Министерство национальной экономики
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Workshop on Supply and Use Tables (SUT) for EECCA and South-East Europe countries
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Input-Output Tables

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Publication

In the national statistical practice, newsletters are produced according to the plan of statistical activities

Product	Periodicity	The date of publication
Supply-Use Tables of the Republic of Kazakhstan	Annually	November 25
Input-Output Tables of the Republic of Kazakhstan	Annually	December 23

SUT, IOT

Methodological basis

System of National Accounts

Guidelines for preparing input-output tables and their analysis

Classifications

CCEA

- Common Classification of Economic Activities, CC RK 03-2003 (NACE Rev.2)

CPEA

- Classification of products by economic activity (CPA 2008)

Dimension

Name	Production tables	Published tables
Supply-Use tables	114 x 698	72 x 125
Input-output tables	114 x 114	68 x 68

Data sources

Supply and use tables

Sectoral statistics data

- Volumes of produced goods and services
- Household income and expenditure, retail trade
- Gross fixed investment, stock of fixed assets
- Other data

Departmental and administrative data

- National Bank of RK (balance of payments, services balance etc.)
- Ministry of Finance of RK (state budget implementation report, customs statistics)

Structural statistics data

Indicators of accounts of production, education and use of income

Sources of information

Input-output tables

Supply and use tables data

- Supply in basic prices, transfer to the purchasers 'prices;
- Use of goods and services at basic prices;
- Use of imported products (goods and services);
- Use of domestic products (goods and services).

Types of symmetric IOTs

There are two types of symmetric IOTs:

industry by industry

product by product

- Republic of Kazakhstan compiles product by product type of IOTs

Symmetric IOTs are compiled by using mathematical transformation from supply and use tables.

IOT are mainly used for economic analysis and econometric modeling.

IOT classical scheme

Main identity:

Total supply = Total use

			Intermediate consumption (products)			**Final consumption**	**Total use**
			1	…	N		
Intermediate consumption (products)		1	$a_{11}x_1$	…	$a_{1n}x_n$	y_1	x_1
		…	…	…	…	…	…
		n	$a_{n1}x_1$	…	$a_{nn}x_n$	y_n	x_n
GDP	Gross value added		z_1	…	z_n		
	Net taxes on products		t_1	…	t_n		
Imports			k_1	…	k_n		
Total supply			x_1	…	x_n		

Methods of deriving IOTs from SUTs

Reallocating secondary activities of certain industries to principal industry

Transferring the costs of secondary activities of this industry

Methods of deriving IOTs from SUTs

There are two basic approaches for the redistribution of secondary products. Both are based on the use of data from the supply-use table to make it diagonal.

Based on assumptions about the production technology in the industry	Based on assumptions about the production technology of the product

Based on assumptions about production technology in the industry

To convert tables into clean industries using this technology, the following calculations are used:

$$T = \left(diag(g)\right)^{-1} \cdot V^T$$

where T – transformation matrix,

V – matrix of output in basic prices (products by industry),

$diag(g)$ – diagonal matrix.

Based on assumptions about production technology in the industry

The formula for calculating intermediate consumption by industries:

$$S = U \cdot T$$

where, *U* – matrix of intermediate consumption at basic prices (product by industry)

S – symmetric matrix of intermediate consumption at basic prices (product by product).

Similarly, we obtain a matrix of value added:

$$K = Y \cdot T$$

where, *Y* – value added matrix (components by industry),

K – value added matrix (components by product).

$$Z = Z$$

where, Z – final demand matrix

Based on assumptions about the production technology of the product

The following calculations are used to convert tables to industries:

$$T = V^{-1} \cdot (diag)(q - m)$$

where T – transformation matrix

V – matrix of output in basic prices (products by industry),

$q - m$ – output vector in basic prices

Based on assumptions about the production technology of the product

Calculation formula for intermediate consumption by industries:

$$S = U \cdot T$$

where, *U* – matrix of intermediate consumption at basic prices (product by industry)

S – symmetric matrix of intermediate consumption in basic prices (product by product).

Similarly, we obtain a matrix of added value:

$$K = Y \cdot T$$

where, *Y* – added value matrix (components by industry),

K – added value matrix (components by product).

$$Z = Z$$

where, Z - final demand matrix

Mixed-mode method

IOT preparation in Kazakhstan in practice

- Two methods of reallocate secondary products are combined to reduce or remove negative values

Coefficients of direct costs

The coefficients of direct and total costs are important for the analytical purposes, coefficients are based on symmetric IOTs at basic prices.

Direct cost coefficients are calculated by the formula:

$$a_{ij} = \frac{x_{ij}}{X_j}$$

where

$x_{i,j}$ – cost of product *i* at basic prices used as intermediate input to produce product *j*,

X_j – total production of product *j*

Coefficients of total cost

The total cost coefficients are considered not only direct but also indirect costs per unit of total final demand.

The total cost coefficients are calculated by the formula:

$$K = (\mathrm{E} - \mathrm{A})^{-1},$$

where K – coefficients of the total cost;
E – identity matrix;
A – coefficient matrix of direct costs.

Publication

"Input-Output Tables of the Republic of Kazakhstan" newsletters for 2001-2016 according to the classification of products by economic activities (CPA 2008)

are posted on the official statistics website **www.stat.gov.kz**

The official statistical information > Operational data (Express information, bulletins) > National accounts > Integrated accounts

Thank you for your attention