

## **Modern Classification: Principles and Documentation - CAPITAL**

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### INTRODUCTION

Historical statistics are coined in the categories and terms of the period – what we refer to within the framework of the Electronic Repository of Russian Historical Statistics as ‘historical classifications’. These categories can even differ within one and the same period, due to the existence of different spelling variants and synonyms. Particularly for the earlier benchmark-years 1795 and 1858 this is often the case. Standardising these categories across data-sets in order to maximise the comparability of the data is one of the central aims of the Electronic Repository of Russian Historical Statistics (ERRHS).

To achieve this, we have:

(a) unified and systematised the 'historical' categories used in the sources and;

(b) matched and marked them accordingly to categories used in accepted modern, and highly standardised systems of classification (NACE, CLEMS, PST and others).

in which:

(a) The standardisation of historical categories into what we will refer to as ‘unified historical classifications’ serves the purpose of making data comparable within one and the same period and facilitates querying the data.

(b) the reliance on modern classifications to tag the data resolves the issue of comparability over time. Unifying 'historical classifications' does not render data comparable between cross-sections. Different grouping principles might have been used, and the meaning of terms and categories apparently similar, can in fact have changed over the years. Coding the data for different years using one and the same classification scheme does, however, solve this problem.

On the Ristat-portal users can query the database using the historical or the modern classification, and aggregate the data at different levels of hierarchy. This query tool is accessed from the left-hand menu at ‘STATISTICS/TOPICS’. A radio-button allows the user to toggle between historical and modern classification, changing the set of categories available for selection under ‘4. Choose indicators’.

Full disaggregated data-sets in database format (one row=one record) with simultaneous historical and modern classification can be downloaded from the left-hand menu at ‘STATISTICS/FILE CATALOGUE’. The historical classification is in the fields ‘HistClass1’, ‘HistClass2’.....‘HistClass10’. The modern classification is in the fields ‘Class1’, ‘Class2’.....‘Class10’. Below, we expand on the methodology used in applying modern classifications.

## GENERAL PRINCIPLES OF THE APPLICATION OF MODERN CLASSIFICATIONS

Modern classifications are, as a rule, hierarchical, and consist of nested categories, which allow for the classification of each and every historical variable, even if at different levels of detail. Branches and sub-branches of industry can be taken as a good example. In case a certain figure cannot be matched to a single sub-branch of industrial production, it might well be feasible to determine the more general branch of production that it relates to, one level up in the hierarchy.

However, such a procedure rarely allows one to reconstruct all categories of the modern classification, because the necessary level of detail of the data to do so might simply not be available in the source. Only if each historical category matches to only one category in the modern classification (a relationship of many-to-one), and all necessary historical categories are identifiable and available in the source ('functional completeness') can we speak of a full reconstruction of a category from the modern classification. This is usually the case only at the higher, as well as at the lower levels of aggregation, whereas at intermediate levels the mismatches are a more vexing problem.

This notwithstanding, we have categorised all data in the database in terms of a modern classification, either through full reconstructions, or by distributing the available historical categories among modern 'baskets'. In the next sections, we will specifically elaborate on our methodology with regards to the modern classification of ERRHS' data on capital.

### 6. CAPITAL

The term "capital" has many meanings. In this project, we use it in the definition of the system of national accounts (SNA 93), that is to designate all tangible and intangible assets that are used to produce goods and services over a significant period of time (more than a year), excluding fuel, raw materials and semi-finished products. Capital in this sense does not include any financial assets and savings. In other words, capital is the total volume of all investments in the national economy for previous years, discounted according to the depreciation rates. Sometimes the literature uses the term "national wealth" to denote capital in this sense.<sup>1</sup>

A detailed classification of types of capital has been developed in the system of national accounts. In this project, however, for practical reasons we have opted for the European KLEMS classification. KLEMS is used in the only project known to us that sets the task of comparing the amount of capital and its productivity in European countries over a fairly long period of time, from 1970 to the present day. Because of this, KLEMS is better suited to statistical practice. When assessing capital available in the economy, we do not include in the calculation the available "reserves", precious metals and works of art, as well as natural resources (land, natural resources, water resources, etc.).<sup>2</sup>

In fact, the classification of capital according to KLEMS is a classification of types of capital according to SNA93 adapted to practical problems. In Appendix 2, we compare the two classifications. In addition, we compare them with the classification of national wealth according to Vainshtein (1960), who used it to reconstruct national wealth in the Russian empire in 1913.

Where it is possible, we indicate to which sector of production capital assets: agriculture, industry, or services. As a result, we use a classification with five levels of detail (see Appendix 1 for a complete list of categories). From the first to the fifth level, the degree of detail increases:

- 1st level determines whether assets were tangible / intangible;
- 2nd level defines the type of asset;
- 3rd level defines products;
- 4th level specifies the type of product;
- 5th level defines the sector (industry, services, agriculture).

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<sup>1</sup> See, for example, Vainshtein A.L. Narodnoe bogatstvo i narodnohozyajstvennoe nakoplenie v predrevolyucionnoj Rossii [National wealth and national economic accumulation in pre-revolutionary] Russia. M.: 1960. Weinstein defines "national wealth" as "an indicator that covers, in value terms, all materialized labor of past years" (p. 66).

<sup>2</sup> There are several variants of KLEMS classifications, differing in the date of creation. In this project, for the indicators of the "capital" direction, we used the most modern version - EU KLEMS 2019 (for more details, <https://euklems.eu/>).

When we do our best to assign the code with the greatest degree of detail. For example, "a state-owned stone building" - falls into "... Non-residential structures" (class 4), while class1 should contain ". Total tangible assets", in class 2 - "..Total construction", class 3 - "... Total non-residential investment". In some cases, the data allow us to assign the 2nd and 3rd levels and, skipping the 4th, assign the 5th level, that is, to determine which sector the asset belongs to (industry, services, agriculture). For example, in the capital statistics for 1795 and 1858 the asset "horses at postal stations" are assigned to CLASS 1 "tangible assets (total)", CLASS 2 "other tangible assets", CLASS 3 "other products", and CLASS 5 "services", whereas CLASS 4 is not defined as no clarifications could be made.

For more information on the KLEMS system, see

<https://euklems.eu/wp-content/uploads/2019/10/Methodology.pdf>

[https://www.rug.nl/ggdc/html\\_publications/memorandum/gd123.pdf](https://www.rug.nl/ggdc/html_publications/memorandum/gd123.pdf)

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**Appendix 1 - KLEMS – Classification**

CLASS 1 Материальные активы (.Total tangible assets)

CLASS 2 Здания и сооружения (.Total construction)

CLASS 3. Жилые здания и сооружения (...Residential structures)

CLASS 3. Инвестиции в нежилые здания и сооружения (...Total non-residential investment)

CLASS 4. Нежилые здания и сооружения (....Non-residential structures)

CLASS 4 Инфраструктурные объекты (...Infrastructure)

CLASS 2 Машины и производственное оборудование (.Machinery and equipment)

CLASS 3 Транспортное оборудование (...Transport equipment)

CLASS 3 Машины и другое производственное оборудование (...Machinery and other equipment)

CLASS 4 Вычислительное оборудование (....Computing equipment)

CLASS 4 Коммуникационное оборудование (...Communications equipment)

CLASS 4 Другие машины и оборудование (....Other machinery and equipment)

CLASS 2 Другие материальные активы ()

CLASS 3 Продукция сельского и лесного хозяйства (...Products of = agriculture and forestry)

CLASS 3 Другая продукция (...Other products)

CLASS 1 Нематериальные активы (.Total Intangibles)

CLASS 2 Программное обеспечение (.Software)

CLASS 2 Другие нематериальные активы (.Other intangibles)

**Appendix 2. EU KLEMS, SNA 93 and Weinstein classifications**

KLEMS	KLEMS notation	SNA 93	Vainshtein (1960)
		AN.1 Produced Assets	
Total investment (or capital asset)	GFCF	AN.11 Fixed Assets	
.Total tangible assets	GFCFT	AN.111 Tangible Fixed Assets	National economy according to Vainshtein as a whole
..Total construction	Con		Structures (each with a breakdown by industry)
...Residential structures	Rstruc	AN.1111 Dwellings	
...Total non-residential investment	OCon	AN.1112 Other buildings and structures	
....Non-residential structures	NRStruc	AN.11121 Non-residential buildings	
....Infrastructure	Infra	AN.11122 Other structures	Railway, water transport, carriage-drawn transport and communication facilities Urban facilities
..Machinery and equipment	MaEq	AN.1113 Machinery and equipment	Equipment
...Transport equipment	TraEq	AN.11131 Transport and equipment	
...Machinery and other equipment	Mach		
....Computing equipment	IT		
....Communications equipment	CT		
....Other machinery and equipment	OMach	AN.11132 Other machinery and equipment	
..Other tangible assets	OGFCFT	AN.1114 Cultivated Assets	
...Products of agriculture and forestry	Agri	AN.11141 Livestock for breeding, dairy, draught, etc... AN.11142 Vineyards, orchards and other plantations of trees yielding repeat products.	Livestock Green spaces
...Other products	Oth	Not included	Not included
.Total Intangibles	GFCFI	AN.112 Intangible fixed assets	Not included
..Software	Soft	AN.1122 Computer software	
..Other intangibles	OGFCFI	AN.1121 Mineral Exploration AN.1123 Entertainment, literary or artistic originals AN:1129 Other intangible fixed assets	
NOT INCLUDED		AN.12 Inventories	Goods and stocks + Coin and precious metals in circulation
		AN.122 Work-in-progress	
		AN.1221 Work-in-progress on cultivated assets	
		AN.1222 Other work-in-progress	
		AN.123 Finished goods	
		AN.124 Goods for resale	
NOT INCLUDED		AN.13 Valuables	
		AN.131 Precious metals and stones	Coin and precious metals in circulation

		AN.132 Antiques and other art objects	
		AN.139 Other valuables	
NOT INCLUDED		AN.2 Non-produced assets	NOT INCLUDED
		AN.21 Tangible non-produced assets	
		AN.211 Land	
		AN.2111 Land underlying buildings and structures	
		AN.2112 Land under cultivation	
		AN.2113 Recreational land and associated surface water	
		AN.2119 Other land and associated surface water	
		AN.212 Subsoil assets	
		AN.2121 Coal, oil and natural gas reserves	
		AN.2122 Metallic mineral reserves	
		AN.2123 Non-metallic mineral reserves	
		AN.213 Non-cultivated biological resources	
		AN.214 Water resources	
		AN.22 Intangible non-produced assets	
		AN.221 Patented entities	
		AN.222 Leases and other transferable contracts	
		AN.223 Purchased goodwill	
		AN.229 Other intangible non-produced assets	
Not included		Not included	Individual consumer property

### **Appendix 3 - User license and correct reference to the data from the Electronic Repository of Russian Historical Statistics**

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Kessler, Gijs and Andrei Markevich, Electronic Repository of Russian Historical Statistics, 18th - 21st centuries, <https://ristat.org/>, Version I (2020): [Datatype number and name] [benchmark-year].

Example:

Kessler, Gijs and Andrei Markevich, Electronic Repository of Russian Historical Statistics, 18th - 21st centuries, <https://ristat.org/>, Version I (2020): Datatype 6.01 - Capital assets, benchmark-year 2002.

or, for the documentation to a data-set:

Kessler, Gijs and Andrei Markevich, Electronic Repository of Russian Historical Statistics, 18th - 21st centuries, <https://ristat.org/>, Version I (2020): [Title] [page numbers] [filename: XXXXX]

Example:

Kessler, Gijs and Andrei Markevich, Electronic Repository of Russian Historical Statistics, 18th - 21st centuries, <https://ristat.org/>, Version I (2020): Modern Classification: Principles and Documentation - CAPITAL, p. 1 [filename: ERRHS\_6\_00\_Modern\_Classification\_EN.pdf]