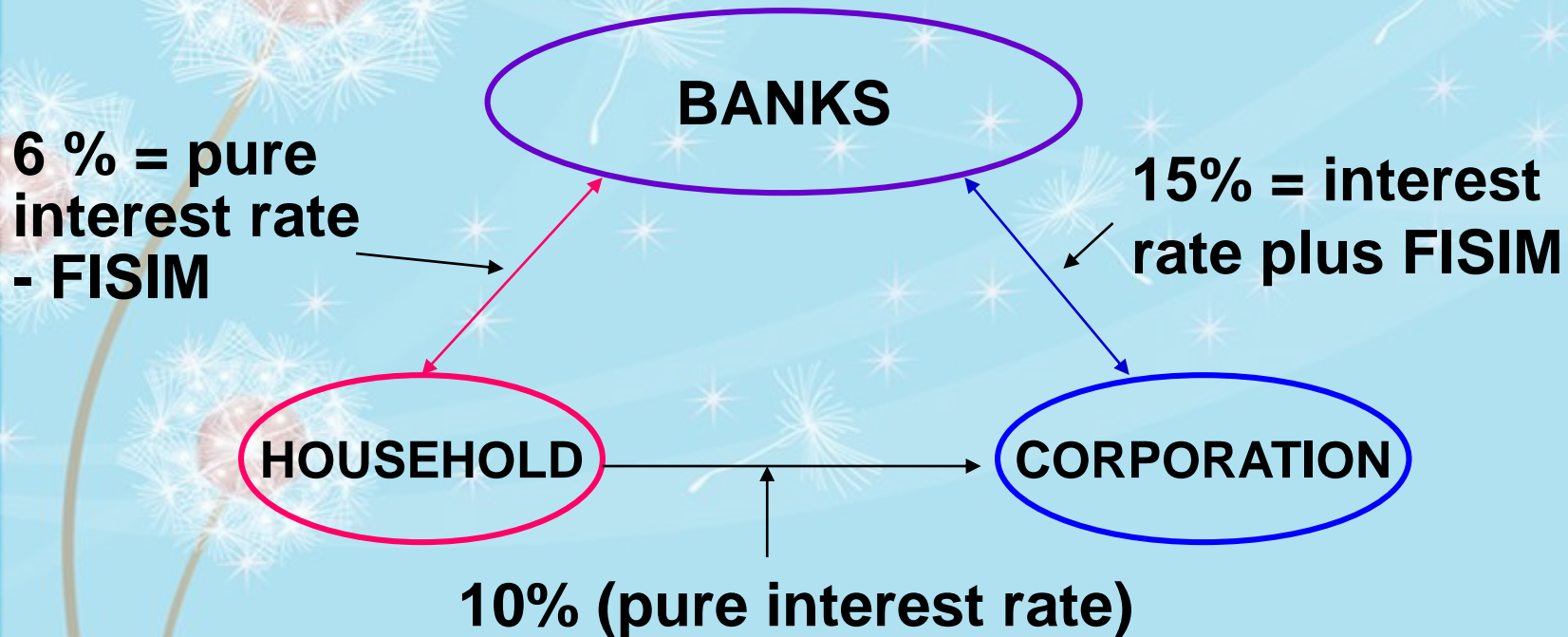
**Imputed service charge = Interest received
from loans – interest paid on deposits**

Banks

FISIM:

on **LOAN** = (actual - pure) interest rate

on **DEPOSIT** = (pure - actual) interest rate



Banks

Example: household deposited 500 mil and bank lent out 300 mil if the reference rate is 10 % what is the FISIM of bank?

FISIM on deposit = $10\% - 6\% = 4$ percent

FISIM on loan = $15\% - 10 = 5$ percent

FISIM ON DEPOSIT = $500(0.04) = 20$ mil

FISIM ON LOAN = $300(0.10) = 30$ mil

There are other deviations in the estimate of FISIM depending upon the availability or choice of reference rate and the data

Other special industries

- **Insurance**

Non life or term insurance

GO = premium payable + supplemental premium - claims

Life insurance

GO = premium payable + supplemental premium - claims - change in actuarial reserve

How to estimate gross value added?

- **Direct estimation**

$$\mathbf{GVA}_t = \mathbf{GO}_t - \mathbf{II}_t$$

where:

\mathbf{GVA}_t = gross value added at time t

\mathbf{GO}_t = gross value of output

\mathbf{II}_t = value of goods and services used as intermediate input

How to estimate gross value added?

- Indirect estimation

1. $GVA_t = GO_{t-1} * GO \text{ extrapolator} - II_{t-1} * II \text{ extrapolator}$

2. $GVA_t = GO_t * gvar$

3. $GVA_t = GVA_{t-1} * GO_t / GO_{t-1}$
= $GVA_{t-1} * \text{value extrapolator}$

gvar = gross value added ratio (usually from benchmark estimates)

value extrapolator = value indicators that can approximate the behavior of the industry

What are examples of value extrapolators?

- **Gross output or gross value added estimates based on sample establishments/enterprise.**
- **Gross receipts tax on businesses**
- **employment * average wage rates**
- **export of commercial crops**
- **tourist arrival* average number of bednights*average room rate per night**
- **population growth rate * growth in rent**
- **etc...**

What is benchmark estimate?

- **Generally by direct estimation and serves as basis for indirect estimates**
- **Estimated when data are based on reliable source with full or wide coverage**
 - population census (e.g. ownership of dwelling, subsistence farming, etc..)
 - economic census (gva for industries covered, capital formation, etc
 - household income and expenditure survey (informal production, household consumption expenditure, etc..)

What is benchmark estimate?

- When most of the industries are benchmark estimates, the year is generally used as base year for constant price GDP
- Used to generate estimation parameters for indirect estimates until the next benchmark estimate

What are the sources of data

- **censuses - for benchmark estimates**
- **establishment surveys - for extrapolating or updating benchmark estimates**
- **enterprise reports - for benchmark or extrapolation**
- **tax reports (Min of Finance) - for extrapolation**
- **population and price index- for extrapolation**
- **government finance statistics - benchmarking, updating or extrapolation**
- **etc..**

How is GDP derived from GVA?

- GDP is the sum of all GVA's of all the industries in the economy
- **GDP (at basic price)**
= Σ GVA(basic price)
- **GDP(at producers price)**
= Σ GVA(producers price)
- **GDP(at purchasers or market price)**
= Σ GVA(basic price) + T-S (on products)

Illustrative Example of how VAT is applied in SNA Compilation

Transaction	Producer 1	Producer 2	Producer 3	Final Demand	TOTAL
Intermediate input	0	100	300		400
Value added	100	200	400		700
Gross output	100	300	700		1100
VAT	10	30	70		110
Deductible	0	10	30		40
Non Deductible	10	20	40		70
Value of sale	110	330	770		
PCE				770	770

Interpretation of the table

- The purchasers price of goods used for intermediate input is equal to the basic price
- The total of value added tax from the various flows is equal to the sum of non deductible taxes
- **Sum of GVA at basic price = 700**
- **VAT = 70**
- **GVA at basic price + VAT = 770**
- **Value of final demand (PCE)=770**

What are the problems compiling GDP by production?

- **No available data for estimation**
 - subsistence agriculture
 - large establishments
- **Lack of support from management**
- **Inadequate knowledge on some industries**
- **Lack of confidence in estimation**
- **Not enough personnel**
- **Pressure to get the perceived estimates of officials.**

How does production affect money flows?

- Only monetary transactions affect the flow of money.
- Subsistence production or production for own use does not affect money flows
- barter transactions such as payment of wages in kind does not affect money flows
- Transactions through credit will not affect money flows at the time of transactions but will be recorded in financial flows



Thank you