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**Russian Input-Output Tables:
Experience on Compilation, Problems and Perspectives**

Natalia Ustinova
Deputy Director
National Accounts Department
Federal State Statistics Service (ROSSTAT)

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Abstract

Russian Federation has a wide experience in compiling input-output tables (IOT). The first Russian IOT called inter-industry balance of production and disposition of output (IIB) were compiled for 1966 on the methodological basis of the material product system (MPS).

Transformation of the Russian economy into the market one that started at the beginning of the 1990-s and required changes in the methodology for all the macroeconomic indicators and gradual introducing the SNA into the statistical practice. The first benchmark IOT based on the 1993 SNA concepts was compiled for 1995 and served as a basis for compiling the annually shortened version of IOT for 1996-2003.

The first IOT based on the new industrial classification by kind of activity harmonised with Statistical classification of economic activities adopted in the European Community (NACE, Rev.1) was compiled for 2004.

This paper describes the Russian IOT construction experience for the last 10 years, challenges that the Russian statisticians encountered while compiling these tables and the prospects of work in this area for foreseeable future.

I.   Introduction

Russian Federation has a long history in compilation and development of input-output tables (IOT). These tables represent more elaborated version of similar tables which were compiled and widely used in the centrally planned economy of the former USSR.

The first IOT for Russia called inter-industry balance of production and disposition of output (IIB) were compiled for 1966 on the basis of the methodology of the material product system (MPS). Transformation of the planned economy into the market one required a new system of indicators for macroeconomic calculations, which could adequately describe the structure and functioning of the Russian economy. The UN System of National Accounts (1993 SNA) became the required system of indicators and a methodological benchmark for the Russian macroeconomic statistics. The first benchmark IOT based on the 1993 SNA concepts was compiled for 1995. In ensuing years the development of the Russian IOT was directed on better reconciliation with the international standards.

The purpose of this paper is to review the major stages of improvement of the Russian IOT, associated problems and prospects of their further development.

This paper consists of six sections. The first section introduces the paper. The second section contains the brief review of the history of development of the first IOT in the USSR. The third section is devoted to description of the most important stages in the development of the IOT – the compilation of the first IOT in the Russian history for 1995 on the basis of the 1993 SNA concepts and definitions. The fourth section deals with the further evolution of the IOT. The fifth section describes the peculiarities of the compilation of the IOT for 2004 which was for the first time prepared on the basis of the new classification of kinds of economic activities harmonized with the NACE, Rev.1. Finally the sixth section contains the concluding remarks as well as the main directions of further improvements of the IOT.

II. Background

The Soviet economists – statisticians developed a framework for research work on inter-industry relations in the context of compilation of the first USSR national economy balance (also known as MPS) for 1923-1924. This balance included inter-industry relation tables defining the interaction between main production industries. These tables to some extent were prototypes of the future IOT.

Unfortunately the Soviet government did not properly appreciate the work that had been carried out by statisticians. Joseph Stalin called the first MPS "playing in figures" Due to the political climate in the Soviet Union there was no statistical work on IOT during the next thirty years.

The work that had been carried out by the Soviet statisticians attracted the attention of the Saint-Petersburg University alumnus - Vassily Leontiev. After studying publications on the USSR MPS for 1923-1924 he highly appreciated the work that had been carried out by the Soviet statisticians. In the inter-industry relation tables he saw the first statistical implementation of François Quesnay and Léon Walras' models and considerable opportunities for their improvement.

Later, when Vassily Leontiev lived and worked in Germany and in the USA, he continued his research on modelling inter-industry relations. He formulated theoretical basis for the input-output method in a precise language of mathematical formulas. That is why Vassily Leontiev is considered to be the founder of the input-output method that helps to perform a structural analysis of economic systems.

By the mid-fifties Vassily Leontiev's ideas in the filed of input-output analysis were well known and appreciated worldwide. IOT were compiled in the countries with a developed system of the state economic control and, first of all, in the USA, France, Netherlands, Norway, etc.

By that time a new burst of interest in inter-industry relations research took place in the USSR. This process was also facilitated by the political "thaw" in the USSR in the mid-fifties.

In 1959 the Soviet government authorized the Central Statistical Office of the USSR to compile an inter-industry balance (IIB) for production and distribution of products in the national economy of the USSR. The IIB for 1959 included 83-industries table. The special sample survey on cost of goods, carried out in all of the economy sectors, became a basis for the IIB.

The input-output method used in the IIB for 1959 provided entirely new opportunities for economic planning. Therefore, starting from 1959, compilation of benchmark IIBs was performed in USSR on a regular basis.

Compilation of benchmark IIBs for the Soviet republics started in 1966. Experts from statistical offices of the republics used the unified methodology provided by the Central Statistical Office of the USSR to compile IIBs.

The benchmark IIBs were normally compiled once every five years (in 1966, 1972, 1977, 1982 and 1987). These balances comprised 124 industries. The production costs structure surveys were carried out every five years to compile these balances.

In 1972 the compilation of annual IIBs in the periods between base years was started. Annual IIB were less detailed and comprised only 22 industries. The quality of informational basis for the shortened balances was lower than for the benchmark balances. Annual statistics and input-output ratio, structural proportions from the benchmark balances were used for compilation of shortened IIBs. However, these balances were in demand, because they provided users them with annual adjusted overview of inter-industry links.

Thus the first Russian IIB was compiled for 1966 and this year became the starting point in development of Russian input-output tables.

III. From the Material Product System to the System of National Accounts

Up to 1990 all Russian IIBs had been complied within the framework of the material product system (MPS). MPS represented a theory of the Soviet political economy according to which the national income of the country was generated only in the material sphere industries. Non-material sphere industries participated only in its distribution.

The material sphere industries comprised industry, construction, agriculture and forestry, cargo transport and communication serving the material sphere, trade and some other industries. Non-material sphere industries included housing and communal utilities, passenger transport, communication serving households and the non-material sphere, education, health care, science and science service, public administration, etc.

The last Russian IIB within the framework of the MPS was complied for 1990.

The market reforms in the Russian economy which started in the 1990s caused significant changes in all socioeconomic aspects of life. Transformation of the planned economy into the

market one required a new system of indicators for macroeconomic calculations, which could adequately describe the structure and functioning of the Russian economy. 1993 SNA became the required system of indicators and a methodological benchmark for the Russian macroeconomic statistics.

Implementation of the SNA into national statistical practice began in 1991. It has been carried out gradually under the Russian State Program of Transition to International Accounting Standards.

Alongside with transition to 1993 SNA, a new methodology was developed for IIB compilation within the framework of the SNA. It was decided not to develop the next benchmark IIB for 1992 due to the dynamic and structural changes taking place in the Russian economy and the principal reforms of the legal framework for economic activities. Experimental shortened IIBs, based on the SNA definition of production boundaries and treatment of the final demand, were compiled for 1991-1993. Production boundaries included all industries of the non-material sphere, which earlier had been reflected under the category «non-productive consumption».

However, in the process of extension of the market reforms in the Russian economy the need was felt for an information framework to describe adequately inter-industry links and structural proportions of the transition economy. This kind of information could only be obtained from IIBs, compiled within a principally new methodological framework of the 1993 SNA.

According to the Russian Government Regulation, the first benchmark IIB of output production and distribution was developed within the framework of the SNA for 1995. To provide information support for it, a special production costs survey was carried out for enterprises in all industries of the economy,

IIB for 2005 comprised 220 industries; the version for publication comprised 110 industries.

IIB for 1995 was brought as close as possible to the 1993 SNA requirements. Some insignificant differences from the SNA standards took place due to the transition type of the Russian economy.

It was not only the IIB at purchasers' prices and basic prices were compiled but also the whole set of tables recommended by the 1993 SNA, namely the matrices of import, trade and transport margins and net taxes on products. The whole set of tables was called Input-Output Tables when published in 1998. Thereafter Russian users got gradually accustomed to the new name, but some users still call IOT inter-industry balance.

Compilation of the first benchmark IOT for 1995 within the framework of the SNA became a major landmark in the development of the Russian macroeconomic statistics. These tables:

- ensured methodological comparability between the Russian macroeconomic indicators and analogous indicators of other countries;

- ensured conceptual coherence of definitions and classifications used in the economic statistics;
- improved reconciliation of data obtained from different sources;
- enhanced the internal consistency of GDP indicators;
- created the information framework for compilation of the subsequent annual shortened IOT;
- provided public administration with a reliable tool for economic forecasting.

It is interesting to note that the first report on the Russian developments on IOTs within the framework of the SNA was presented by the Rosstat senior executives at the International Input-Output Association Congress in May 1998, New York, in the presence of V. Leontiev, and aroused his deep interest.

Unfortunately, IOT for 1995 were the first and last benchmark tables within the framework of the SNA compiled by the Rosstat. In the following years only annual tables, comprising 22-24 industries, were compiled.

IV. Further Evolution of IOT
IOT Structure and Format

Before 1997 all the Russian IOT were symmetric tables reflecting links between so-called pure industries which were defined as a group of homogeneous goods and services, produced by all economic sectors. It was the concept of «pure industry» that gave the name to inter-industry tables, though they reflected the links of product-by-product type.

Pure industry output was formed through transfer of secondary production outputs into an industry, where these products were primary. Secondary production costs were also registered for the industry, where this production was primary. For example, if the motor car industry produced refrigerators as secondary product, then output of refrigerators was transferred into the refrigerator industry.

In the benchmark IOT output of primary and secondary production and production costs were calculated on the basis of data derived from special business surveys conducted once every 5 years and obtained from enterprises. In the years between the benchmark IOT ratios between output of economic industries (defined as the grouping of enterprises which may consist of different establishments) and pure (homogeneous) industries were used for these purposes.

Neither Make Tables, nor Supply Tables were constructed in an explicit form. Transfer of output and production costs was conducted through automatic data processing.

Since 1998 Russian Supply and Use Tables have been compiled in compliance with the 1993 SNA recommendations.

Supply Tables had an unusual form, because the output matrix for all industries, except industrial production, was filled only with diagonal elements (see Annex 1). The fact is that at that time production accounts for industries, Supply and Use Tables were constructed for pure industries, which produced no secondary products. Total industrial production was also a pure industry, because it had no secondary output of trade, agricultural products, construction, etc. However, branches of the industry could include industrial products of other branches as secondary products. For example, oil industry could include oil products and gas as a secondary products.

Since 1998 symmetric product-by-product tables have been compiled using mathematical methods on the basis of the commodity technology assumption.

Classifications

Despite the fact that since the 1990s all macroeconomic statistics has shifted to the principally new methodology of the 1993 SNA, old national product and industry classifications were still used in all statistical areas.

All-Union Classification of Industries of the National Economy (CINE) was used for industry classification. In CINE industries were formed accordingly to the organizational structure of government executive bodies and existed economic relationships. For example, wholesale trade was broken down into domestic and foreign trade. Retail trade was broken down into public, consumer cooperation and kolkhoz (collective farm) trade.

Russian Classification of Products was used for product classification. This classification covered only industry and agriculture. Russian Classification of Services Provided to Population was used for service classification. All those classifications were developed to meet needs of the centrally planned economy and bore the impress of the Soviet theory of extended reproduction.

By the beginning of the 1990s all those classifications became outdated, they lacked some types of economic activities and products existed in reality.

National product classifications were not harmonized with corresponding international classifications, and that complicated data sharing with developed countries and international comparisons. From all existed classifications only commodity classification used in the external trade statistics, - the Foreign Economic Activity Commodity Nomenclature of the Russian Federation (FCN) – was harmonized with the Harmonised Commodity Description and Coding System (HS) and Combined Nomenclature (CN).

However, the crucial fact was that all those classifications were practically incompatible with each other; therefore the process of product supply and use balancing while compiling IOT was complicated.[1]

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[1] The lack of reconciliation between product and industry classifications was one of the reasons, why product classification for IOT was developed on the basis of CINE and not on the basis of the classification of products

Starting January 1, 2003, instead of CINE, Russian Classification of Kinds of Economic Activities (RCEA) was implemented. RCEA was harmonized with Statistical Classification of Economic Activities in the European Community (NACE, Rev.1) at the 4-digit level. The 5th and 6th digits of the RCEA code reflect national peculiarities and specific characteristics of the Russian economy.

The differences between CINE and RCEA were so big, that the shift to the new classification can be compared to a breakthrough in the whole Russian statistics. It suffices to say, that CINE comprised about 600 industries, but RCEA comprises about 1200. In some cases one CINE industry could break down into ten RCEA industries, but in unknown proportions. The differences between the CINE and RCEA could be seen even at the highest level of aggregation of industries (see Annex 2). Besides, there were also conceptual differences between those classifications.

Implementation of RCEA coincided with changes in the information base used for SNA calculations. It led to methodological review of calculation of macroeconomic indicators and, first and foremost, approaches to the GDP calculation by production method. Production and generation of income accounts for industries were now constructed not for pure, but for economic industries. An economic industry was a group of enterprises, grouped by type of activity. Such approach to formation of an industry was connected with the changes in the business accounting due to adoption of the Tax Code. As a result it became impossible to receive the data on intermediate consumption, compensation of employees, taxes and subsidies on production, gross operating surplus by establishments. Of course, a structure of industrial production became less homogeneous, but it was closer to the reality (see Annex 3),

Beginning with the data for 2003, all industrial national accounts have been produced on the basis of RCEA. As far as IOT were a component of the national accounts, the problem of their compilation in accordance with the new classification arose. There was a need for a tool to increase internal coherence of accounts and check the quality of the GDP calculation, which was first made on the basis of the new classification by activity. Only IOT could become such a tool.

The need for IOT development was obvious, but it was lingered due to several problems.

1) RCEA was implemented without concurrent implementation of a new product classification, harmonized with RCEA.

2) The annual statistical surveys lacked data for calculation of intermediate consumption structure in detailed product breakdown by RCEA sectors.

The first problem could be solved through development of a product classification for IOT, based on RCEA. The second problem could be solved through the use of alternative approaches to IOT indicators' calculation.

V. IOT in the New Classification

Transition to RCEA was not unexpected for Russian national accountants. On a preparation stage before its implementation, new industry and product classifications were developed for construction of production accounts and generation of income accounts for industries and benchmark IOT, based on RCEA. The most detailed (draft) level of industry classification included 155 items, the product classification – 350. Besides, more aggregated classifications were developed. They included 60, 31 and 15 industries and groups of products.

Various direct and reverse transition keys have been developed:

- from IOT industry and product classification for 1995 to IOT industries and products for 2004,

- from IOT industry and product classification for 2004 to IOT industries and products for 1995,

- from FCN product classification to IOT product classification for 2004.

However, it was not possible to develop IOT on the basis of the new classification using these transition keys by mechanic regrouping of IOT indicators, compiled on the basis of the old classification. Therefore it was decided, while developing IOT, to use the information base of the new classification by activity.

The information base review showed that information resources available in the RCEA structure allowed to calculate the output matrix for 165 industries and 355 products. It was possible to calculate import and export for IOT and estimate supply for domestic consumption for each of the 355 products through aggregation and regrouping of foreign trade statistics indicators at the 6-digit level.

Taking this into account, it was decided to build the Use Table also for 355 products, using the commodity flow method. Knowing that information gap will hamper adequate calculation of intermediate consumption indicators for 155 economic industries, it was decided to develop the intermediate consumption matrix at the higher level of aggregation (at the level of 60 or 31 industries).

Compilation of the Supply Table did not cause any difficulties, because all the necessary data were available. Some problems occurred in the process of conversion of supply at basic prices into purchasers' prices. In cases, when there was no data on trade and transport margins for separate product types as well as on taxes on products, their share in supply at basic prices for similar products was used, which was taken from benchmark IOT for 1995. Transition keys from IOT product classification for 2004 to IOT for 1995 were used for selecting an analogous product. For example, for 7 product types isolated in the draft version of IOT for 2004 (pulp, wood pulp, paper, cardboard and their products), the ratio between the margin and supply at basic prices for paper-

pulp industry products, taken from IOT for 1995, was used. In subsequent calculation the margin could be adjusted.

In the process of the Use Table compilation it was easy to calculate practically all components of the final demand and derive total intermediate demand for each of the 355 product types. Structure of household final consumption expenditure was derived from household budget surveys' data in the codes of COICOP **-** The classification of individual consumption by purpose. There were some problems in deriving gross fixed capital formation for machinery and equipment, but they could be solved using the commodity flow method.

The main challenge was calculating the intermediate consumption matrix.

Statistical reports contained data that enabled to calculate input of power, different kinds of fuel, transport, communication, advertising, auditing and some other types of services in all 155 economic industries. However, these data covered only 20 % of all input. There were no detailed data on input of materials and supplies by product types.

The commodity flow method was mainly used to calculate missing indicators of intermediate consumption.

Due to detailed product classification the commodity flow method allowed to identify a specific consumer (industry or intermediate demand industry) for selected products. For example, textiles were mainly in intermediate demand for clothing production; pulp and wood pulp – for paper and cardboard production; fertilizers – in agriculture, parts and accessories of cars and their engines– in car production, etc.

Missing intermediate demand indicators were calculated by using expert estimates on the basis of input and distribution coefficients for analogous products and industries, taken from benchmark IOT for 1995. Corresponding transition keys were used for selecting analogous products and industries.

Concurrently with the intermediate demand matrix calculation, the Import Use Table was built on the basis of the principle of intended use of import (when appropriate). The work with detailed import data in 6-digit codes of FCN in many cases helped to revise the structure of intermediate demand for selected product types.

Accounting data of selected large enterprises available in the Internet were used to revise the structure of intermediate demand.

Obviously, it was a long and painstaking work, but it was the only way out due to the information gap.

In the process of compilation of the intermediate demand matrix supply and use balance at purchasers' prices and basic prices, and for each industry output at basic prices and intermediate consumption were constantly controlled.

Reconciliation of supply and use was complicated by considerable scales of production in small business and underground economy as well as of unregistered import, which were estimated indirectly.

The final reconciliation of the IOT for 2004 was carried out at the higher level of aggregation, namely at the level of 15 industries of RCEA. At this level the whole set of tables was developed, namely the Supply Table, Use Table at purchasers' and basic prices, Import Use Table, matrices of margins and net taxes on products.

Considering certain conventions used in compilation of the intermediate demand matrix, symmetric tables for 2004 were not built.

Shortened Supply and Use Tables for 15 industries of RCEA for 2004 were first published in 2007. Supply and Use Tables for 6 industries are shown in Annexes 4 and 5.

Despite their experimental form, they proved to be very important.

Firstly, they were used to check internal coherence of the SNA compiled on the principally new classification.

Secondly, these tables provided users with information on inter-industry links, first described by the new classification, which adequately reflected realities of market economy and is used in most of the countries.

Thirdly, due to the use of the new industry classification, harmonized with NACE, the Russian IOT became fully comparable with IOT of other countries, and, first of all, the EU countries.

No doubt these tables adequately describe structural economic proportions at a highly aggregated level. Nevertheless, the information and analytical value even of the shortened IOT, initially based on detailed data in the RCEA structure, is much higher, than that of tables, built using the transition key method from shortened CINE tables to shortened RCEA tables.

More detailed IOT can only be constructed if all the necessary data are available. For this purpose it is necessary to carry out a special production cost survey as part of the economic census and to develop benchmark IOT, based on new product and industry classifications.

For years Rosstat has been negotiating with the Russian Government on additional financing for this wide-scale work. Unfortunately, so far the negotiations have not been successful.

VI. Conclusions

During more than 40 years of existence Russian IOT have undergone significant changes. There were changes in methodology of their development, classifications used, structure, kind and format of tables, their information support and approaches to calculation. Development of IOT was

aimed at gradual adoption of international standards, but it could not be carried out apart from the system of the Russian state statistics.

Due to transition to the 1993 SNA methodology and implementation of the new industrial classification by kind of economic activities, Russian IOT for 2004 became fully comparable with IOT of other countries. Unfortunately, without corresponding information support the level of details in the developed tables cannot be increased.

For further development of IOT the whole system of collection and processing of statistical data should be improved which implies:

- implementation of a new product classification, harmonized with RCEA[2],
- conducting the Russian economic census,
- increasing the quality and level of details of primary data.

If the above-mentioned requirements are fulfilled, improvement of IOT will be carried out in the following main directions:

- increase of IOT level of details,
- full-scale implementation of the commodity flow method,
- development of IOT not only at current, but also at constant prices.

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[2] Currently the development of the new Russian Classification of Products by Economic Activities, harmonized with the Statistical Classification of Products by Activity in the European Economic Community, 2002 version, is in the final stage. Its implementation is planned no sooner than in 2008.

Annex 1. 2003 Make Table for Russia (based CINE)
(bln. roubles)

Products		Industrial production			Industry total	Construction	Agriculture and foresty	Transport and communication	Trade and catering, material supply and procurement, real estate, general commercial activities to support market	Other branches of material production	Housing, communal and personal services	Health care, phisical culture and social security, education, culture and art	Science and scientific services, geological exploration and prospecting, geodesic and hydrometeorological services	Finance, credit, Insurance, pensionschemes, general administration, social organisations	Total product output at basic prices
Industries		Electricity production	Oil industry	...											
		01	02	...	16	17	18	19	20	21	22	23	24	25	26
Electrical energy	01	886.8	1.0	...	**922.2**	-	-	-	-	-	-	-	-	-	**922.2**
Oil	02	0.0	927.6	...	**928.1**	-	-	-	-	-	-	-	-	-	**928.1**
Oil products	03	0.0	3.0	...	**662.9**	-	-	-	-	-	-	-	-	-	**662.9**
Gas	04	0.0	16.4	...	**193.3**	-	-	-	-	-	-	-	-	-	**193.3**
Coal	05	-	-	...	**123.7**	-	-	-	-	-	-	-	-	-	**123.7**
Other fuel (schist and peat)	06	-	-	...	**1.5**	-	-	-	-	-	-	-	-	-	**1.5**
Ferrous metallurgy products	07	0.0	0.1	...	**719.6**	-	-	-	-	-	-	-	-	-	**719.6**
Non-ferrous metallurgy products	08	0.0	0.0	...	**776.9**	-	-	-	-	-	-	-	-	-	**776.9**
Chemical and PetroChemical products	09	0.4	0.1	...	**549.6**	-	-	-	-	-	-	-	-	-	**549.6**
Machine-building and metel-working	10	2.0	1.0	...	**1 554.7**	-	-	-	-	-	-	-	-	-	**1 554.7**
Timber,woodworking, pulp and paper products	11	0.1	0.0	...	**371.0**	-	-	-	-	-	-	-	-	-	**371.0**
Construction materials	12	0.2	0.2	...	**289.6**	-	-	-	-	-	-	-	-	-	**289.6**
Products of light industry	13	0.0	0.0	...	**172.2**	-	-	-	-	-	-	-	-	-	**172.2**
Food products	14	0.1	0.0	...	**1 407.3**	-	-	-	-	-	-	-	-	-	**1 407.3**
Other industry products	15	5.9	0.0	...	**241.8**	-	-	-	-	-	-	-	-	-	**241.8**
Industry products - total	16	**895.5**	**949.4**	...	**8 914.4**	-	-	-	-	-	-	-	-	-	**8 914.4**
Construction	17	-	-	-	-	1 720.6	-	-	-	-	-	-	-	-	**1 720.6**
Agriculture and foresty products	18	-	-	-	-	-	1 207.9	-	-	-	-	-	-	-	**1 207.9**
Transport and communication	19	-	-	-	-	-	-	2 056.4	-	-	-	-	-	-	**2 056.4**
Trade and catering, material supply and procurement, real estate, general commercial activities to support market	20	-	-	-	-	-	-	-	4 943.0	-	-	-	-	-	**4 943.0**
Other branches of material production	21	-	-	-	-	-	-	-	-	189.7	-	-	-	-	**189.7**
Housing, communal and personal services	22	-	-	-	-	-	-	-	-	-	668.9	-	-	-	**668.9**
Health care, phisical culture and social security, education, culture and art	23	-	-	-	-	-	-	-	-	-	-	1 299.5	-	-	**1 299.5**
Science and scientific services, geological exploration and prospecting,geodesic and hydrometeorological services	24	-	-	-	-	-	-	-	-	-	-	-	377.4	-	**377.4**
Finance, credit, Insurance, pensionschemes, general administration, social organisations	25	-	-	-	-	-	-	-	-	-	-	-	-	1 944.6	**1 944.6**
Direct purchases abroad by residents	26	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
CIF/FOB adjustment	27	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Total industry output at basic prices	26	**895.5**	**949.4**	...	**8 914.4**	**1 720.6**	**1 207.9**	**2 056.4**	**4 943.0**	**189.7**	**668.9**	**1 299.5**	**377.4**	**1 944.6**	**23 322.5**

Note: Values may not add due to rounding

Annex 2. 2003 IOT industry classification (national) and concordance with 2004 IOT industry classification

2003 IOT industries	Description	2004 IOT industries	NACE, Rev. 1 code	Description	Notes
01	Electricity production	05	E	Electricity, gas and water supply	
02	Oil industry	03	?	Mining and quarrying	
03	Oil products industry	04	D	Manufacturing	
04	Gas industry	03	C	Mining and quarrying	
		04	D	Manufacturing	
05	Coal industry	03	C	Mining and quarrying	
06	Other fuel (schist and peat) industry	03	C	Mining and quarrying	
07	Ferrous metallurgy	04	D	Manufacturing	
		03	C	Mining and quarrying	
08	Non-ferrous metallurgy	04	D	Manufacturing	
		03	C	Mining and quarrying	
09	Chemical and petrochemical industry	04	D	Manufacturing	
		03	C	Mining and quarrying	
		07	G	Wholesale and retail trade; repairs of motor vehicles, etc.	pertinent to rubber footwear repair
		11	K	Real estate, renting and business activities	pertinent to aerosol spray capsule filling with domestic chemical products and packaging of mineral fertilizers, crop protection agents, lacquers, paints, etc.
10	Machine-building and metal-working	04	D	Manufacturing	
		07	G	Wholesale and retail trade; repairs of motor vehicles, etc.	
		05	E	Electricity, gas and water supply	pertinent to wiring, repair and maintenance of electrical networks
		11	K	Real estate, renting and business activities	pertinent to computing machinery repair and maintenance
11	Timber, woodworking, pulp and paper industry	04	D	Manufacturing	
		01	A	Agriculture, hunting and forestry	pertinent to forest harvesting
12	Construction materials industry	04	D	Manufacturing	
		03	?	Mining and quarrying	
13	Light industry	04	D	Manufacturing	
		07	G	Wholesale and retail trade; repairs of motor vehicles, etc.	pertinent to domestic and personal articles repairs
14	Food industry	04	D	Manufacturing	
		02	?	Fishing	pertinent to fishery
		01	A	Agriculture, hunting and forestry	pertinent to marine harvesting
		03	?	Mining and quarrying	pertinent to salt extraction and production
15	Other industry	04	D	Manufacturing	
		15	O	Other community, social and personal service activities	pertinent to dry-cleaning laundry of lenin and other fabrics
		11	K	Real estate, renting and business activities	pertinent to photography services
		05	E	Electricity, gas and water supply	pertinent to water collection and purification
		07	G	Wholesale and retail trade; repairs of motor vehicles, etc.	pertinent to jewelry repairs
		03	?	Mining and quarrying	pertinent to mining (extraction) of precious and semi-precious stones (excluding diamonds), gems and amber
16	Construction	06	F	Construction	
		04	D	Manufacturing	pertinent to installation, adjustment and commissioning of equipment
		03	?	Mining and quarrying	pertinent to oil and gas extraction services
		05	E	Electricity, gas and water supply	pertinent to installation, adjustment and commissioning of heat network facilities
		11	K	Real estate, renting and business activities	pertinent to architectural activities and engineering in construction

2003 IOT industry	Description	2004 IOT industry	NACE, Rev. 1	Description	Notes
17	Agriculture and foresty	01	A	Agriculture, hunting and forestry	
		02	?	Fishing	pertinent to fish-breeding
		04	D	Manufacturing	pertinent to tea leaf primary processing
		14	N	Health care and social services	veterinary
		15	O	Other community, social and personal service activities	pertinent to wilderness areas and wildlife protection
18	Transport and communication	09	I	Transport, storage and communication	
		11	K	Real estate, renting and business activities	pertinent to cleaning of industrial premises and hosing, equipment and motor vehicles
		06	F	Construction	pertinent to repairs of motor-ways, bridges, tunnels, parkings
19	Trade and catering, material supply and procurement, real estate, general commercial activities to support market	07	G	Wholesale and retail trade; repairs of motor vehicles, etc.	
		08	?	Hotels and restaurants	
		09	I	Transport, storage and communication	pertinent to storage and warehousing
		11	K	Real estate, renting and business activities	
20	Other branches of material production	04	D	Manufacturing	pertinent to publishing
		11	K	Real estate, renting and business activities	pertinent to activies, involving usage of computing machinery and activies of private detective agencies
		15	O	Other community, social and personal service activities	pertinent to media agencies activities
21	Housing, communal and personal services	11	K	Real estate, renting and business activities	
		05	E	Electricity, gas and water supply	
		15	O	Other community, social and personal service activities	
		08	?	Hotels and restaurants	
		06	F	Construction	pertinent to working-up building site
		01	A	Agriculture, hunting and forestry	pertinent to lanscape-gardening (landscaping of cities)
		09	I	Transport, storage and communication	pertinent to usage of township roads, bridges, cross-walks, sea embankments, etc.
22	Health care, phisical culture and social security, education, culture and art	14	N	Health and social work	
		13	M	Education	
		15	O	Other community, social and personal service activities	
		09	I	Transport, storage and communication	pertinent to tourism industry activities
		08	?	Hotels and restaurants	pertinent to tourist hotels, resorts, holiday hotels, children's campuses
		11	K	Real estate, renting and business activities	pertinent to desinfecting stations and exhibitions
		04	D	Manufacturing	pertinent to sound recording production
23	Science and scientific services, geological exploration and prospecting, geodesic and hydrometeorological services	11	K	Real estate, renting and business activities	
24	Finance, credit, Insurance, pension schemes, general administration, social organisations	10	J	Financial intermediation	
		12	L	Public administration and defence; compulsory social security	
		15	O	Other community, social and personal service activities	

Annex 3. Structure of Industry Output for Russia, 2004 (based RCEA)
(as percentages of total industry output)

Products \ Industries		? Agriculture, hunting and forestry	B Fishing	C Mining and quarrying	D Manufacturing	E Electricity, gas and water supply	F Construction	G Wholesale and retail trade; repairs of motor vehicles, etc.	H Hotels and restaurants	I Transport, storage and communication	J Financial intermediation	K Real estate, renting and business activities	L Public administration and defence; compulsory social security	M Education	N Health and social work	O Other community, social and personal service activities	Total product output at basic prices
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
? Agriculture, hunting and forestry	01	92.9	0.3	-	0.1	-	-	-	-	-	-	0.1	-	-	-	0.2	**5.0**
B Fishing	02	-	87.8	-	0.1	-	-	-	-	-	-	-	-	-	-	-	**0.4**
C Mining and quarrying	03	-	-	89.1	0.2	-	0.5	0.2	-	0.5	-	0.6	-	-	-	-	**7.2**
D Manufacturing	04	5.7	10.7	7.1	95.3	0.5	2.2	2.7	0.4	0.7	-	2.1	-	0.1	-	1.3	**28.3**
E Electricity, gas and water supply	05	0.2	0.1	0.2	0.5	94.2	0.2	0.4	-	0.3	-	1.9	-	-	0.1	0.7	**5.1**
F Construction	06	0.1	-	1.6	0.4	0.8	94.2	0.1	-	0.6	-	0.8	-	-	-	0.4	**6.1**
G Wholesale and retail trade; repairs of motor vehicles, etc.	07	0.6	0.3	0.5	2.5	0.5	0.3	92.2	1.0	1.0	-	0.6	-	-	0.1	0.3	**15.6**
H Hotels and restaurants	08	0.1	-	0.1	0.1	0.1	-	0.2	96.5	0.2	-	0.1	-	0.1	0.1	0.3	**0.9**
I Transport, storage and communication	09	0.3	0.4	0.5	0.2	0.2	1.1	1.0	0.2	95.6	-	0.3	-	-	-	1.2	**9.4**
J Financial intermediation	10	-	-	-	-	-	-	-	-	-	99.7	-	-	-	-	0.1	**2.4**
K Real estate, renting and business activities	11	0.1	0.4	0.7	0.5	1.2	1.4	3.1	0.9	0.8	0.3	92.9	2.2	0.1	0.1	1.5	**8.1**
L Public administration and defence; compulsory social security	12	-	-	-	-	-	-	-	-	-	-	-	97.8	-	-	-	**5.3**
M Education	13	-	-	-	-	-	-	-	-	-	-	-	-	99.7	-	0.1	**1.9**
N Health and social work	14	-	-	0.1	-	-	-	-	0.2	0.1	-	-	-	-	99.5	-	**2.7**
O Other community, social and personal service activities	15	-	-	0.1	-	2.5	-	-	0.7	0.1	-	0.5	-	-	-	93.9	**1.8**
Total industry output at basic prices	16	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Values may not add due to rounding

Annex 4. 2004 Supply Table for Russia
(current prices, bln. roubles)

Industries \ Products		Agriculture, hunting,forestry and fishing	Mining and quarrying, manufacturing, electricity, gas and water supply	Construction	Ttrade, hotels and restaurants, transport, storage and communication	Financial intermediation	Services	Total product output at basic prices	Import	CIF/FOB adjustment	Total product supply at basic prices	Trade and transport margins	Taxes less subsidies on products	Total product supply at purchasers' prices
		01	02	03	04	05	06	**07**	08	09	**10**	11	12	**13**
Agriculture, hunting,forestry and fishing	01	1 557.4	16.0	0.6	2.9	-	3.5		125.1	-		243.1	58.3	
Mining and quarrying, manufacturing, electricity, gas and water supply	02	103.6	11 506.5	50.6	196.4	0.0	113.7		2 803.4	-		4 704.9	1 832.0	
Construction	03	1.6	81.2	1 683.2	21.0	-	20.2		87.8	-		-	92.7	
Ttrade, hotels and restaurants, transport, storage and communication	04	15.8	268.6	25.7	7 311.0	0.0	34.9		138.1	-76.7		-4 948.0	143.3	
Financial intermediation	05	-	0.2	0.1	0.3	694.3	0.7		56.4	-3.0		-	-2.3	
Services	06	2.9	122.0	26.1	179.4	2.2	5 494.8		188.5	-		0.0	44.4	
Direct purchases abroad by residents	07	-	-	-	-	-	-		454.2	-		-	-	
CIF/FOB adjustment	08	-	-	-	-	-	-		-79.8	79.8		-	-	
Total	09													

Note: Values may not add due to rounding

Annex 5. 2004 Use Table for Russia
(current prices, bln. roubles)

Industries / Products		Agriculture, hunting,forestry and fishing	Mining and quarrying, manufacturing, electricity, gas and water supply	Construction	Ttrade, hotels and restaurants, transport, storage and communication	Financial intermediation	Services	Total intermediate	Final consumption expenditure			Gross fixed capital formation	Change in inventories	Net acquisition of valuables	Export	Total use at purchasers' prices
									by households	by government	by non-profit institutrions serving households					
		01	02	03	04	05	06	**07**	08	9	10	11	12	13	14	**15**
Agriculture, hunting,forestry and fishing	01	358.0	542.0	0.1	21.1	-	55.2		786.6	33.0	0.1	-5.2	48.9	-	167.7	
Mining and quarrying, manufacturing, electricity, gas and water supply	02	363.5	5 767.1	739.6	1 150.6	11.9	1 169.3		5 307.9	77.1	1.1	1 249.1	359.0	39.1	5 120.7	
Construction	03	2.3	103.3	12.9	64.2	2.4	103.0		41.9	-	-	1 597.7	10.3	-	45.4	
Ttrade, hotels and restaurants, transport, storage and communication	04	30.9	337.4	64.7	903.4	3.1	272.1		1 028.0	35.8	7.4	-	-	-	238.3	
Financial intermediation	05	7.9	91.6	10.3	40.8	433.1	16.1		132.1	-	-	-	-	-	14.7	
Services	06	12.6	414.2	95.6	734.0	41.8	686.3		886.4	2 701.7	139.8	205.2	10.1	-	131.6	
Direct purchases abroad by residents	07	-	-	-	-	-	-		454.2	-	-	-	-	-	-	
Direct purchases on the domestic territory by non-residents	08	-	-	-	-	-	-		-152.9	-	-	-	-	-	152.9	
Total intermediate/ final use at purchasers' prices	09															
Value Added	10	**906.1**	**4 739.0**	**863.1**	**4 796.8**	**204.2**	**3 365.8**									
Total industry output at basic prices	11															

Notes: 1. Values may not add due to rounding
2. Financial intermediation includes financial intermediation services indirectly measured

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