



Module 4: Compilation of Use Table

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Outline

- Intermediate consumption
- GVA
 - Compensation of employees
 - Other taxes less subsidies on production
 - Operating surplus and mixed income and consumption of fixed capital
- Final consumption expenditure
 - Household final consumption expenditure
 - Final consumption expenditure of NPISH
 - Final consumption expenditure of general government
- Gross fixed capital formation and Acquisition less disposal of valuables
- Changes in inventories
- Exports



Main references

- System of National Accounts 2008
- UN Handbook on Supply, Use and Input-Output Tables with Extensions and Applications, 2018
- Eurostat Handbook on Supply, Use and Input-Output Tables
- Eurostat-OECD manual on the compilation guide of inventories



Use Table

Use Table												
Products	Intermediate Consumption					Household Consumption Expenditure	Government Consumption Expenditure	Nonprofit Institutions Serving Households Consumption	Gross Fixed Capital Formation	Changes in Inventories and Valuables	Exports of Goods and Services	Total Use at Purchasers' Prices
	Industries											
	Industry 1	Industry 2	Industry 3	Industry 4	Total							
I					II			III				
Goods 1	55	45	-	-	100	30	-	-	18	2	55	205
Goods 2	25	20	5	-	50	25	-	-	14	1	40	130
Services 1	-	-	-	-	55	20	7	5	-	-	20	107
Services 2	-	-	-	-	40	11	25	3	-	-	4	83
Direct Purchase on Nonresident in Domestic Market	-	-	-	-	-	-2	-	-	-	-	2	-
Direct Purchases of Residents Abroad	-	-	-	-	-	5	-	-	-	-	-	5
Total	80	65	5	0	245	89	32	8	32	3	121	525
Value Added Table		IV										
Gross Value added	65	40	120	75	205							
Compensation	30	20	35	30	115							
Taxes Less Subsidies on Production	4	3	2	1	10							
Operating Surplus	31	17	83	44	80							
Total Output	145	105	125	75	450							



Use Table

- Two approaches for compiling the use table:
 - input approach (establishment survey, consumer expenditure survey, government expenditure survey, capital expenditure survey)
 - output approach (production statistics and foreign trade statistics)
- If the industry output and intermediate consumption are known → GVA is a residual variable
- If income measure components of GVA are known → net operating surplus and net mixed income is the residual variable



Intermediate Consumption

- Consists of the value of goods and services consumed as inputs by a production process, excluding fixed assets
- Includes all non-durable goods and services with an expected life of less than one year
- Excludes any goods for resale without any further processing



Intermediate Consumption

- Compilation method varies depending on the data sources available – recommended to have regular data collection on input structure
- Common approach in compilation
 - Estimate value for total IC by industry
 - Enter in the table ‘known’ values of IC by product and by industry when available
 - Use additional information on cost structure to estimate all other values



Intermediate Consumption

- Example of a calculation of values of an input column:
 - Total input = 2,500
 - Survey-based input structure is provided.
 - Values of input of products 2 and 5 are known as 150 and 300, respectively.

Product	Survey-based input structure % (1)	“Known” values (2)
Product 1	16.0	
Product 2	6.0	150
Product 3	7.0	
Product 4	44.0	
Product 5	14.0	300
Product 6	8.0	
Product 7	5.0	
Total	100.0	

Intermediate Consumption

Product	Survey-based input structure % (1)	"Known" values (2)	Survey-based input structure excl. known (3) = (1) * 100/80	Inputs estimated from survey-based structure (4) = (3) * (2500 - 450)/200	Result: Input column (5) = (2) + (4)
Product 1	16.0		$16 * 1.25 = 20.0$	410	410
Product 2	6.0	150			150
Product 3	7.0		$7 * 1.25 = 8.8$	179	179
Product 4	44.0		$44 * 1.25 = 55.0$	1128	1128
Product 5	14.0	300			300
Product 6	8.0		$8.0 * 1.25 = 10.0$	205	205
Product 7	5.0		$50 * 1.25 = 6.3$	128	128
Total	100.0		100.0	2,050	2,500

Source: UN Handbook, 2018



Intermediate Consumption

- Survey of cost structure
 - Limitation (e.g., units below a threshold)
 - Adjustment (e.g., acquisition of capital equipment)
- Annual report
- Government accounts
- Input structure of other industries
- Informal economy
- Industry-specific reports and studies



Gross Value Added

- Compensation of employees
- Other taxes on production
- Other subsidies on production
- Gross operating surplus
 - Consumption of fixed capital on gross operating surplus
 - Net operating surplus
- Gross mixed income
 - Consumption of fixed capital on mixed income
 - Net mixed income



Compensation of Employees

- Wages and salaries, in cash or in kind
- Employer's social contributions (actual and imputed)



Other net taxes on production

- Taxes incurred by enterprises as a result of engaging in production (e.g., taxes on the ownership or use of land, buildings or other assets used in production or on the labour employed, or compensation of employees paid)
- Less subsidies on production (e.g., subsidies on payroll or workforce, subsidies to reduce pollution, grants for interest relief)



Consumption of fixed capital

- Amount of fixed assets used up in current production
- (To be distinguished from business accounts) estimated based on the stock of fixed assets and the probable average economic life of the different categories
- Perpetual inventory method is recommended



Final Consumption

Possible Data Sources	HFCE	Final consumption expenditure of NPISH	Final consumption expenditure of general government	Gross Fixed Capital Formation	Changes in Inventories	Acquisition less disposal of valuables	Exports
HH budget survey	✓						
Retail trade survey	✓						
Business survey		✓		✓	✓		
Capital expenditure survey				✓			
Admin sources	products subject to regulations, taxes or subsidies	Company accounts, regulatory bodies, collective group accounts	Government accounts	Government accounts	Company accounts	Trade data	Trade data, BOP data

Household final consumption expenditure

- Three large components:
 - Purchases of goods and services
 - Goods and services produced as outputs of unincorporated enterprises owned by households that are retained for consumption by the members of the households (own-consumption)
 - Remuneration in kind
- Household budget surveys include purchases of resident households abroad. If retail trade survey is used, purchases of nonresidents in the domestic territory should be excluded, and purchases of resident households abroad should be included
- Include imputed transactions such as imputed rentals of owner occupied dwellings and FISIM



Government Final Consumption Expenditure

GFCE = government non-market output (excluding own account fixed capital formation)

- receipts from sales of non-market output
- + purchases of goods and services provided to households free or at economically insignificant prices



Gross Fixed Capital Formation

- Using survey on capital expenditure, link GFCF by type of asset to product and industry

GFCF, Dwellings	Agriculture	Forestry	Mfg	...	Activities of households as employers	Total
Product 1						
Product 2						
...						
GFCF, Other bldg and structures	Agriculture	Forestry	Mfg	...	Activities of households as employers	Total
Product 1						
Product 2						
...						



Changes in inventories

- No changes in inventories in services (exceptional cases)
- CII should not include holding gain
- To remove holding gains, output and intermediate consumption must be valued at prices at the time of production and the use of input take place. Inflate/deflate opening and closing of stocks to the average prices of the year before calculation of the difference
- Separate output of storage from holding gains:

$$Q(P_{1,t+1} - P_{0,t}) = \underbrace{Q(P_{0,t+1} - P_{0,t})}_{\text{Holding gains}} + \underbrace{Q(P_{1,t+1} - P_{0,t+1})}_{\text{Storage output}}$$

Type I: goods whose value do not change over time

Type II: goods whose value change over time

- Goods that have very long production process
- Goods that change their physical characteristics while in inventories
- Goods that have seasonal patterns of demand and supply, but not both



Changes in inventories: transforming business accounts to national accounts

1. Segregate the book values of inventories at the opening and closing dates of the period by accounting method used.
 - Apply any adjustments needed (e.g., markup for operating surplus in the case of work in progress and finished goods or a coverage multiplier)
2. Techniques for FIFO and weighted-average cost accounting
 - a. Construct an appropriate price deflator to convert book values of inventories into volumes. Assume how long goods are held in inventories (or stock holding period), and appropriate prices for the goods held in inventory
 - b. Calculate constant price values by dividing the book value of inventories by the appropriate price deflator
 - c. Take the difference between the constant price values of the book values of inventories at the beginning and end of the period (notionally equivalent to the change in quantities of inventories between the beginning and end of the accounting period)
 - d. Volume change in the stock of inventories is multiplied by an average price index for the current accounting period

Source: Eurostat-OECD compilation guide on inventories



* Most NSIs assume that businesses report based on the FIFO method (see also IAS on LIFO).

Changes in inventories: transforming business accounts to national accounts

Changes in inventories for FIFO and weighted-average cost accounting method

$$\Delta S_{i,t} = \left(\frac{BV_{i,tE} * b_{i,t} * c_{i,t}}{CI_{i,tE}} - \frac{BV_{i,tE-1} * b_{i,t-1} * c_{i,t-1}}{CI_{i,tE-1}} \right) * \overline{PI}_{i,t}$$

$\Delta S_{i,t}$ = value in change in inventories for inventory item i at average prices of the current period t

$BV_{i,t}$ = book value of inventories at time t

$b_{i,t}$ = mark-up adjustment for operating surplus and other relevant costs not included in output inventories

$c_{i,t}$ = coverage multiplier

CI = acquisition cost index (deflator)

$PI_{i,t}$ = average price index of item i in period t



Changes in inventories: transforming business accounts to national accounts

3. Techniques for LIFO accounting method

$$\Delta S_{LIFO,t} = BV_{LIFO,tE} - BV_{LIFO,tE-1}$$

4. Calculate totals by adding together the changes in inventories from each accounting methods

Source: Eurostat-OECD compilation guide on inventories



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Changes in inventories: allocation by product

- Inventories of finished goods and work-in-progress: output
- Inventories of raw materials and fuels: input structure
- Inventories of goods for resale:
 - For trade industries (G45, G46, G47), use breakdown of turnover (sales) by product
 - For other industries, there are two ways:
 - Industry = product
 - For other industries (broadly service industries), assign one storable product for each industry



Exports

- Data sources: customs, merchandise trade, trade in services
- Exports include both intermediate products and final products
- Valued at FOB
- Exports include direct purchases in the domestic market by non-residents
- No re-export
 - Income earned or the fee for the provision of the services/facilitation should be recorded of relevant sectors



Example: Imputed Rent

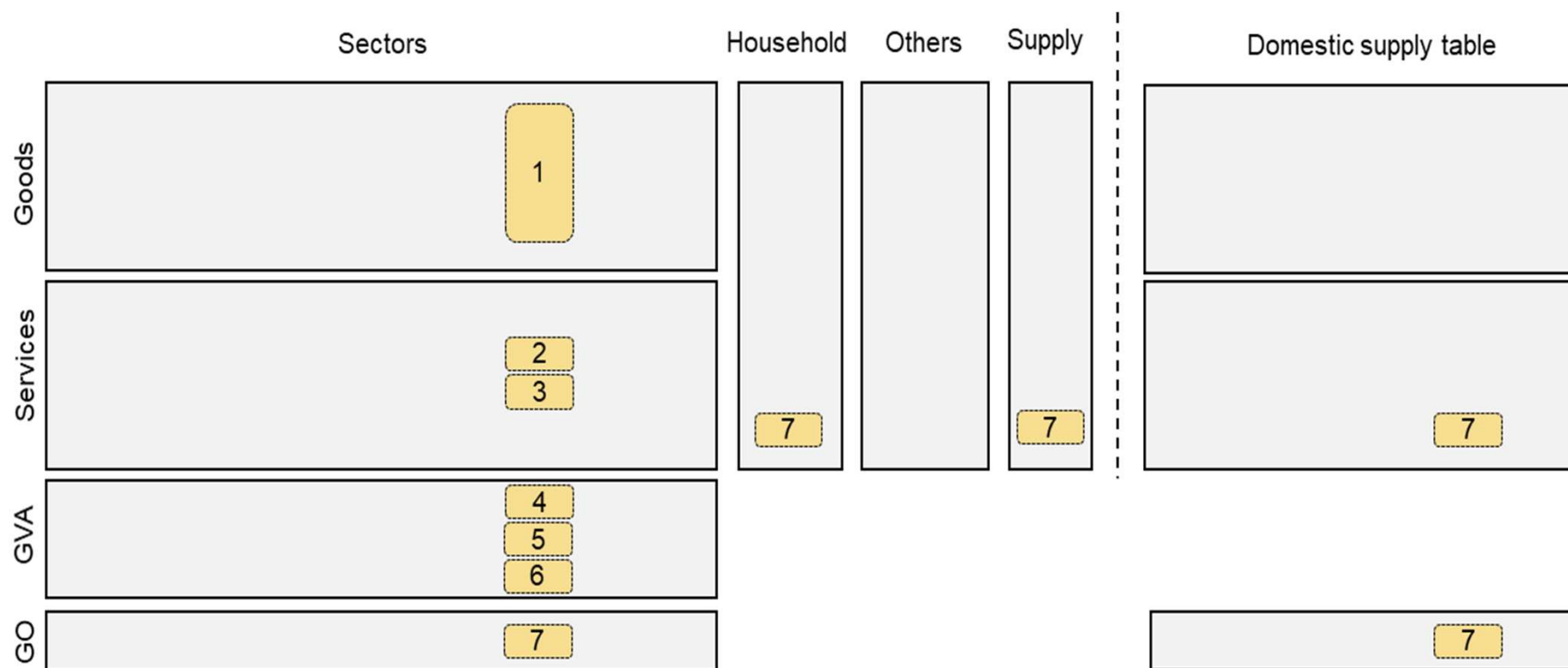
- Net acquisition approach
 - Covers transaction between HH and other sectors only
 - Costs associated with transfer of ownership (for transactions between HH and HH sector)
- Use approach
 - Rental equivalence
 - User cost
- Payments approach



When to use User Cost Method for Owner-occupied Dwelling Services

- The standard procedure recommended in the SNA for owner-occupied dwellings is to assume that the rents that would be paid are the same as the rents actually paid for similar dwellings.
- Standard procedure should not be used if:
 - Less than 25% of all dwellings in the country are actually rented
 - More than half of the rented dwellings are occupied by foreigners paying high rents or by government/other employees paying low rents; or
 - Rented dwellings are not evenly distributed over all parts of the country

Owner-occupied Dwellings within the Supply-Use Framework



1 = materials and supplies for minor repairs, disaggregated by CPA/CPC; 2 = construction services for minor repairs and maintenance (e.g. plumbing, repainting, etc.); 3 = financial services related to owning a dwelling (e.g. FISIM on mortgage and insurance services on dwelling excluding its contents); 4 = other taxes on production which include property taxes and land tax; 5 = consumption of fixed capital; 6 = net operating surplus; 7 = expenditure on owner-occupied dwelling services

Example: Changes in inventories

See [sample worksheet](#)



Thank you!