COMPARISON OF GROSS OUTPUT AND FINAL DEMAND OF INDUSTRY AGRICULTURE, HUNTING, FORESTRY IN THE BALTIC STATES AND FINLAND

Ilze Balode[1], Andrejs Jaunzems[2]
[1]Riga Stradins University, Latvia; [2]Ventspils University of Applied Sciences, Latvia
ilze.balode@rsu.lv, jaunzems.andrejsjan@gmail.com

Abstract. The actual scientific problem of national economy arising from practical managerial needs is to discover the implicit inter-industry marginal relations between components of the net output and components of the gross output of industries taking in account revenues and expenditures of industries. The goal of this paper is to highlight the application possibilities of the input-output analysis for theoretical investigations and for managerial needs. Methodical innovation the marginal analysis under selected *ceteris paribus* constraints in various mixed forms is offered. In order to demonstrate the offered method in action, as the object of the research the industry "Agriculture, hunting, forestry" in Estonia, Latvia, Lithuania and Finland was selected. The mathematical tool of the offered method is the Gauss-Jordan elimination or pivot transformation of the linear systems derived from the input-output model, which allows to calculate large sets of marginal economic indicators. It should be noted that each number in these linear systems contains important economical information that could be useful for comparative statics and managerial decision making. Some of marginal indicators discovered trough the offered input-output analysis are well-known and already used traditionally, but for all that thanks to pivot transformation realized in the various mixed forms create new indicators that usually are not immediately apparent in simple linear systems but are revealed step by step.

Keywords: Estonia, Finland, Latvia, Lithuania, input-output analysis, agriculture, hunting, forestry.

Introduction

The input-output model characterizes the economy as a system of production, distribution, and consumption among economic agents who relate to one another through purchasing and selling of commodities [1-5] (W. W. Leontief). The immediate expenditures with respect to the unit of gross output (coefficients of direct expenditures) estimated from statistical data assumptions about the linearity of connections between basic indicators allow to construct the input-output model in a form of system of linear equalities and linear inequalities. This system shows in the explicit and implicit forms the complex inter-industry marginal relations between the components of the net output and components of the gross output of industries. The expenditure of one agent is decomposed in the revenues of other agents, but revenue of the same agent is decomposed in the expenditures of other agents. Gross revenue and gross expenditure of the agent are the indicators with the same amount but constructed in different ways due to unequal concepts.

The input-output model is a useful widespread technique in economic analysis and policy making because of holistic mathematical approach and clear economical interpretations of indicators [6-13].

Significant work about input-output models has been done by line of researchers in order to investigate different markets. Several authors have written about input and output, for example, Ashyrov et.al [12] looked at the Italian construction sector, Isard et al. [9] developed methods of inter-regional analysis, Yoo and Yang [13] discussed the water utility in Korean economy, Cai and Mak described tourism linkages [11]. The signals about growing interest to the Input-Output Economics is already appearing. Some recently published works, such as Oosterhaven [14], Mukhopadyay [15] and Tan et al. [16] demonstrate the modern applications of the input-output analysis. The diversity of input-output research has looked at various current issues recently, such as the Catalonian financial crisis [17], footprints of tourism [18], fishery during Covid-19 [19] and sustainability of fishery and coastal management [20]. Therefore, the usage of input-output calculations is still a very useful research tool for various sectors, including those analysed in this paper. The authors have already used the input-output approach in various other studies concerning different industries of Estonia, Latvia, Lithuania and Finland [21-25].

Materials and methods

Economic production defined by the System of National Accounts (the internationally agreed concepts, definitions, classifications and accounting rules) states [26]: "Production is an activity carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital and goods, and services to produce outputs of goods and services." (SNA, 2025).

The industry can be considered as an abstract subject-producer transforming bought multiple factor inputs into gross output what being sold generates value added. In order to produce gross output, the industry has to buy intermediate domestic or imported resources. In order to get money, the industry as an abstract subject-producer must sell its net output. The gross value added of industry forms as the last balancing indicator after buying, producing, selling actions.

The National Input-Output Table characterizes balanced results of the selling-purchasing activities of each industry as a structure of gross output due to two equations: direct and dual. Direct equation presents gross output as a sum of sales; the dual equation presents gross output as a sum of purchases. Equilibrium means that for each industry total revenues equals total expenditures.

The marginal analysis of the equilibrium offered in this paper can be organized in various aspects.

Typical research questions that arise are:

"What will happen with some of indicators if one of them gets perturbation Δ, but same other remain constant?";

"How should the definite line of indicators be changed in order to cause the change Δ of the definite indicator?"

The three classifications that were used in this paper are the following.

- The National Input-Output tables (NIOT) are available thanks to the World Input-Output Database (WIOD) [27] with its unified structured statistical information in monetary terms - in current prices, expressed in millions of US dollars. Using WIOD we refer [28] to Timmer et al. (2015).
- NIOT is constructed by utilizing the national accounts. The System of National Accounts (SNA) [26] is the internationally agreed standard set of recommendations on how to compile measures of economic activity and forms a basis for economic analysis and policy formulation
- The International Standard Industrial Classification (ISIC) [29] is a globally accepted standard for industry classification. The industries in ISIC are strictly defined and internationally accepted.

In the mathematical sense this research is based on linear algebra.

In the more practical sense this article is based on the mentioned above significant publication of Miller and Blair [3; 4; 30] and on the famous and very widely used Andersen, Sweeney and Williams [31] quantitative approaches.

Herein is a short explanation of the theoretical framework and methods used.

In order to be concise, the matrix form of the input-output model in monetary terms will be used.

Economy consists of n industries, each industry produces one and only one product, but different industries produce different products.

Under the axiom of linearity, the input-output model is expressed in form

$$\textit{direct model}\ X = A\,X + Y,$$

$$\textit{dual model}\ P = A^T\,P + V,$$

where $A = (a_{ij}) \in \mathbf{R}^{n,n}$, (i, j = 1, 2, .. . n) - the matrix what characterizes interindustry technological linkages in monetary terms;
$P = (p_1\ p_2\ ...\ p_n)^T \in \mathbf{R}^{n,1}$ - vector of prices indices, initially $P = (1\ 1\ \dots\ 1)^T$;
$X = (x_1\ x_2\ ...\ x_n)^T \in \mathbf{R}^{n,1}$ - vector of gross output;
$Y = (y_1\ y_2\ ...\ y_n)^T \in \in \mathbf{R}^{n,1}$ - vector of final product or net output (final demand);
$V = (v_1\ v_2\ ...\ v_n)^T \in \mathbf{R}^{n,1}$ - vector of value added with respect to unit of gross output.

Equality $X = AX + Y$ means that gross output of the industry equals intermediate sales plus net output.

Equality $P = A^T\ P + V$ means that the price of product equals intermediate purchases plus value added.

The concept of value added in microeconomics, macroeconomics and in NIOT.

In microeconomics an acceptable definition of firm's created value added is given by Blomqvist, Wonnacott & Wonnacott [32]: "Value added. Value of the product sold less the cost of intermediate products bought from other firms".

The macroeconomic concept of value added created by an industry is explained in the European Central Bank (ECB) Glossary [33] and European system of accounts [34]: "Value added (gross) is total output less the intermediate consumption". Gross domestic product (GDP) is the standard measure of the gross value added created through the production of goods and services in a country during a certain period.

Eurostat [35] explains: "Gross domestic product = compensation of employees + gross operating surplus + net taxes on production and imports."

The National Input-Output table and models derived from it show the logic of the definitions given by ECB and Eurostat.

As it was shown, each industry in their production process as intermediate consumption utilizes products bought from domestic industries and from foreign industries (imports). Total intermediate consumption is explored in the special row under the code II_fob.

The last row of NIOT shows the gross output of industry: (GO | Gross output at basic prices).

Gross output minus total intermediate consumption is called gross value added (GVA).

The gross value added represents the payments to primary factors of production [36].

In NIOT the gross value added is divided in 6 categories (Table 1).

Table 1

Components of gross value added. Codes and descriptions in NIOT

Code	Description
TXSP	Taxes less subsidies on products
EXP_adj	Cif/ fob adjustments on exports
PURR	Direct purchases abroad by residents
PURNR	Purchases on the domestic territory by non-residents
VA	Value added at basic prices
IntTTM	International Transport Margins

For the separate industry GVA = GO − II_fob.

- Value added (gross) = Output at basic prices − Total intermediate consumption.
- Value added (net) is defined as follows: VA = GVA − TXSP − EXP_adj − PURR − PURNR.
- Value added net = gross value added − taxes less subsidies on products − Cif/ fob adjustments on exports − purchases on the domestic territory by non-residents.

It should be critically remarked that NIOT does not explore the complete structure of value added ("compensation of employees + gross operating surplus + net taxes on production and imports") and it makes impossible to investigate the distribution of created wealth between different economic agents.

The value-added creation problems in agriculture are investigated in several of recent papers, for instance [37], "Projecting value added in agriculture in Latvia" (Pilvere, Krievina, Nipers 2018) devoted to the value-added increase problem in connection with the Common Agricultural Policy of the European Union. It suggests the following main conclusion: "If the Common Agricultural Policy of the European Union is not changed after 2020 (baseline scenario), the value added of agriculture in Latvia is expected to increase by 33% in 2030 and by 80% in 2050 when compared with 2017" (ibid.).

Results and discussion

In a broad sense, the scientific importance of these research results offers a look into methods of linear systems that can create original, complete and flexible comparative statics with *ceteris paribus* principle utilization.

Also, this paper is devoted to the comparative statics of the value added with respect to the gross output and with respect to the net output in the industry “Agriculture, hunting, forestry” (NACE A01_A02) comparing indicators of Estonia, Finland, Latvia, Lithuania.

The empirical material of the study is the OECD IOT (OECD 2023) [38] database that is freely available and a very useful empirical tool for economic research and structural analysis at the international level as it highlights inter-industry relationships covering all sectors. The OECD database comprises information on 45 sectors of the national economy over the period 1995-2020. The Input-Output Tables (IOTs) that are used in this research describe the sale and purchase relationships between producers and consumers within an economy.

The Nomenclature of Economic Activities (NACE) is the integrated classification system for products and economic activities, as specified in Regulation (EC) of the European Parliament and of the Council [39].

In NIOT following the United Nations industry classification system (ISIC) agriculture (A) is classified into three industries A01 (Crop and animal production, hunting and related service activities), A02 (Forestry and logging), A03 (Fishing and aquaculture).

The definition of the industry A01 “Crop and animal production, hunting and related service activities” (SCEA, 2008) [40]:

“This division includes two basic activities, namely production of crop products and production of animal products, covering also the forms of organic agriculture, growing of genetically modified crops and raising of genetically modified animals. This division includes growing of crops in open fields as well in greenhouses. Group 01.5 (Mixed farming) breaks with the usual principles for identifying the main activity. It accepts that many agricultural holdings have reasonably balanced crop and animal production, and that it would be arbitrary to classify them in one category or the other.

This division also includes service activities incidental to agriculture, as well as hunting, trapping and related activities.”

The first sublevel of the industry A01 is defined as:

- A011 Growing of non-perennial crops;
- A012 Growing of perennial crops;
- A013 Plant propagation;
- A014 Animal production;
- A015 Mixed farming;
- A016 Support activities to agriculture and post-harvest crop activities.

The comparative marginal analysis of equilibrium referring to the industry A01_02 and A03 in the Baltic States and Finland was carried out under various selected *ceteris paribus* constraints.

Tables 2, 3 contain coefficients from the initial system $Y = (I - A) X$ and coefficients after sequentially first and second pivot transformation (Gauss-Jordan elimination).

As it was stressed before, we consider the numbers in Tables 2, 3 as proper marginal indicators.

Therefore, Tables 2, 3 provide significant information in the form of differential quotients.

Is important to stress that in order to ensure the correct interpretation of these discovered original numbers, it is necessary to have perfect understanding of the marginal sense of all input-output linear expressions.

For clarification, here are some detailed examples.

Example 1. Let us compare and discuss the numbers (x ↔ A01_02; y ↔ TTL_A01_02) in tables EST-1, FIN-1, LVA-1, LTU-1. These corresponding numbers are 1.1905; 1.1373; 1.2833; 1.095. The proper marginal values added are 0.4230; 0.6348; 0.5096; 0.4747.

So, the change of net output of the industry A01_02 by $\Delta y = 1$, keeping gross output in A03 unchanged, requires increasing of gross output in the industry A01_02 by 1.1905; 1.1373; 1.2833; 1.095. At the same time, it will cause the value added increasing by 0.4230; 0.6348; 0.5096; 0.4747.

It is easy to interpret 1.095 because the industry A01_02 in LTU is more productive than in other three countries. We can also understand the number 1.2833 for LVA what confirms the well-known sore problem. We can be delighted with FIN success in A01_02 with 1.1373 in spite of geolocation. The number 1.1905 for EST, in our opinion, positively impacts workers in the industry A01_02.

Example 2. Let us compare and discuss the numbers (x ↔ A03; y ↔ TTL_A03) in tables EST-1, FIN-1, LVA-1, LTU-1. These corresponding numbers are 0.9965; 0.8647; 0.8791; 0.9637. Marginal values added are 0.4195; 0.4992; 0.5696; 0.4396.

Table 2

Coefficients of initial linear expressions (I − A) X, value added, and coefficients of these expressions after two sequential pivot transformation (EST, FIN)

EST - 0	x ↔ A01_02	x ↔ A03	…	**FIN - 0**	x ↔ A01_02	x ↔ A03	…
y ↔ TTL_A01_02	0.8400	-0.0012	…	y ↔ TTL_A01_02	0.8793	-0.0016	…
y ↔ TTL_A03	-0.0001	0.9965	…	y ↔ TTL_A03	0.0000	0.8647	…
…	…	…	…	…	…	…	…
value added	0.3553	0.4190	…	value added	0.5582	0.4982	…
EST - 1	y ↔ TTL_A01_02	x ↔ A03	…	**FIN - 1**	y ↔ TTL_A01_02	x ↔ A03	…
x ↔ A01_02	1.1905	0.0014	…	x ↔ A01_02	1.1373	0.0019	…
y ↔ TTL_A03	-0.0001	0.9965	…	y ↔ TTL_A03	0.0000	0.8647	…
…	…	…	…	…	…	…	…
value added	0.4230	0.4195	…	value added	0.6348	0.4992	…
EST - 2	y ↔ TTL_A01_02	y ↔ TTL_A03	…	**FIN - 2**	y ↔ TTL_A01_02	y ↔ TTL_A03	…
x ↔ A01_02	1.1905	0.0014	…	x ↔ A01_02	1.1373	0.0021	…
x ↔ A03	0.0001	1.0035	…	x ↔ A03	0.0001	1.1565	…
…	…	…	…	…	…	…	…
value added	0.4230	0.4210	…	value added	0.6348	0.5773	…

Source: authors' calculations based on OECD I-O data 2020.

Table 3

Coefficients of initial linear expressions (I − A) X, value added = (VA) X, and coefficients of these expressions after two sequential pivot transformation (LVA, LTU)

LVA - 0	x ↔ A01_02	x ↔ A03	…	**LTU - 0**	x ↔ A01_02	x ↔ A03	…
y ↔ TTL_A01_02	0.7793	-0.0060	…	y ↔ TTL_A01_02	0.9130	-0.0150	…
y ↔ TTL_A03	-0.0005	0.8791	…	y ↔ TTL_A03	-0.0001	0.9637	…
…	…	…	…	…	…	…	…
value added	0.3971	0.5665	…	value added	0.4334	0.4325	…
LVA - 1	y ↔ TTL_A01_02	x ↔ A03	…	**LTU - 1**	y ↔ TTL_A01_02	x ↔ A03	…
x ↔ A01_02	1.2833	0.0078	…	x ↔ A01_02	1.0953	0.0164	…
y ↔ TTL_A03	-0.0006	0.8791	…	y ↔ TTL_A03	-0.0001	0.9637	…
…	…	…	…	…	…	…	…
value added	0.5096	0.5696	…	value added	0.4747	0.4396	…
LVA - 2	y↔TTL_A01_02	y ↔ TTL_A03	…	**LTU - 2**	y ↔ TTL_A01_02	y ↔ TTL_A03	…
x ↔ A01_02	1.2833	0.0088	…	x ↔ A01_02	1.0953	0.0170	…
x ↔ A03	0.0007	1.1375	…	x ↔ A03	0.0001	1.0377	…
…	…	…	…	…	…	…	…
value added	0.5100	0.6479	…	value added	0.4747	0.4562	…

Source: authors' calculations based on OECD I-O data 2020.

So, increasing of gross output of the industry A03 by 1 unit keeping net output in A01_02 unchanged, will cause an increase of net output in the industry A03 by 0.9965; 0.8647; 0.8791; 0.9637. At the same time, it will cause the value added increase by 0.4195; 0.4992; 0.5696; 0.4396.

Industry A03 in EST with its 0.9965 has reached the state when almost all gross output becomes net output. The value added 0.4195 shows that 42% of the industry A03 expenditures flows into the value added section (see Table 1).

In the present comparison A03 in LVA with its 0.8791 looks quite good.

Conclusions

1. The offered innovative multishaped and flexible application of pivot transformations (Gauss-Jordan eliminations), using ceteris paribus principle, sufficiently extends the feasibility of informative analysis of linear systems, allows to derive implicit connections and to calculate original marginal indicators.
2. In order to elaborate rational managerial decisions with the help of input-output approach the line of implicit economic indicators can be calculated, which allows to estimate the productivity of a national economy and identify the most important obstacles.
3. The analytical multi-sided comparison of indicators of the industry “Agriculture, hunting, forestry” in Estonia, Latvia, Lithuania, Finland in 2020 shows that the efficiency of the industry “Agriculture, hunting, forestry” may be ranked in this succession: FIN, EST, LTU, LVA.

Author contributions

Both authors have contributed equally to the study and preparation of this publication. The authors have read and agreed to the published version of the manuscript.

References

[1] Leontief W. W. Quantitative input and output relations in the economic systems of the United States. The review of economic statistics, Vol. 18, No. 3 (Aug., 1936), pp. 105-125.
[2] Dorfman R. Wassily Leontief’s Contribution to Economics. The Swedish Journal of Economics, Vol. 75, No. 4 (Dec., 1973), pp. 430-449.
[3] Miller R. E., Blair P. D. Input-Output Analysis: Foundations and Extensions. Englewood Cliffs, NJ: Prentice-Hall, 1985, 464 p.
[4] Miller R. E., Blair P. D. Input-output analysis: foundations and extensions. Cambridge University Press, 2009.
[5] Hirschman A.O. The Strategy of Economic Development. Yale University Press, New Haven, CT, USA, 1958.
[6] Charnes A., Cooper W. W., Rhodes E. “Measuring the efficiency of decision making units.” European Journal of Operational Research, Vol.2, 1978, pp, 429-444.
[7] Harck E., Rose A., Miernyk W. Input-output analysis: the first fifty years. Economic Systems Research, 1(2), 1989, pp. 229-272.
[8] Chenery, H. B., Watanabe, T. International comparisons of the structure of production. Econometrica: Journal of the Econometric Society, 1958, pp. 487-521.
[9] Isard W., Azis I.J., Drennan M.P., Miller R.E., Saltzman S., Thorbecke E. Methods of Inter-regional and Regional Analysis. Ashgate, Hants, UK, 1998.
[10] Oosterhaven J., Piek G., Stelder D. Theory and practice of updating regional versus interregional interindustry tables. Papers in Regional Science, 59(1), 1986, pp. 57-72.
[11] Cai J., Leung P., Mak J. Tourism’s forward and backward linkages. Journal of Travel Research, 45(1), 2006, pp. 36-52.
[12] Pietroforte R., Bon R. An input-output analysis of the Italian construction sector, 1959-1988. Construction Management and Economics, 13(3), 1995, pp. 253-262.
[13] Yoo S. H., Yang C. Y. Role of water utility in the Korean national economy. International Journal of Water Resources Development, 15(4), 1999, pp. 527-541.
[14] Oosterhaven J. Rethinking Input-Output Analysis: A Spatial Perspective. − University of Groningen, The Netherlands. Series: SpringerBriefs In Regional Science. Publisher: Springer Nature Switzerland AG. Year: 2019.

[15] Mukhopadhyay K (ed.). Applications of the Input-Output Framework. − McGill University Montreal, QC, Canada. Publisher: Springer Nature Singapore Pte Ltd. Year 2018.

[16] Tan R. R., Aviso K. B., Promentilla M.A.B., Yu K. D. S., Santos J. R. Input-output models for sustainable industrial systems: Implementation using LINGO. − Springer, Singapore. Year 2018.

[17] Freire-González J., Canosa O. Economic crises and energy use: An input-output analysis of Catalonia’s 2008-2014 financial crisis Journal of Industrial Ecology, 29 (1), 1999, pp. 185-203.

[18] Demeter C., Lin P. C., Sun Y. Y., Dolnicar S. Assessing the carbon footprint of tourism businesses using environmentally extended input-output analysis. Journal of Sustainable Tourism, 30(1), 2021, pp. 128-144.

[19] Aponte F.R. Economic interdependencies and sectoral impacts: An input-output analysis of the Norwegian isheries and aquaculture sector amidst COVID-19, Fisheries Research, 2025, 107247, ISSN 0165-7836,

[20] Brito J.A.F, Nguyen T.V., Kristófersson D.M. Evaluating the sustainability and potential of the Blue Economy: A bioeconomic and input-output analysis of the fisheries sector in Cape Verde, Ocean & Coastal Management, Volume 250, 2024, 107042, ISSN 0964-5691.

[21] Jaunzems A. Value added created by industry “Education” in Baltic States and Finland. 2019, DOI: 10.22616/ERDev2019.18. N044. pp. 1090-1103.

[22] Jaunzems A., Balode I. Comparative dynamic analysis of value added created by industry “Crop and animal production, Hunting and related service activities” in the Baltic States and Finland. Engineering for Rural Development, 2019, pp. 1104-1117. DOI: 10.22616/ERDev2019.18.N045.

[23] Jaunzems A. Industry “Scientific research and development” as economic unit in the Baltic States and Finland. Engineering for Rural Development, 2020, pp. 177-190. DOI:10.22616/ERDev.2020.19.TF040.

[24] Jaunzems A., Balode I. The industry “Fishing and Aquaculture” as economic unit in the Baltic States and Finland. Engineering for Rural Development, 2019. pp. 276-291. DOI:10.22616/ERDev.2020.19.TF066

[25] Jaunzems A., Balode I. Industry “Manufacture of food products, beverages and tobacco products” as economic unit in the Baltic States and Finland. Engineering for Rural Development, 2021, pp. 1367-1385. DOI: 10.22616/ERDev.2021.20.TF297.

[26] SNA - System of National Accounts, 2008. [online] [06.04.2025.] Available at: https://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf

[27] World Input and Output Database -WIOD. [online] [20.03.2025.] Available at: https://www.rug.nl/ggdc/valuechain/wiod/

[28] Timmer, M. P., Dietzenbacher, E., Los, B., Stehrer, R. and de Vries, G. J. (2015), ”An Illustrated User Guide to the World Input-Output Database: the Case of Global Automotive Production”, Review of International Economics., 23: 575-605.

[29] ISIC - International Standard Industrial Classification of All Economic Activitie, 2008. [online] [06.04.2025.] Available at: https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf

[30] Miller R. E., Blair P. D. Input-Output analysis. Foundations and extensions. 3 rd Edition. − Cambridge University Press, 2022.

[31] David R. Anderson, Dennis J. Sweeney, Thomas A. Williams. An Introduction to Management Science: Quantitative Approaches to Decision Making. Seventh Edition. West Publishing Company, 1994.

[32] Blomqvist, A. G., Wonnacott, P., & Wonnacott, R. J. (1983). Economics. McGraw-Hill Ryerson.

[33] ECB - European Central Bank, Glossary. [online] [06.04.2025] Available at: https://www.ecb.europa.eu/services/glossary/html/glossv.en.html

[34] ESA - European system of accounts, 2010 [online] [06.04.2025.] Available at: https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-02-13-269

[35] Eurostat - Eurostat Thematic glossaries. [online] [06.04.2025] Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title = Thematic_glossaries

[36] Deardorffs’ Glossary of International Economics. [online] [06.04.2025] Available at: https://websites.umich.edu/~alandear/glossary/p.html#PrimaryFactor

[37] Pilvere I., Krievina A., Nipers A. Projecting value added in agriculture in Latvia. Engineering for Rural Developmentn, 2018, pp. 1084-1090. DOI: 10.22616/ERDev2018.17.N151.

[38] OECD IOT Database. [online] [06.04.2025.] Available at: https://www.oecd.org/en/data/datasets/input-output-tables.html
[39] Statistical classification of economic activities - NACE [online] [06.04.2025.] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri = legissum:24030103_2
[40] SCEA - Statistical Classification of Economic Activities NACE Rev. 2.0, 2008. [06.04.2025.] Available at: https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF